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The Effect of Technology on a Student's Motivation and Knowledge Retention

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Abstract

The purpose of this study was to examine the impact that technology has on a student's motivation to learn new information and retain said information. The procedure involved the completion of two projects over the course of a nine-week study. One group was to create traditional storybook projects. A second group was to complete computer-based projects. A third group was given the choice of which project to complete. A pre-post-retention test, Likert scale surveys, and post project interviews were used to collect the data. The results of this study support the idea that when given the choice of project, students retain knowledge no matter which project is chosen, traditional or computer-based.

Introduction

In an ever changing technological world, computers seem to be at the forefront of education. At the same time, the exact impact of using technology for instruction is still unknown. Some questions teaching communities grapple with are technology's role in student's desire to learn and how technology affects the retention of the information. More specifically, it would be useful to know whether students respond in a more positive manner to participating in a social studies class when using web 2.0 tools versus when using paper-based methods. For an educator in the 21st century, it is important to gain a deeper understanding of the impact of technology on education. The general

question that guided this study was "To what extent does technology help student motivation and retention of information in a 7th grade Social Studies classroom? To this end, for this investigation, the researchers outlined three major goals. First, the purpose of this study is to uncover students' motivation for learning when engaging with technology during the instructional time. The second goal is to measure the retention of information after using two different methods of teaching. The final goal of this study is to analyze a smaller special needs group and how their motivation and retention are affected by technology-based projects.

Literature Review

Motivation is a fundamental concern among teachers (Linnenbrink and Pintrich, 2003). Motivating students is a continual problem throughout education and although there are no clear cut solutions, there are several strategies to help teachers with the dilemma (Linnenbrink and Pintrich). Motivation is generally defined as an internal condition that initiates behavior ("Motivation," 2009). Motivation gets humans going. Motivation arouses interests. Motivation creates the want to achieve a goal. Teachers are always looking to see what motivates their students. Motivation is the key to academic success as well as promoting lifelong learning (Sanacore, 2008). The reluctance to learn must be turned into the want to learn.

There are reluctant learners in every classroom. Reluctant learners are the individuals that do not finish their assignments and, sometimes, avoid tasks. Reluctant learners are content with just getting by. One common thread among reluctant learners is their perception of themselves, known as self-efficacy (Sanacore, 2008). If their self-efficacy is low, then their motivation to perform will be low. When students are constantly berated with negative comments, their self-esteem and self-efficacy become diminished. Student's reluctance to learn is also affected by the assignments teachers create. If an assignment is too easy or too difficult, reluctant learners are unmotivated to succeed. Students are

motivated when they feel excited about a task or feel that what they are doing is worthwhile (Linnenbrink and Pintrich, 2003). Teachers must adjust their teaching to match the motivations of their students.

In a traditional classroom, teachers need to encourage students' intrinsic motivation (Sanacore, 2008). Intrinsic motivation stems from factors such as interest or curiosity (Woolfolk-Hoy and Hoy, 2009). Extrinsic motivation focuses on rewards or incentives. In order to motivate, teachers must encourage and challenge their students (Sanacore, 2008). Students presented with too easy or too difficult material will eventually become bored and unmotivated. In a traditional classroom, teachers must differentiate activities in order to place some power into the hands of the students (Sanacore). This freedom can positively affect the motivation for a student who is unwilling to participate. Great motivators in traditional classroom should encourage students to love learning and help students maintain high self-efficacy beliefs (Linnenbrink and Pintrich, 2003). This often proves to be the most difficult task for some teachers. To motivate students, teachers must rely on what interests students and what they already know and with which they are successful.

Creating activities that students enjoy and respond to is a challenging task for teachers of all subjects. Introducing technology infused lessons may prove to be a beneficial motivator for every grade level. Digital natives respond well to technology-infused activities because of their familiarity with technology (Prensky, 2001). Technology and teacher motivation have positive effects on student motivation (Atkinson, 2000). Because students respond positively to technology and are motivated by technology, teachers should make conscious efforts to create activities that encompass some form of technological tool. Motivated students will be more likely to perform at their highest levels because of the opportunities that their teachers have made available.

Retention

Instead of memorizing facts for a test, teachers want their students to retain the information longer than a week. Teachers find it difficult to teach more and more curriculum (Wolfe, 2001). Just

covering the expanse curriculum does not build strong connections in student's memory (Wolfe). Because of the pressures of standardized tests, teachers must find different ways to teach the required curriculum and help students retain the necessary information.

In many traditional classrooms, teachers engage in traditional styles of teaching. Some give lectures where students are expected to take copious notes, while others assign vocabulary where students are expected to memorize definitions and spellings of important words. These two styles of teaching fall under the category of rote rehearsal (Wolfe, 2001). The repeated rehearsing of information may help a student study for a vocabulary test, but does not help a student retain information (Wolfe). Instead, students should use the strategy known as elaborative rehearsal (Nuthall, 2000). Once a student elaborates on information, they are more likely to retain the information over a longer period of time (Nuthall). As students collect new information that is unfamiliar and relate that material to information they already know, then they will be able to retain this new information more easily. Students need to see meaning in order to remember.

Because today's children have grown up with a different digital landscape than their teachers (Jukes, 2008), they, most likely, are inspired and motivated by different technology. Today's digital natives speak a different language than their teachers do (Prensky, 2001). For these reasons, students of the 21st century may retain more information if it comes to them through a digital medium. In a more digital world, online teaching tools are better for a student's memory (Miller, 2009). Not only online tools, but digital tools in general are better for a student's memory. SMARTboards, digital "clickers," and computers all spur interest in a child and are more likely to motivate a student to perform at his or her highest level (Miller). Online tools that promote content creation among students, such as videos, audio podcasts, and web pages, are more effective strategies than traditional methods (Miller).

Learning with Technology

The effectiveness of learning with technology has been tackled from both sides. There is

evidence that the use of technology increases achievement and self-efficacy (Liu, Hsieh, Cho, and Schallert, 2006), but some studies indicate that the use of technology in certain areas is not beneficial to students (Cramer and Smith, 2002). Still yet, some studies show no link between technology and achievement, but a positive relationship between technology use and discipline (Garthwait, 2007).

Technology use in schools has had mixed results. Technology integration must have a purpose in order for it to be beneficial for producing positive results (Cramer and Smith, 2002).

Web 2.0. VoiceThread is a popular website that allows users to create, share, and learn from each other. VoiceThread is a web-based digital storytelling tool that allows users to create digital slideshows with captivating images. The social aspect of VoiceThread allows all users to learn and grow with each other. Using digital tools allows students to use technology while achieving the same objectives of those students using traditional methods of learning.

Digital Storytelling. Storytelling has been an educational method for centuries. As children become personally involved with the story, they are more likely to learn from it. Digital storytelling helps children actively participate in the learning instead of passively watching (Ohler, 2005). Children gain many skills through storytelling. The telling of stories orally helps students develop their listening skills, planning skills, and allows students to create academic content in their own language (Ohler, 2008). Critical thinking skills will develop as the listener is guided through the story. Listening to and creating stories provides a child with the framework to tell their own stories about their own lives (Ohler).

With the advent of technology, storytelling has taken on a digital medium. Storytelling has gone from spoken words to text and now to media with the arrival of the digital age (Gils, 2005). Digital storytelling offers new ways to educate people (Ohler, 2008). During the creation process, students can personalize their creation with relevant pictures that align with the story. Not only are students afforded the opportunity to use technology, but they also have the potential for deeper learning (Ohler). Digital storytelling allows students the opportunity to become more creative with their stories (Robin, 2008

Method

Participants

The participants involved in this action research study consisted of 102 seventh grade students enrolled in a World History course in five social studies classes. All participants were between the ages of 12 and 13 years old. There were 50 boys and 52 girls involved with this action research. There were 5 ethnicities involved with this action research study: 86 Caucasian, 2 Black, 5 Asian, 2 Indian, and 7 Latin American. Six of the participants had individualized education plans (IEP) and were classified with special education needs. Three of the participants held a 504 education plan.

The students in the study were split into three groups: experiment group A, experiment group B and a control group. Experiment group A consisted of those students in the two classes that had history during the periods 4 and 5. Experiment group B was a group of students in an "In Class Support" (ICS) class that had an additional special education teacher. The control group of students were the students in the two remaining classes that met during the periods 1 and 3.

Participants were broken up into three different groups during this project in order to test the original research question. Group B was chosen as the experiment group because of the need to differentiate assignments for the variety of different learners in the class.

The study took place in a suburban middle school in New Jersey. The teacher in all five classes what the first author of this study.

The Unit of Study

All participants included in the study were enrolled in the regular seventh grade social studies course. The seventh grade social studies curriculum covered Early Man, Early Civilizations, Ancient Egypt, Ancient India, Ancient China, Ancient Greece, and Ancient Rome. The study was conducted at the time when the students studied Ancient China.

Materials

The quantitative methods that were used included a series of tests. Students took one pre-test at

the beginning of the unit of study. This test consisted of 35 multiple choice questions. The purpose of this pre-test was to see what the student previously knew about Ancient China. At the end of the unit, students took a post-test. This test was identical to the pre-test. The purpose of this test was to measure the extent to which students learned the content of study immediately after the teaching. Finally, a retention test was given two weeks after the study was over. Again, this test was identical to the pre and post-test, except for the order of the questions. This quantitative measure was given to students in order to see how much information the students in both groups remembered after the Ancient China Unit was well over. The three tests allowed the researcher to see whether or not the students learned and then retained the information.

One qualitative method of data collection included a daily journal. After each class, the researcher wrote down what occurred in class that day. The researcher looked for discontent, motivation, excitement, engagement, and focus. This method of collecting data was chosen because it allowed the researcher to examine not only what the students did, but also how they felt about the process.

Another qualitative instrument of data collection included a survey completed at the end of the 9-week study. Each of the three groups of students was given a 12 question survey. The use of the group survey proved beneficial in assessing the overall emotions of the 9-week study. These surveys were important to this particular action research project because of the different groups involved.

Because the triangulation of data was extremely important, a fourth qualitative instrument of measure was included in this study. The researcher conducted ten minute interviews of participants. The participants were allowed to elaborate on several questions without judgment or encouragement from the researcher.

Procedure

During the course of this research, the three groups of students were involved with two projects. Experiment group A completed these two projects in a computer lab. Experiment group B students had

a choice of whether to use technology while working on the project or not. Finally, the control group did all their work in the classroom without the use of technology, never visiting the computer lab during this research.

On the first day of the study, all students in the study took the pre-test to assess their previous knowledge of Ancient China. After fourteen days of instruction, students entered into a project week. Over the course of five school days, students created a storybook. The experiment group A created a digital story utilizing VoiceThread in the computer lab, the participants in the experiment group B had the option whether to use the technology or not, and the control group created a paper-based storybook.

During the first two weeks of February, students re-entered the classroom for ten more days of instruction. After ten more days of instruction, students entered into a second project week. Again, the experiment group A created a digital story utilizing VoiceThread in the computer lab, the participants in the experiment group B had the option whether to use the technology or not, and the control group created a paper-based storybook.

During the third week of February, students took the surveys that mirrored the condition in each group, i.e. students in the experiment groups A and B were directed to an online survey in which their answers were emailed directly to the researcher, and the control group participants were given the Likert survey on paper.

The final week of February was dedicated to any make-up surveys and/or interviews that needed to be conducted because of absenteeism. After all surveys and interviews were completed, two weeks after the completion of the unit, the participants took a retention test.

Results

The average score on the pre-test was 19.08 out of 35 possible points. The average post-test score for all participants was 27.15. The average score on the retention test for all participants was 28.07. Table 1 summarizes the results by each group on all three tests.

The results of the pre-test were low for all the groups. The average mean score for the pre-test for all three groups was 19.08 with a standard deviation of 3.48, indicating quite a range of responses on the pre-test.

The average mean score (the mean score for the three groups) for the post-test was 27.15 with a standard deviation of 3.95. The standard deviation of 3.95 , which is similar to the pre-test (3.48) indicates that the spread of responses remained equal on the two tests. Two factors may explain lower than expected post-test scores. First, certain students may not have prepared for the test. Second, student absences throughout the study may also explain the lower than expected post-test scores.

Table 1

Mean and Standard Deviations for the three test groups on Pre, Post, and Retention Tests

Group	N	Pre-Test	Post-Test	Retention Test
Experiment Group A (computer)	42	19.24 (3.33)	26.48 (4.23)	26.64 (5.30)
Experiment Group B (option)	17	19.47 (2.96)	27.47 (3.74)	29.18 (4.45)
Control (paper)	43	18.77 (3.83)	27.67 (3.75)	29.02 (4.10)

The mean score for the retention test for all three groups was 28.07 with a standard deviation of 4.79. Seventy-eight percent of the participants achieved retention test scores equal to or higher than their respective post-test scores. At the same time, the standard deviation, which increased on the retention test, indicates that at the retention test, there were more scores deviating from the mean in either direction than there were at either pre or post-test.

Table 1 shows a retention test score of 26.64 for the experiment group. When comparing experiment group A's mean score on the retention test (Table 1) with the mean score of the retention

test from the participants that chose the computer-based project from experiment group B (Table 2), you get a difference of 3.03 points. One can explain this difference if one takes into account that the participants in experiment group A were all forced to work on the computer, while the participants in experiment group B had their choice of project. To see whether there was a significance difference between the groups, the ANOVA analyses were carried out. The ANOVA shows a significant difference between the groups at the retention test $F(2, 99) = 3.316$, $p < 0.040$. Post hoc comparisons indicated that the difference is between experiment group A and experiment group B, Dunnett $t = -2.543$, $p < .051$.

Table 2 demonstrates a breakdown of experiment group B. The participants that completed the computer-based project in experiment group B had the highest overall retention test score, 29.67 (SD = 4.18). The participants that completed the paper-based project in experiment group B had a mean retention test score of 28.33 (SD = 5.09). Of the seventeen participants in experiment group B, only two switched projects halfway through the research. These two participants scored a mean retention test score of 29.50 with a standard deviation of 6.36. Since experiment group B had their choice of project, these participants chose the type of project that best suits their educational needs.

Table 2

Means (and Standard Deviations) on Pre, Post, and Retention Test of three sub-groups within Experiment Group B

	No.	Pre-Test	Post-Test	Retention Test
Experiment Group B (Paper)	6	19.00(1.67)	26.00(5.22)	28.33(5.09)
Experiment Group B (Computer)	9	19.33(3.74)	28.11(2.71)	29.67(4.18)
Experiment Group B (switched projects)	2	21.50(2.12)	29.00(2.83)	29.50(6.36)

Total Participation	17	19.47(2.96)	27.47(3.74)	29.18(4.45)

In addition, experiment group B had six participants with IEPs. By the second project, these students all completed the computer-based project. Since these students were more aware of their educational disabilities, they were more likely to choose the educational methods that matched their learning style. By using computer-based methods, these six participants with IEPs succeeded on their post and retention tests because of how they visualized the information on the computer screen.

Table 3 shows the results from the Likert scale survey given to experiment group A. The results of the Likert scale survey for this group indicate that participants from this experiment group, on average, agreed that technology helped them remember the Ancient China Unit and motivated them to learn.

Table 3

Means and Standard Deviations of Likert scale survey questions given to experiment group A.

Question	Mean	Standard Deviation
I liked using Technology for this type of project.	4.59	0.72
I would want to use VoiceThread in the future.	4.33	1.00
By using Technology, I'll remember the Ancient China Unit better.	4.03	1.20
Using technology motivated me to learn.	4.07	1.17
VoiceThread was easy to use.	4.87	0.44
I would like to use computers to learn history in the future.	4.42	1.02

Table 4 shows the results from the Likert scale survey given to experiment group B. Since there are two distinctively different groups answering this survey, it was important to include two different means and standard deviations; one for the participants who completed the computer-based projects and one for the participants who completed the paper-based projects.

Table 4

Mean and Standard Deviation values of Likert scale survey given to experiment group A.

Question	Computer		Paper	
	Mean	SD	Mean	SD
I prefer VoiceThread for this project.	4.59	0.96	1.79	0.8
I would want to use VoiceThread in the future.	4.73	0.55	1.21	0.43
By using technology, I'll remember the Ancient China Unit better.	4.27	0.83	2.21	1.12
Using technology motivated me to learn.	4.23	0.97	1.86	0.86
I will not remember the Ancient China Unit because of VoiceThread	1.64	0.66	3.79	1.19
I prefer to work on a traditional project than use the computer.	1.55	0.96	4.07	0.83
I would want to use paper for this type of project in the future.	1.27	0.55	4.79	0.43
By using paper, I'll remember the Ancient China Unit better.	1.73	0.83	4.07	0.83
Completing a paper based project motivates me to learn.	1.77	0.97	4.14	0.86

I prefer to work on a computer than work on a paper based project.	4.45	0.96	1.93	0.83

When asked if they would remember the Ancient China Unit because they used technology, the participants who chose the computer-based project strongly agreed (Mean = 4.27, SD = 0.83), while participants that chose the paper-based project disagreed as indicated by a low mean of 2.21 (SD = 1.12). It was evident that those participants who worked on the computer-based project preferred using technology over paper-based methods, while those who initially chose traditional paper based project clearly did so because of their dislike of or discomfort in the computer use in learning

Table 5 shows the mean and standard deviation values from the Likert scale survey given to the control group.

Table 5

Mean and Standard Deviation values of Likert scale survey given to control group

Question	Mean	Standard Deviation
I liked using a traditional method for this type of project.	4.04	0.82
I would want to participate on this type of project in the future.	3.40	1.13
By using traditional methods, I'll remember the Ancient China Unit better.	4.18	0.93
Using traditional methods motivated me to learn.	4.07	0.95
The project was easy to use.	4.50	0.81
I would like to use paper to learn history in the future.	3.62	0.95

Participants interviewed from experiment group A thought their computer project was fun and easy as well. When asked why he liked the VoiceThread, one participant responded, “it was fun to have the headset on.” The same participant claimed that his “eyes are drawn to electronics.” At the same

time, not all the participants interviewed from experiment group A liked the VoiceThread. One interviewee felt the pressures of the time frame of the projects. This same participant felt that the VoiceThread project did not help her learn about Ancient China and that was also evidenced in the low score of her retention test. However, even though she was negative about the VoiceThread project and offered no suggestions for improving the project, she still felt it was better than completing the paper-based project.

Interviewees from experiment group B were strategically picked. The researcher wanted to choose a participant that completed the paper-based project, a participant that completed the computer-based project, and a participant that switched projects. Of the participants from experiment group B, only two switched from paper to computers when completing their second project. These two happened to be twin brothers with the IEPs. While interviewing these twins separately, the researcher heard very different opinions. One of the participants liked the projects, while the other did not. One participant switched his project to the VoiceThread because he wanted to learn with technology, while the other thought it was easier to complete. One participant was motivated to get straight A's, while the other "just wanted to get it done quickly." The retention test scores for these two participants also differed. The participant that was motivated by straight A's scored a 34 on his retention test, while the other scored a 25. Since each participant in this experiment group had the choice, real motivations were clearly evident.

When interviewed, participants from the control group had one common feeling towards the paper-based project: it was fun and easy. When asked how this project helped them learn about Ancient China, one interviewee responded, "writing sentences helped me make connections with the pictures." Most participants in the control group agreed that completing the project was better than "book work."

Analysis of Data

If the choice of project were given to all participants, it is likely that the results would be different. When given the choice, participants will choose the project that best suits their educational

needs. There were participants in experiment group A that would have chosen to work on the paper-based assignments, while there were participants in the control group that would have chosen to work on the computer-based assignments. Even though students may seem more interested and motivated with computers, this does not necessarily mean they learn best with computers.

The participants in experiment group A had lower levels of learning and retention, but enjoyed learning with technology

When taking a closer look at individual scores on the quantitative tests, the researcher noticed another phenomenon with the results. After examining the results, there was a noticeable "grouping" of participants in each of the three groups there were students who did not retain information, students who retained some information, and those who learned and retained a lot of information. Figure 1 displays individual results of pre-test, post-test, and retention test scores taken from select participants

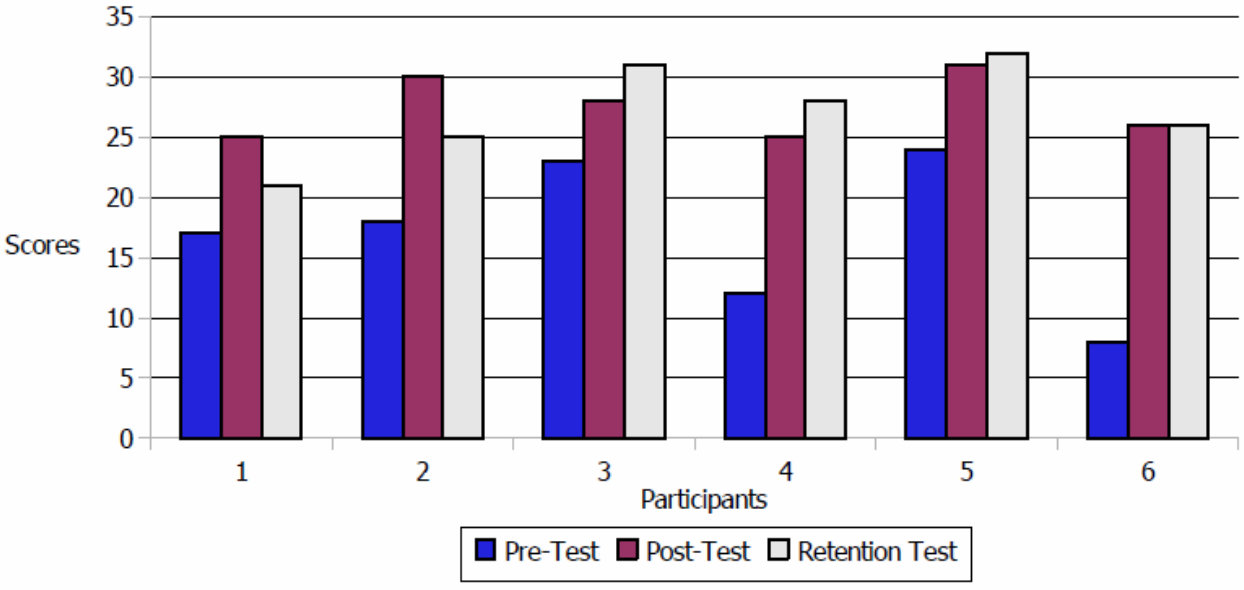

Figure 1
Individual results of select participants from Experiment Group A

from experiment group A. Participants 1 and 2 show lower retention test scores than post-test scores. When surveyed, Participant 1 claimed that using technology helped remember the Ancient China Unit. Participant 2 was an extreme case where, although a high pre-test and post-test score, the retention test score is low.

When interviewed, Participant 2 strongly disagreed that using technology would help remember the Ancient China unit. Participants 3 and 5 showed some signs of learning given their pre-test scores. Even though these participant's retention tests scores increased from their post-test scores, they were not fully convinced that they enjoyed using technology to learn.

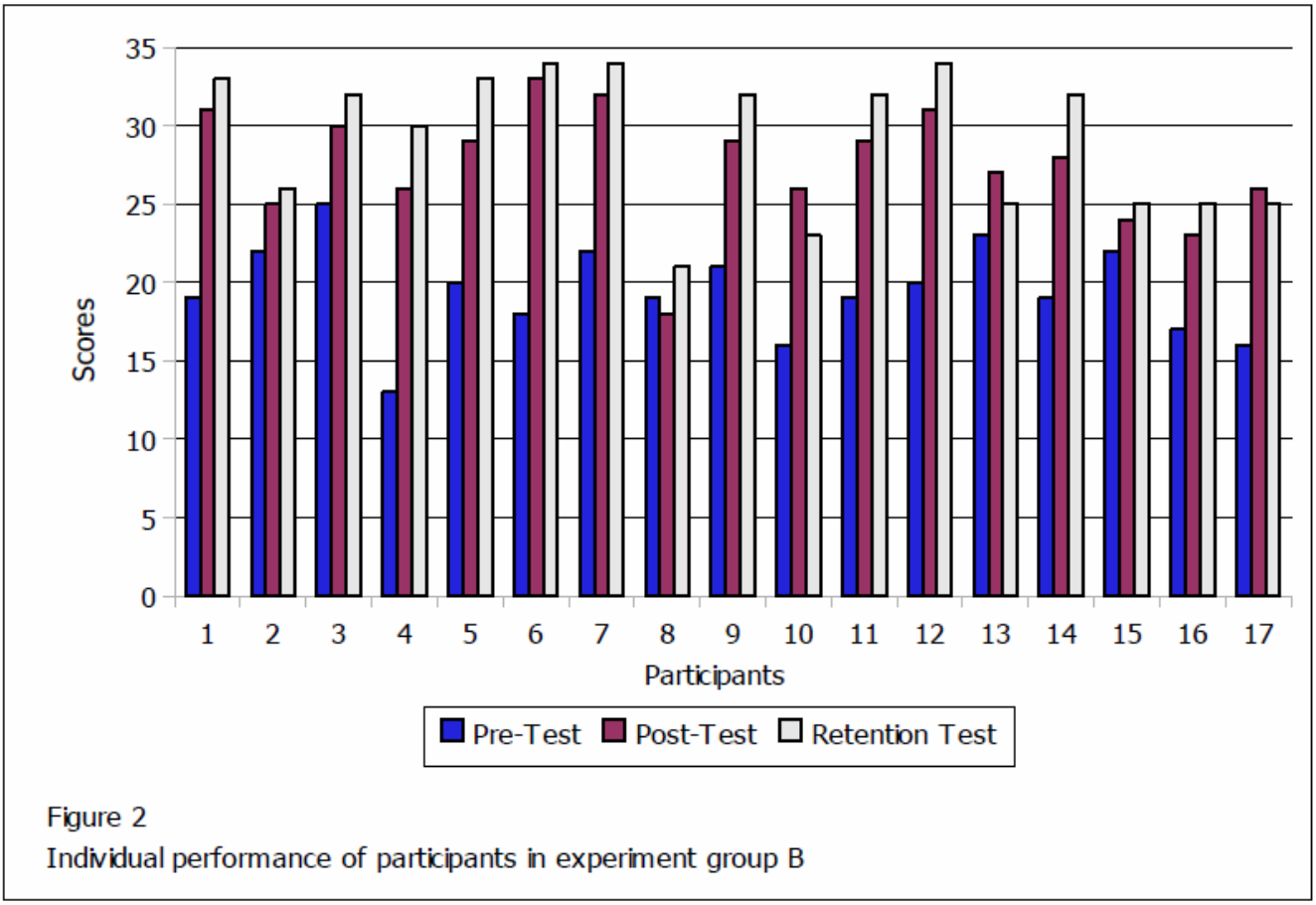

Figure 2
Individual performance of participants in experiment group B

Figure 2 displays the results of pre-test, post-test, and retention test from all participants in experiment group B. This group displayed overall greater numbers on their post-test and retention test scores. The Figure indicates that the participants 10, 13, and 17 had retention test scores slightly lower than their post-test scores. On their surveys, both participants 10 and 13 claimed that the use of technology would not help them remember the Ancient China unit. When given the opportunity, Participant 13 switched from the paper-based project to the computer-based. All three of these select participants claimed that the completion of a paper-based project would not motivate or help them remember the information. These three participants also happen to be classified as special education.

Even though they had the opportunity to choose their own project, these students continually struggled with the content being taught.

Participants 2, 3, and 15 showed signs of learning a little given the slight increase in their post-test scores and subsequent slightly higher scores on their retention test.

Participants 1, 4, and 6 showed signs of learning a lot given their lower pre-test scores and relatively higher post-test scores. These participants were also able to retain this information and scored 30 or above on their retention tests.

One noteworthy case is Participant 8. Although the low pre-test score and even lower post-test score, Participant 8 scored a slightly higher retention test score, which shows signs of learning. Even though test scores were low, this participant was still capable of learning. Even though this participant's scores were low, there was no switch from paper-based to computer-based project. This student stuck with the story book because she knew she did not want to try her luck on the computer.

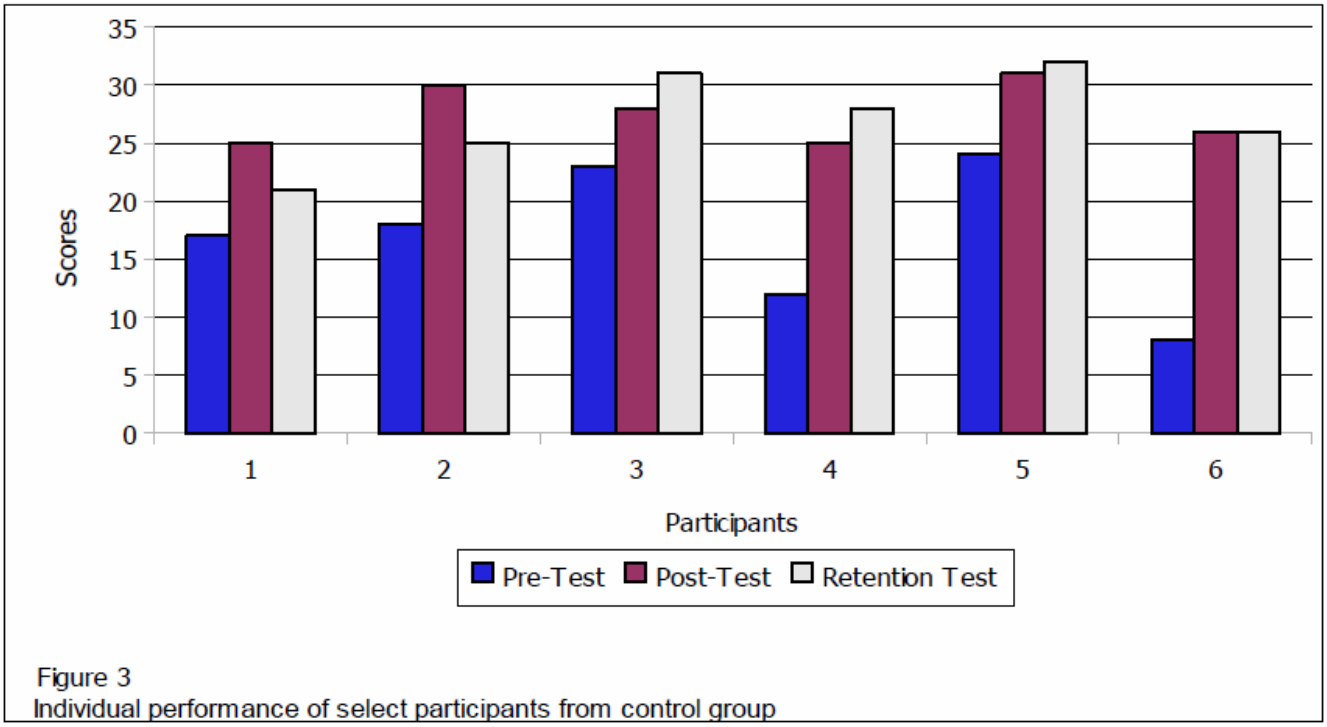

Figure 3
Individual performance of select participants from control group

Figure 3 exhibits the results of select six participants from the control group. Unlike the pattern that can be seen in Figures 1 and 2, this figure indicates that *all* participants performed better at post-test than they did at the pre-test. Examining the Figure further, one can see that Participants 1 and 2 had

retention test scores that were considerably lower than their post-test scores. Even though Participant 2 scored 30 on the post-test, information was not retained. When reviewing the survey results for these participants, the researcher discovered that participants 1 and 2 scored relatively low on a question that asked if the traditional project was a motivator for learning.

Participants 3 and 5 scored higher on their post-test than pre-test and yet even higher on their retention tests. This shows information was learned and retained after two weeks. These participants both strongly agreed that the paper-based project was a strong motivator to learn. Also, both participants agreed that traditional methods will help them remember the Ancient China unit. Although participant 3 strongly disagreed about the ease of the project, this participant still retained information after the completion of the study.

Finally, Participants 4 and 6, whose pre-test scores were relatively low, but retention test scores were equal to or greater than their post-test scores, both strongly agreed when asked if the paper-based project would help them remember the Ancient China unit. Even though this paper-based project did not necessarily motivate Participants 4 and 6 to learn, they still scored high on the post-test and sustained that score on the retention test.

Discussion

It was discovered in this research, that students who chose to complete projects using available technology scored significantly better than students who were forced to use available technology. Much to the researcher's surprise, when given the choice between completing a paper-based project or completing a computer-based project, the class was virtually split down the middle. Previous assumptions would have led this researcher to believe that more seventh grade students would have chosen to work on the computer over traditional methods of learning.

This research found a mix of students that would not have chosen to work on the computer if given the choice. What went wrong for these *digital natives* in their previous schooling? Did they have a teacher that did not know how to use technology? Did they have a teacher that poisoned their minds

with hatred towards technology? Do they have the right equipment at home and are they allowed to use it to gain the proficiency they need to learn the "technology language"? These students were obviously uncomfortable in front of a computer because "computers didn't like them" or "computers were too difficult to understand." But then there was another group of students that would have chosen to work on the computer if given the choice. Why were these students accepting of technology? Did they have a previous teacher that encouraged them to use the computer or was enthusiastic when teaching with technology? Did they have a parent that taught them to use the computer at an earlier age? These students preferred the computer and succeeded in creating meaningful VoiceThreads. These are all the questions that the future research studies must take into consideration and try to explore.

Implications for Teaching

The results of this study brought mixed feelings. Although the results from the pre-post-retention tests indicate a greater post-test score for the control group and experiment group B than experiment group A, it seemed as though participating in the VoiceThread project was more desired than participating in the paper-based storybook project. Motivation for learning was higher within experiment group A and group B, but test scores were greater in the control group. Even though there is a desire for technology use, this research points to greater achievement and knowledge retention without the use of computers. Previous years of schooling may point to the reasons behind this phenomenon.

Research should be taken on participants that choose their style of project. Participants will choose a project that best suits their educational needs. If supposed "digital natives" do not choose technology, then research must delve into their previous schooling. Perhaps, a longitudinal study of school projects completed over many years could point to some insight as to why a particular student is uncomfortable around technology.

During this research project, I became more aware of how students may want to learn as opposed to how they learn best. Many students in the 21st century gravitate towards technology because

they think it is “fun and easy.” Sometimes, just because a project is “fun and easy” does not mean that student will learn information.

Conclusion

The researcher concludes that technology has the potential to be a powerful educational tool for those that have interest in it. For students with no interest in using technology, they will still benefit educationally from traditional methods. This research alludes to the fact that assigning a computer-based project haphazardly to a group of students will not necessarily generate high test scores. There needs to be interest and motivation with using technology in the first place for students to succeed. As with any instructional topic, technology needs to be taught and embraced at an early age. If students are taught to hate technology at an early age, then their disdain for technology may follow them into their later years.

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