

*Does Using Technology
Help Students
Retain Information They Learn?*

A Teacher Inquiry

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Introduction and Rational

After the second grade students in my class demonstrated that they were able to save their work on the district server, I wondered what else they were capable of doing on the computer. I wondered if they could create PowerPoint presentations and/or iMovies. These programs required them to use similar skills they have already mastered in KidPix, a kid-friendly program which allows students to create pictures using different tools, colors, images, text, etc. Furthermore, I became interested in whether students could successfully use these computer programs (PowerPoint/iMovie) to organize and present information to others, and if it helped them to retain the information they learned. My inquiry focuses on whether students are more or less likely to retain information they learn when they use technology to organize and present the information to others. After finishing my research I have a better understanding of what second grade students are capable of learning to do on the computer. I also have a clearer idea of whether using technology truly helps students retain information and if it makes the material they are learning more meaningful to them.

In completing this inquiry, I found whether taking the time to teach students certain computer programs is worthwhile for me to do in the future. There were two big questions that helped me to find the answer to this wondering. One, were students having fun? Was creating the PowerPoint presentation more fun than writing a paper? Did the students enjoy working on the computer and organizing their information in a more visual manner? If students enjoyed this activity and learned just as much as writing a

paper, did that make the activity more meaningful to them? If so, it is worth spending time to teach students how to use technology.

Second, did students remember what they did because of the different method of organizing and presenting information? Did using technology help students to remember what they learned? If so, spending the time teaching students how to use certain programs would be worth the time also. The answers to these questions helped me to decide whether this is something worth doing again in the future with my students.

Exploring these wonderings helped me in my teaching for many reasons. I have a better idea of what students are capable of doing on the computer. I have evidence of how much students learn when they use technology compared to other methods of compiling, organizing, and presenting information. I know if they have fun using the technology to accomplish the same outcome. Knowing these answers will help me to be a better teacher, because I can more accurately meet the needs of my students, who are growing up in a world full of technology.

Wonderings

Below are the main questions and wonderings that drove my inquiry. They were the focus of my research and guided me through the inquiry process.

Main Question or Wondering:

Are students more or less likely to retain information they learn if they use technology to organize and present the information to others? Would they remember more, less, or even the same?

Sub Questions or Wonderings:

- Are second grade students capable of creating simple PowerPoint presentations?
- How much assistance will they need?
- Can PowerPoint be taught to students this age as a whole class in the computer lab, or is it necessary to teach students in smaller groups with closer ratio of students to teachers?

- Will using technology make the students' learning more meaningful?
- Are students motivated when they are able to use technology?
- Do they find it fun?
- What will be the biggest obstacles in teaching students how to use PowerPoint?
- What are the prerequisite skills necessary to make this project successful?
- Does doing a similar project beforehand without using technology make the students more comfortable and set them up for success?

- Are we not challenging students to use technology because *we* do not know how to use it yet either?
- Do we automatically think that because we do not know how to do something that the students today, who are growing up in the technology age, cannot learn it along with us?

- When I tell adults that I am teaching second grade students how to make PowerPoint presentations, they all seem surprised. Is this because they cannot create PowerPoints themselves (or have not yet learned), and think that because they cannot do it second grade students could not possibly do it either? Or, are they just surprised that students at such a young age could be capable of performing such a “sophisticated” activity on the computer?

Literature and/or Experts

When it comes to technology in the classroom there are many questions. What should students be learning and at what age? How much computer-based instruction should students receive? Where do you find money to put technology in school buildings and classrooms? A good place to start is recognizing that students need to be exposed to technology in the school setting. According to Dr. Smita Guha (2000), “Considering the wide range of computer application in today’s world, and society’s usage of computers in all spheres of life, teachers and school administrators cannot ignore the need for school children to be exposed to computer based instruction” (p.4).

In today’s world, technology is a part of almost everything. We use technology on a daily, hourly, even minute by minute basis. We are using technology whether we are talking on the phone, writing a paper or lesson plan, watching TV, emailing, and even setting our alarm to wake us up in the morning. We are surrounded by technology and are becoming more and more dependant on it each day.

So why are students in elementary school not challenged to use technology like they are challenged in other subjects? Dr. Guha’s study mentions many reasons teachers

feel computer literacy is not stressed. The study states “ The five highest barriers to the use of computers with teachers *already* using computers are: lack of time, scheduling computer time, too few computers, not enough time in school schedule for computer-based instruction, and inadequate financial support for computers” (Guha, 2000, p.6).

But there are teachers who do not *already* use the computer. The biggest reasons for these teachers to not implement computer-based instruction were “...dissatisfaction with the status quo, insufficient knowledge and skill, lack of resources, available time, etc.” (Guha, 2000, p.6).

When I told others about my inquiry project, almost all seemed surprised that I was going to try to teach second grade students how to use PowerPoint. Many said I was “ambitious”, some were “amazed”, and some believed my expectations were too high. While I had support from my mentor and supervisors, I wondered why so many adults felt this way. In reading about a similar research project done by Michael Varlaro, I saw he received the same reaction. He stated in his study, “There are many skeptics out there who believe that second graders are unable to learn such software. The questions I investigated were of interest to me because I wanted to demonstrate that second graders are more than capable of learning how to use Microsoft PowerPoint” (2003, p.6). While I was not out to prove that second graders were capable of using PowerPoint, I wanted to show that students can apply skills they have learned in one program to a similar program on the computer. I had confidence that students could complete the task I gave them, but my wonderings were more focused on their ability to retain the information they learned from it.

I have seen first hand how technology can enhance student learning and student engagement. Varlaro states, “Research shows that computers strengthen specific skills, foster creativity and problem solving, and enhance the writing process” (2003, p.12). Students who are visual learners benefit a great deal from using technology, because most of the time it is both auditory and visual instruction simultaneously.

So what other research is there about how technology affects student learning? An article written by Carol Kimble takes a critical look at the research done concerning the impact technology has in the classroom. She describes research done by James Kulik and his colleagues from the University of Michigan. They demonstrated

“...that students usually learn more, and in less time, in classes with computer-based instruction. Students reported enjoying classes more when they received computer help and they learned as much or more from computer-based tutoring as from peer and cross-age tutoring” (Kimble, 1999, p.4).

Kimble continues to report the findings of an Apple Classrooms Of Tomorrow research project. They found “that when technology was integrated into good writing instruction, students were more engaged, writing more per minute, and able to use more descriptive vocabulary than they could without technology (Kimble, 1999, p.4). This research demonstrates the positive effects technology can have in education.

Kimble also talks about a Stamford University Professor, who has been studying the impact of computers in the classroom for 15 years. His name is Larry Cuban, and he stresses the importance of the educators to first determine the goals of the school or district and then decide how to use technology to accomplish those goals (Kimble, 1999, p.4). Another researcher criticizes the fact that computers are being bought at the expense of music and art programs (Kimble, 1999, p.5).

In researching the subject of using technology in the classroom, I have concluded that there are many benefits that can come from it. With anything, it is important to take the right precautions, but at the same time be willing to try something new. Technology is always changing, and as educators we need to try our best to keep up with the changing times, in order to best prepare our students for the world that awaits them.

Teaching Context

This inquiry is taking place in a second grade classroom at Easterly Parkway Elementary School in the State College Area School District. Our district has access to many resources and our school building is fairly new. We have, on average, three computers in every classroom and a computer lab with enough computers for an entire class to be working at one time. In the computer lab, the teacher's computer is connected to a projector, which can be used to teach lessons. There is a technology curriculum in place in the district and students complete computer competencies each year. We have access to the Internet and the ability for students, second grade and higher, to save work on the district server. This allows students access to their work from any computer connected to the school's network.

Because many graduate students from around the world bring their families when they come to study at Penn State University, we have a large population of ESL (English as a Second Language) students and students from around the world. In our class we have two ESL students who are now full time in our English-speaking classroom.

In our class there are 19 students, 18 of which are taking part in the inquiry. One student is with different teachers for her instruction, to better meet her learning needs.

There are eight boys and ten girls.

There are students of varied reading levels. We have fluent readers able to read the Harry Potter series and other chapter books. We have six students who receive Title 1 services for reading. Some of these students needed help reading during the research phase of the inquiry.

The students in this class also have varied writing abilities. Some students can write quickly, while others take a great deal of time to write each word. While four students are sent to writing enrichment, two have a lot of difficulty with spelling. Sound spelling is encouraged in second grade.

Three of our students are still six years old. One of the students in the class needs a great deal of prompting to finish any given task. He has a hard time focusing and listening to directions. He needed some extra support throughout the inquiry to help him stay on task. This was not different from a regular school day.

Another one of our students receives instruction for most subjects from the special needs teacher. When he is in the regular education classroom he is usually accompanied by a paraprofessional. Due to the times we are scheduled to be in the computer lab, he was not able to attend every session. He was still able to successfully complete the project.

In terms of computer usage, the students in the class have similar computer background experiences at school. For example, each student has experienced KidPix, a kid friendly program in which students create pictures using a variety of tools. Students

have created their own images and added text and sound to pictures as well. This program requires students to perform some of the same operations they use in PowerPoint. For instance, they need to add text, type letters, and save their work on the server. They were able to use these skills when creating their PowerPoint presentations.

None of the students had any experience with PowerPoint, and every student in the class has minimal typing skills. Due to the fact that students take a long time to type, in the past whenever students typed a paper they had written, my mentor and I went around and “gave them each a sentence”. This means, in order for students to finish in a reasonable amount of time, we quickly typed one sentence for each student. We would circulate around the lab, picking up where the students had left off, and helping them by typing their next sentence quickly for them. After we were finished the students would continue where we stopped. My mentor and I did the same for the students while they created their PowerPoint presentations. This helped them to finish in the given amount of time and prevented frustration due to their inability to type quickly.

Project vs. Inquiry

There are many reasons why this research is truly an inquiry. First, I began with wonderings of which I did not know the answers. I wondered: would using technology help students retain the information they learn? Can second grade students create PowerPoints? How much support will they need? In a project, usually there is one question or goal, of which you already know, or have a pretty good idea of the outcome. Second, I am going to systematically collect data, beginning with a baseline, to form

claims about my wonderings. The data will provide evidence for the claims. In a project, research may be done, but data is not systematically collected for evidence. Third, I will continue to research about my wondering, while collecting data throughout my inquiry. I may form new questions along the way and investigate them as well. This distinguishes my inquiry from a project because in a project there is one focus or goal that is static. For these reasons, this is a true inquiry.

Inquiry Plan and Description

To begin the research for my inquiry, I gave surveys to both parents and students. These surveys provided me with background information to help me better understand each student's computer usage at home, and their overall experience with using the computer.

I sent home a letter to parents explaining my inquiry project as well as thanking them for their cooperation in filling out the survey. In the parent survey (Appendix A) I asked if they had a computer at home, how often their child used the computer, and what their child was capable of accomplishing independently on the computer. These questions gave me a good idea of how much my students were capable of doing before I started teaching them anything new. Next, I asked if the parent/s or guardian/s were familiar with PowerPoint or iMovie, and if they had used the programs themselves. Getting background information on the parents allowed me to see if students may have heard the terminology at home. Last, I asked parents/guardians if they believed using technology

would help students to retain the information they learn. In asking this question I was able to look at my wondering from different perspectives.

In the student survey (Appendix B), I inquired whether the students liked to use the computer. This question would help me to see if using technology was motivating for students. Next, I asked if students knew what PowerPoint was. I continued to ask whether they thought it would be fun to learn how to make PowerPoints or iMovies, providing familiar examples, and whether or not they would like sharing their work with others. This was helpful because it showed me how students felt before my inquiry process even began.

The next step was to decide how I could *measure* “if using technology helps students to retain the information they learn”. In an effort to not make any extra work for myself and the students, I looked at what the students were already doing in the classroom. At this time students were completing a research project on a famous American in our *American Album* unit. Here is what the project looked like.

First, we provided students time to read about a few famous Americans they were interested in. We had two bins of books they could skim through. Each book was on a different person (there were a few copies of some). After two days of browsing, students chose the person they were most interested in and read about them. While students were learning facts about the American they chose, they began to fill in a note sheet my mentor designed. Next, after students read and took notes, they wrote a paper about the person they researched. Last, we scheduled a time for our second grade students to share the information they learned with first grade students.

I decided to create an identical research project in our next unit, only changing one aspect. Instead of writing a paper, students would create PowerPoint presentations. Here is what this project looked like.

First, students were given time to browse book bins with books on animals. Because we were studying *Pioneers*, the animals students were browsing were ones they would find on the trail west. Next, after two days, students chose the animal they were most interested in and began to research it. As students read, they filled out a note-taking sheet I designed (See Appendix C). During the research phase, we took two days and went to the computer lab where the students learned how to make PowerPoint presentations (See Appendix D for lesson outlines). Once the research was complete, students created PowerPoint presentations with the information they learned (See Appendix E, F, & G for samples). Finally, students shared their presentations with first grade students and parents.

One and a half to two weeks after each of these projects was completed, I had students write down as many facts as they could remember about the respective topics. I used the data I collected from first research project as my baseline data. The data I compiled from the PowerPoint research project helped me to see if using technology helped students to retain more or less of the information they learned. I compared the data and formed conclusions based on the evidence I had.

Following the research projects, I had both parents and students complete post-surveys to help me to more thoroughly answer my wondering. The answers to the questions also helped me to answer some of my sub-questions.

In the parent post-survey (See Appendix H), I asked parents'/guardians' what their initial reaction was when they heard their child was going to learn how to create PowerPoint presentations. I asked them to explain why they thought they felt that way. I continued and asked how much they agree or disagree with the idea that we do not challenge students with technology because we need to learn how to use it ourselves. In understanding parents'/guardians' thoughts on these ideas, I could more accurately make claims about my sub-questions.

In the student post-survey (See Appendix I) I asked the students: if they had fun making their PowerPoint, if they were proud of the work they did, if they liked sharing it with others, if they liked writing a paper or creating a PowerPoint better, and if they thought making the slideshow would help them to remember the information they learned about their animal. Knowing how the students felt about the project after it was completed was important in making claims.

After collecting all of my data I made my claims based on the evidence I had. I analyzed the data and formed conclusions. I presented my findings, as well as, stated my new wonderings that stemmed from the new information I now had.

Data Collection

There are four ways in which I collected data. First, I used student pre- and post-surveys to gauge how students felt throughout the inquiry. Second, I used parent/guardian pre- and post- surveys to gain different perspectives on my wonderings, as well as, learn how parents/guardians felt about their child learning technology at such a young age.

Third, I had students write down as many facts as they could remember upon the completion of each project, in order to have concrete numbers to compare. Fourth, my mentor and supervisor took notes during different parts of the inquiry process.

Student Surveys

PRE-SURVEY: The data from the student pre-survey helped me understand how students felt about five things (please refer to Appendix B). First, how did the students feel about using the computer? Did they like it or not? Second, did students know what PowerPoint was? Knowing this helped me to create lesson plans for teaching the students how to use PowerPoint. Third, did the students think it would be fun to learn how to do new things on the computer? For example, I asked if they thought it would be fun to learn how to make PowerPoint presentations and iMovies. I provided familiar examples to help the students more accurately answer this question. Fourth, did students think they would be proud of the work they did? And last, I asked students if they thought they could make an iMovie or PowerPoint presentation. This data showed me how confident students were when using the computer.

The students all took the survey at the same time. Before the survey began I stressed that it was not an assessment and there were no right or wrong answers. I read each question out loud, to be sure each student understood the question. The students needed to circle either YES or NO. I only had two choices so students would not be overwhelmed.

After the students took the survey, I tallied how many YES's and NO's there were for each question (see Appendix J). In looking at this data I was able to begin my inquiry

knowing how confident students were, and how they felt about learning how to do new things on the computer.

POST-SURVEY: The data from the student post-survey allowed me to see how students' feelings changed over the course of the inquiry (please refer to Appendix I). Did they feel the same or differently after learning new things and sharing their work? This survey also provided me data for five different ideas. First, did students have fun making their PowerPoint slideshows? If a lesson is fun for students it is more engaging. Second, were the students proud of the work they did? If students are proud of what they accomplish, it builds their self-esteem and increases the chances they will take risks in their learning. Third, did the students like sharing their work with others? This question also helped me to see how confident students felt after completing the project. Fourth, I wondered if students still preferred to write a paper instead of using the computer. The answers students provided me to this question will help me make the best decisions for my future students. Lastly, I asked students if they thought making the slideshow would help them to remember what they learned about the animal they had researched. After collecting the data and seeing how much information students retained, with regards to each research project, I wondered if their answers to this question were congruent with the data I had collected.

The students all took the post-survey the same day (with one exception, he took it the following day due to absence). I administered the survey in small groups during literacy centers. I began by explaining there were no right or wrong answers, and I stressed that I wanted to know how each of them felt. I read each of the questions out

loud, and clarified any questions. Students had either two or three options to choose from for each question (please refer to Appendix I). After all of the students completed the survey, I tallied the answers for each question (please see Appendix K), and analyzed the data.

Parent Surveys

PRE-SURVEY: The data I collected from the parent/guardian pre-survey gave me a good idea of each child's background experience with computers. I asked if there was a computer at home, how often the child used it, and what the child was capable of doing independently. I continued to ask if parents were familiar with PowerPoint and iMovie, and if they had used either program themselves. Knowing the parents computer experience gave me a clearer idea of the students' computer experience at home. I ended the survey by asking my main wondering to see how parents felt about it. Did they agree or disagree that using technology would help their child retain the information they learned?

I sent these surveys home with a note attached explaining my inquiry project. Of the eighteen I sent home, I received sixteen back. This gave me a clear idea of parents' thoughts, as well as, the students' computer experience at home. All of the questions were yes or no answers with the exception of two. I asked parents to describe what sorts of activities their child was able to do independently and *why* they agreed or disagreed with my wondering.

Upon receiving the surveys back from parents, I compiled the responses and analyzed the data (please refer to Appendix L).

POST-SURVEY: I gave a survey to the parents/guardians that were able to come in and see their child present the PowerPoint presentation they had created. The data I collected from the parent post-survey demonstrated how parents felt about their child learning PowerPoint in second grade. I asked what their initial reaction was and why they felt that way. I also asked how much they either agreed or disagreed with the statement “Are we not challenging students to use technology because we need to learn how to use it too?” That is one of my sub-questions. The data I collected from this survey helped me to better answer that sub-question in my inquiry. Please see Appendix M for a compilation of the parent post-survey data.

Facts Students Remembered

One and a half to two weeks after each of the research projects, I had students write down as many facts as they could remember. I totaled each student’s list of the facts and compiled a list to compare the number remembered for each project (please see Appendix N).

When counting the facts the students remembered, I would give the student half of a point if the fact they wrote down was *almost* correct. For example, if they wrote down that their famous American was born on January 3, 1876, and he or she was really born on January 3, 1878 I would give them half a point because they were only two years away. This shows that they almost knew the correct information. Also, if they wrote January 5, 1876, I would give them half a point. In this case they were only two days off.

Another example would be if the student wrote that their animal could weigh from 3oz. to 4 lbs., and the correct information stated that the animal could weigh from 3oz. to 3 lbs. In this example, I gave the student one point for knowing the first number, and half a point for providing a number so close to the second number. My reason for doing this is because they were very close to providing the correct information. If they said their animal could weigh 3oz. to 30 lbs., they I only gave them one point for knowing the first number. In doing this, I could more accurately describe how much each student could recall.

Facts in Students Research Project

In order to calculate a percentage of facts students remembered, I counted how many facts students wrote in each of their original research projects. When counting facts in the biography papers, I did not count facts that were repeated. For example, if the student said Martin Luther King was known for his speeches at the beginning and end of their paper, I only counted it once.

Mentor and Supervisor Notes

My mentor and supervisor took notes during my inquiry. They observed and noted student behavior and learning. They wrote observations four different times, but my mentor was there every step of the way. I used these observation notes as evidence for my claims.

Data Analysis

There are three main ways I analyzed the data. First, when I received the surveys from both students and parents, I tallied answers for each question. This allowed me to see what the majority of parents/students believed for each question (Please see Appendices J, K, L, and M to view the totals for each of the surveys). For the questions where I required parents/guardians to explain their answer, I compiled all of the answers in order to view them all at one time. This allowed me to form generalizations about parent views and ideas.

Second, I compared the number of facts each child remembered from the two research projects (see Appendix N). For example, student three remembered five facts after writing the biography paper, and nineteen facts after creating the PowerPoint slideshow. I created a table in order to organize this data. The table allowed me to compare students' abilities to retain information when they used technology, and when they did not. In order to easily compare numbers in the table, I made similar columns the same color. For example, the two blue columns compare the number of facts students remembered from each project, while the two orange columns compare the percentage of facts students remembered from the project.

There are two columns on the same chart (Appendix N) that tell the number of facts that each student included in their paper or PowerPoint presentation. With this information I was able to calculate a percentage of the facts students remembered. Knowing the percentage of facts students remembered helped me to get a clearer idea of just how much students remembered.

Third, as I read through the observations my supervisor and mentor wrote, I was able to gather evidence to support the conclusions I made about the student learning through my inquiry process. In reading over these notes, I was able to analyze different aspects of my inquiry project.

Data Analysis Results

Parent Pre-Survey

I received sixteen of the eighteen surveys back that I sent home to parents. It was helpful to get this many back because I then had a clear idea of students' background computer experience. Here are the results. Out of sixteen students:

1. 100% (16) have a computer at home
2. 6% (1) never use the computer at home
3. 37.5% (6) use the computer 1 to 2 times a week
4. 31.3% (5) use the computer 3 to 4 times a week
5. 25% (4) use the computer everyday
6. Students have varying abilities of independent activities on the computer. Below is the list of activities students are capable of and how many students are able to do the activity independently.
 - Connect to internet/5
 - play games/13
 - email/2
 - find bookmark/3
 - use program on disk/2
 - particular program/1
 - use google/3
 - Napster for songs/1
 - notepad/1
 - paint/2
 - log onto kids websites/2
 - MSN messenger/1
 - learning Chinese/1
 - card making software/1

CD player/1
photo folders/1

7. 75% (12) of parents were familiar with PowerPoint
8. 62.5 % (10) of parents had made PowerPoint presentations themselves
9. 31.2% (5) of parents were familiar with iMovie
10. 6.2 % (1) of parents had created an iMovie themselves
11. 75% (12) of parents/guardians agreed that using PowerPoint and/or iMovie to organize and present information would help their child to retain the information they learned. This was compared to not using technology at all.
12. 6.2% (1) said using PowerPoint and/or iMovie would not help their child to retain the information they learned, 6.2% (1) were not sure, 6.2% (1) had no opinion, 6.2% (1) said both yes and no

Parent Post-Survey

I had parents/guardians that attended the PowerPoint presentations complete a post-survey. I had sixteen surveys completed. Below are the results. Out of sixteen parents/guardians:

1. 12.5% (2) said they “did not know it was” and “they had never heard of it” was their initial reaction when they learned their child was going to learn PowerPoint in second grade
2. 81% (11) were excited, amazed, “wowed”, impressed, or happy their child was going to learn PowerPoint in second grade

3. 12.5% (2) were “cautiously optimistic” and said “it seemed very advanced for second graders” was their initial reaction when they heard their child learning PowerPoint in second grade
4. 6.2% (1) said “it was unnecessary technology to teach 2nd graders” was their initial reaction when they heard their child learning PowerPoint in second grade
5. 18.75% (3) of parents/guardians *agreed* that we are not challenging students to use technology because we need to learn how to use it too
6. 18.75% (3) of parents guardians *strongly agreed* we are not challenging students to use technology because we need to learn how to use it too
7. 18.75% (3) of parents guardians were *neutral* to the idea that we are not challenging students to use technology because we need to learn how to use it too
8. 43.7% (7) of parents guardians *disagreed* that we are not challenging students to use technology because we need to learn how to use it too

Student Pre-Survey

I had all eighteen students fill out the pre-survey. Here are the results of the survey. Out of eighteen students:

1. 100% (18) said they liked using the computer
2. 77.7% (14) said they thought it would be fun to learn how to make an iMovie
3. 16.6% (3) said they knew what PowerPoint was

4. 88.8% (14) said they thought it would be fun to learn how to make a PowerPoint presentation (after I explained what PowerPoint was and provided a familiar example)
5. 88.8% (14) said they thought they would want to show friends their work
6. 61% (11) said they thought they could make a PowerPoint or iMovie

Student Post-Survey

I had all eighteen students fill out the post-survey. Here are the results of the survey. Out of eighteen students:

1. 100% (18) said they had fun making the PowerPoint Presentation
2. 100% (18) said they were proud of the work they did
3. 100% (18) said they liked sharing their work with others
4. 88% (16) said they would rather create a slideshow than a paper, 11% (2) could not decide which they would rather do
5. 72.2% (13) said they believed that making the slideshow would help them remember what they learned about the animal they researched.

Claims & Evidence

Below are the conclusions I made with the data I collected. Each of my claims is supported by evidence I gathered throughout my inquiry.

Claim 1: *Second grade students retain more of the information they learn when they use technology to organize and present their information to others.*

Evidence:

A. 16 out of the 18 students remembered more facts after completing the PowerPoint presentation.

B. 16 out of the 18 students remembered a higher percentage of the facts they had included in the original project (paper/PowerPoint).

C. Some (about 7) students remembered more facts about the animal they had researched than they had included in their PowerPoint presentation. In these cases I checked the resources the students used to get their information, and found the extra information they remembered was indeed in the reading they had done. This only happened with one student with regards to the written paper.

Claim 2: *Students have different computer background experiences and knowledge.*

Evidence:

A. The results from question two from the Parent Pre-Survey (Appendix K) shows that students each use the computer a different amount when they are at home.

B. The results from question three from the Parent Pre-Survey (Appendix K) shows that students each are capable of doing different activities independently.

C. The results from questions four and five from the Parent Pre-Survey (Appendix K) show that students each live in a home environment in which parents have different knowledge of different computer programs. This demonstrates that students

have different home computer environments, which can affect the child's background knowledge of computers.

Claim 3: *Second grade students are motivated when they use technology.*

Evidence:

A. The results from question one of the student post-survey show that 100% of students said it was fun to create the PowerPoint Presentation.

B. The results from question two from the student post-survey show that 100% of students were proud of the work they did.

C. The results from question three from the student post-survey show that 100% of students enjoyed sharing the work they had done with others. Having the opportunity to share their work was motivating for students.

D. The results from question five from the student pre-survey show that 88.8% of students said they thought they would want to show friends the work they created on the computer.

E. The results from question one from the student pre-survey show that 100% of the students said they liked using the computer.

F. The results from question two from student pre-survey show that 77.7% of students said they thought it would be fun to learn how to make an iMovie.

G. The results from question four from the student pre-survey show that 88.8% of students said they thought it would be fun to learn how to make a PowerPoint presentation.

H. My supervisor observed the second lesson in which I taught students how to create PowerPoint presentations. In her observation notes it says, “As children moved back to the computers they were excited to log in and begin blending pictures with text to their animal PowerPoint presentations.” She continued to write, “students were proud to share what they had learned” and “they were learning so much!”

Claim 4: *Second grade students can be taught how to use PowerPoint successfully in a whole group setting.*

Evidence:

A. Both of the lessons were taught in the computer lab to the whole class at one time. A quote from my mentor teacher’s observations clearly shows that the lessons were successful. Quoted from my mentor observations on March 27, 2007, the “lessons teaching PowerPoint were clear and effective! I was amazed at what they accomplished.”

B. My supervisor observed the second PowerPoint lesson I taught my students. Notes from her observation show that the students were able to learn PowerPoint in the whole group setting. She quoted on March 2, 2007, “The introductory presentation was amazing. The students were riveted to the screen as you reviewed what they had learned. They were right with you and able to explain exactly how to make a PowerPoint presentation.”

C. Each of the 18 students successfully created a PowerPoint presentation in which they added text, pictures, a background color, and changed the slide layout, saved their work to the district server, and added new slides independently. Please see

Appendices E, F, and G for examples. Each student received instruction on how to create PowerPoint presentations in a whole group setting.

Conclusions

There are two things I have learned from doing this inquiry that will help me in my future teaching. First, I will not underestimate what students are capable of learning and accomplishing on the computer. I need to remind myself that the children I am teaching are growing up in a world where technology plays a big part. Students today do not know anything different. It is a way of life for them. They are not afraid to try new things on the computer, or think it may be too complicated. They just do it.

In learning this I will not hesitate to teach students how to use different tools on the computer. PowerPoint is a program most students will go on to use in higher grades, through college, and beyond. Many parents/guardians agreed that PowerPoint is something very useful for students to learn.

This program alone has many other wonderful uses in the classroom. For example, Bob Hodges states, “presentation software makes writing more fun”. He wrote an article describing how students make their writing come alive by creating *Electronic Books* using PowerPoint. Students first write their stories, making sure they have all of the components. Next, students create their own *Electronic Book* using pictures they have taken, the text they have written, and sounds they have made. Last, students share their stories with others by presenting what they have created. Students learn a great deal from this project, and technology plays a big role.

The second thing I learned from this inquiry is that students are motivated when they use technology. 100% of the students in my class said they had fun when they made their slideshows, they were proud of the work they did, and they liked sharing their work with others. Those results alone show me that students truly enjoyed this project.

I could also see how much students enjoyed using the technology when I observed them throughout my inquiry. They were so excited to see “computer lab” on the schedule. They couldn’t wait to work on their slideshow, and you could see how proud of their work they were. Whenever I walked passed their computer in the lab, each student wanted me to watch their slideshow, over and over again. When they added a new slide or a new picture, they wanted me to watch it another time. If you ever asked a student to share with you what they had accomplished, their eyes lit up and they were so excited. That said it all. To see students so excited and engaged in the activity was wonderful. They were having fun while they were learning.

In my future classrooms I plan on using a great deal of technology if it is available to me. I have seen what a difference it made in student learning and student engagement in this classroom of students. With this particular project, students were reading, writing, and learning computer literacy skills all at the same time, and they were having fun doing it. I already use the computer a great deal in my classroom. I have taken students on virtual field trips around the country in our American Album unit, and I am currently exploring Life Under the Sea with my students. I am able to share video clips, images, and activities with them on the computer. We are going to be making podcasts in small groups in the near future. Students even use the computer for math activities! It is

amazing how much they learn. I hope to continue to learn more ways to incorporate technology into my classroom.

New Wonderings

Eight out of the eighteen students that participated in my inquiry remembered extra facts about their animal that they did not include in their PowerPoint presentations. After finding this, I read their note-taking sheets and the resources they used, and found that they had indeed either read the facts or had included them in their note-taking sheet. These students had chosen not to use these facts in their PowerPoint, but had still remembered them. The students had not reviewed these facts for over four weeks and they still remembered them. This only occurred with one student for the other project in which they wrote their paper. I wonder why. Why did students remember extra facts from the research project that ended with the PowerPoint. Was it because they worked with their information when creating the final product? For example, they needed to choose the order in which to put the facts, which picture to put with each fact, and which facts to include on the PowerPoint? Was the second research project overall more motivating for students and that caused them to remember more? Was the note-taking sheet more specific, which helped the students to remember the facts they had written?

Another wondering I had, after watching how quickly students learned how to create PowerPoint presentations, was “what else they can do?” What other programs are second grade students capable of using as successfully as PowerPoint? I am interested in researching this information, as well as trying some new technology myself. I hope to

provide my students with tools and experiences with technology that will best prepare them for the real world.

Resources

Hodges,-Bob. (1999). Learning-and-Leading-with-Technology. Electronic Books: Presentation Software Makes Writing More Fun. 27.18-21. Retrieved March 5, 2007, from ERIC database.

Guha, Smita. (2000). A Comparative Analysis of Present and Preferred Situations of Elementary Grade Teachers in Using Computers for Classroom Instruction.

Kimble, Carol. (1999). The Impact of Technology on Learning: Making Sense of the Research. Policy Brief. Retrieved March 5, 2007, from ERIC database.

Varlaro, Michael A. (2003). An Analysis of Students' Interactions in Peer-Tutoring Situations. Retrieved Feb. 19, 2007, from ERIC database.

Appendix Table of Contents

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Appendix A

2/7/07

Dear Parents/Guardians,

As part of my student teaching semester, I am required to do an inquiry project. For this assignment, I am asked to take a wondering I have about student learning and explore it in detail. I need to collect data in regards to my wondering, and form conclusions based on the evidence I find.

I am most interested in how technology affects student learning. So far, I have used technology in the classroom to enhance lessons. For example, in the *American Album* unit we traveled around the country and “visited” important places in the United States. I used a program called *Google Earth* to take the students on a virtual tour of the places we visited, using real satellite photos and 3-D images of particular places.

For my inquiry project, I intend to explore if student are more or less likely to retain information they learn when they use technology. I hope to have students research a sea animal of their choice (to coincide with our final unit *Under the Sea*) and create PowerPoint presentations to organize and present the information they find. After a period of time, I will ask the students to write all of the information they can remember regarding the sea animal they researched. I will compare how much they remembered to a similar research project they have already completed.

I have created a survey which will provide me with a better understanding of how much your child uses the computer at home, and how familiar they may be with particular computer programs. I have also asked how familiar you are with particular programs. If you could please fill out the survey and return it to school as soon as possible, I would greatly appreciate it. It only takes a few minutes. If you have any questions or concerns, please feel free to contact me at jaa23@scasd.org. Thank you for your cooperation. With your help, I hope to help your child reach their full learning potential.

Sincerely,

Julie Alex

Please circle the appropriate answer and explain your choice when necessary.
Thank you!

1. Do you have a computer at home? Yes No

2. If you answered yes to #1, how often does your child use the computer?

Never 1 to 2 times a week 3 to 4 times a week Everyday

3. If your child uses the computer, what sorts of activities is he or she capable of doing independently? Please describe.

4. Are you familiar with the computer program PowerPoint? Yes No

If so, have you created PowerPoint presentations yourself? Yes No

5. Are you familiar with the computer program iMovie on a Macintosh computer?

Yes No

If so, have you created iMovies yourself? Yes No

6. Do you believe if your child learned to create PowerPoint presentations and iMovies to present information they have learned to others, they would be more likely to retain the information they have learned after a period of time?

Yes No

Why?

Please return to school as soon as possible. Thank you again!

Julie Alex

Appendix B
Student Survey

1. Do you like to use the computer?

YES NO

2. Do you think it would be fun if you learned how to make an iMovie like the one I made for Back to School Night with all of you in it?

YES NO

3. Do you know what PowerPoint is?

YES NO

4. Do you think it would be fun if you learned to make a slideshow like the one Mr. Peter's and the fifth grade students showed you?

YES NO

5. If you made an iMovie or slideshow by yourself, would you like to show it to your friends and family?

YES NO

6. Do you think you can make an iMovie or Slideshow?

YES NO

Appendix C

Name: _____

**Note Taking Sheet
Animals on the Trail**

Please answer the following questions about the animal you chose to research.

Animal Name

How tall is your animal? (height) _____

How much does your animal weigh? (weight) _____

How long does your animal live? (life span) _____

What color is your animal? _____

What are your animal's enemies? _____

What does your animal eat? _____

What are 2 things you learned about your animal from the captions around the pictures?

1. _____

2. _____

What type of animal is it? Please circle **one**.

Mammal

Fish

Amphibian

Reptile

Bird

Write **at least three** more facts you learned about your animal. Remember to use your own words.

1. _____

2. _____

3. _____

4. _____

(If you have more facts you would like to write down, you may go on to the back of this paper)

Where did you get your information?

Resource 1:

Title: _____

Author: _____

Volume: _____ Page: _____

Resource 2:

Title: _____

Author: _____

Volume: _____ Page: _____

Resource 3:

Title: _____

Author: _____

Volume: _____ Page: _____

Appendix D

PowerPoint Lesson 1

OPEN POWERPOINT

Click on **Macintosh HD** → **Applications** → **Microsoft Office 2004** → **Microsoft PowerPoint**

Make sure “**PowerPoint Presentation**” is chosen (should be automatically) and choose **Open**

BEGIN TO CREATE PRESENTATION

In the “**click to add title**” box put title *I am (name)*

In the “**add subtitle**” box put “**by**” and your name

In the **Insert** menu choose **New Slide**

NOW WE ARE GOING TO CHANGE THE LAYOUT to match what we are doing today

In the **Format** menu choose **Slide Layout**

In the **Slide Layout** window choose “**Title Only**”

CREATE 3 MORE SLIDES for practice

Click on “**add title**” and add something else about you (**I am 5ft 6in**)

In the **Insert** menu choose **New Slide**

Click on “**add title**” and add something else about you (**I am 124 pounds**)

In the **Insert** menu choose **New Slide**

Click on “**add title**” and add something else about you (**I am 21 years old**)

Have students try this. Walk around and check.

Gather students together if time.

CHANGE BACKGROUND AND WATCH SLIDESHOW

Choose **slide number 1** by clicking anywhere on slide 1

In the **Format Menu** choose **Slide Background**

Choose a color and **apply to all**

WATCH WHAT YOU MADE

Make sure you are on the first slide when you decide to watch the show. It will start where you are currently working

Push **slideshow button**

Move through slideshow by pushing arrow on the keyboard

CLOSE AND DO NOT SAVE

PowerPoint → Quit

Appendix E

Owls

By:Iddo

- Owls are 18 inches.



- They can weigh up to 4 pounds.



- They live up to 18 years



- They are brown, white, black and much more.



- An owls enemies are eagles, buzzards, and people.



- They eat mice, rats and voles and much more.



- They have large and powerful eyes to see in the dark.



- They have soft feathers to make less noise when flying.



- Owls are birds.



- Owls have very flexible toes for: catching food and sitting on branches.



- There are 133 different kinds of owls.



- Owls appear in lots of movies.



- Owls fly very quickly and quietly.



- Owls can lay up to 3 eggs most of the time.



PICTURES FROM:

- www.static.flickr.com
- www.rspb.org
- www.fusionanomaly.com
- www.art.com
- www.sagehen.com
- www.wildimages.com
- www.bu.edu
- www.mindspring.com

ALSO FROM:

- www.mobirds.com
- www.istokphoto.com
- www.mccullagh.com
- www.gra—estminister.com
- www.graysofminister.co
- www.wildwindimages.com

- THE END OF THE OWL POWER POINT PRESENTATION THAT I WROTE DOWN ON THIS COMPUTER AND YOU READ ON THIS COMPUTER AND IT'S PRETTY MUCH THE END OF IT.

Appendix F

Eagle

By Marcel

- Eagles are meat eaters.



- Eagles are mostly gray or brown with some white markings.



- Eagles can eat a lot of meat.



- Eagles can be 20 years old.



- Eagles can eat a fox.



- Eagles can eat fish.



Eagles can be up to
66 pounds.



- Eagles are not harmless.



- Eagles are birds.



Pictures from

- www.wildnatureimages.com.
- WWW.tps.k12.ok.us.com.
- WWW.johnshawphoto.com.
- WWW.rhw.com.
- WWW.cnn.com.
- WWW.rayden.com.
- WWW.fws.gov.
- WWW.lighthouseexcursion.com.

THE END

Appendix G

The wolf

By Caroline

- This cub is cute.



Wolves can be scary.



- A wolves enemies are people.



- Wolves live up to 16 years.



- Wolves weigh up to 175 pounds.



- Wolves are up to 32 inches tall.



- Wolves are gray, white and brown.



- Wolves eat sheep, deer, moose and farm animals.



- Wolves have a good sense of smell to find food.



- Wolves have strong legs for running



- Wolves are mammals



- Wolves are meat eaters.



- Wolves have strong sharp teeth to hold and rip up food.



- Wolves are a kind of wild dog.



- You can find wolves in Russia, Canada, the United States and Europe.



- Wolves who are going to have babies hide in an underground den.



- Wolves live with each other this is called a pack.



- There are only two kind's of wolves.



- Gray wolves turn white in the winter.



- Wolves have thick fur to keep warm.



- Wolves are the largest member in the dog family.



Pictures from

- [1620600.page 3.betaweb.org](http://1620600.page3.betaweb.org)
- www.wolf.wild.art.pl
- www.afondideldesktop.com
- Intern.com
- www.white-wolf-sanctuary.com
- Homepage.mac.com
- www.alanandsandcarolyphotos.com
- 1620600.page3.betaweb.org
- www.kevinwolf.com
- www.flatrock.org.nz
- www.sfondideldesktop.com

- Thank you for watching wolves.

Appendix H

Parent Survey

1. What was your initial reaction when you heard your child was learning how to create PowerPoint presentations in second grade?

2. Why do you think you felt that way?

3. While some of us may be more technology inclined than others, none of us grew up in a world as influenced by technology as the one children are growing up in today. Today's children have grown up with the technology we are learning now. They know nothing different.

One of the sub-questions I am interesting in researching is:

Are we not challenging students to use technology because we need to learn how to use it too?

How much do you agree or disagree with this statement? (Circle one)

strongly disagree disagree neutral agree strongly agree

Thank you 😊

Appendix I

Name:

Student Survey

Please circle one or write your answer.

1. Did you have fun making your PowerPoint slideshow? YES NO

2. Are you proud of the work you did? YES NO

3. Did you like sharing your work with others? YES NO

4. Would you rather write a paper after researching a topic, or create a slideshow?

write a paper

create a slideshow

5. Do you think making the slideshow will help you to remember what you learned about your animal?

YES

NO

I Don't Know

Appendix J

Question 1: like using computer	18/YES	0 /NO
Question 2: fun to learn iMovie	14/YES	4 /NO
Question 3: know what PowerPoint is	3 /YES	15/NO
Question 4: fun to learn PowerPoint	16/YES	2 /NO
Question 5: want to show friends	16/YES	2 /NO

Appendix K

1. Did you have fun making your PowerPoint slideshow? 18/YES 0/NO

2. Are you proud of the work you did? 18/YES 0/NO

3. Did you like sharing your work with others? 18/YES 0/NO

4. Would you rather write a paper after researching a topic, or create a slideshow?

0/write a paper 16/ create a slideshow 2 /circled BOTH

5. Do you think making the slideshow will help you to remember what you learned about your animal?

14/YES 0/NO 4/I Don't Know

Appendix L

1. Do you have a computer at home? Yes/16 No/0

2. If you answered yes to #1, how often does your child use the computer?

Never/1 1 to 2 times a week/6 3 to 4 times a week/5 Everyday/4

3. If your child uses the computer, what sorts of activities is he or she capable of doing independently? Please describe.

Connect to internet/5	play games/13	email/2
find bookmark/3	use program on disk/2	particular program/1
use google/3	Napster for songs/1	notepad/1
paint/2	log onto kids websites/2	MSN messenger/1
learning Chinese/1	card making software/1	CD player/1
photo folders/1		

4. Are you familiar with the computer program PowerPoint? Yes/12 No/4

If so, have you created PowerPoint presentations yourself? Yes/10 No/6

5. Are you familiar with the computer program iMovie on a Macintosh computer?

Yes/5 No/11

If so, have you created iMovies yourself? Yes/1 No/15

6. Do you believe if your child learned to create PowerPoint presentations and iMovies to present information they have learned to others, they would be more likely to retain the information they have learned after a period of time?

Yes/12 No/1 Not Sure/1 Both/1 No Opinion/1

Why?

YES:

- certain Degree

- creates point of reference- remembers things from movies

- writing PowerPoint will reinforce, helps visually, teaching and organizing information helps remember
- good at using computer –takes notes
- more likely
- you remember what you work on and important things
- she learned a lot from school
- another way to visualize information, hands-on project
- through own experience with PowerPoint, agrees it helps to retain information
- will give deeper insight and therefore longer retention
- if doing all the work themselves will retain it more
- visual, quick to pick up technology
- multiple modes of learning

NO:

- could be same as equally intensive project that does not use technology
- no more than making “low-tech” such as posters, drawings, stories

Appendix M

1. What was your initial reaction when you heard your child was learning how to create PowerPoint presentations in second grade?

- we are excited to be here
- very impressive and also happy
- it's great
- I thought it was unnecessary technology
- I was cautiously optimistic that she would be learning content as well as flash
- I didn't know what it was
- I had never heard of it
- It was "wow" – I don't even know how to make a PowerPoint presentation
- I felt it was a great take. I want my child to learn computer program as much as possible since I feel that computer has is application in every field of life
- I was very excited – it's a great skill to learn
- I thought it sounded great
- It is a good for learning software and computer
- Seems very advanced for second graders
- happy and support this learning at such a young age
- excited
- I was amazed they were doing this in second grade

2. Why do you think you felt that way?

- I did not use a computer until much later. I'm glad to see the children so comfortable with technology
- very universal communication tool. Will use it all through their education and life
- My daughter will be able to organize her knowledge and information in a very interactive and creative way
- most adults I know would be intimidated by the project
- It a technology world more and more
- It was something that I had never done, so I was thrilled that my daughter was being given this opportunity
- I'm using PowerPoint for about 7 years for teaching and conferences, so learning it earlier on is wonderful

- cause I myself have no idea what PowerPoint was til I grew up
- because I was so impressed
- my background experience with teaching and technology has shown me that technology can be used to motivate and extent content and to make additional depth or connection available, but that is often used to do the same projects as low-tech, but less efficiently and with more distraction
- I sometimes feel kids are pushed to learn technology over basic skills
- Learning to use tools is part of education
- I don't know what she learned at school. She didn't talk too much. she just said how much fun she had. I'm surprised that she learned a lot besides math and English. Some things which I even don't know.
- proud grandparents

3. While some of us may be more technology inclined than others, none of us grew up in a world as influenced by technology as the one children are growing up in today. Today's children have grown up with the technology we are learning now. They know nothing different.

One of the sub-questions I am interesting in researching is:

Are we not challenging students to use technology because we need to learn how to use it too?

How much do you agree or disagree with this statement? (Circle one)

0 /strongly disagree 7/disagree 3/neutral 3/agree 3/strongly agree

Appendix N

Student	Facts Remembered: Biography Paper	Total Facts in Biography Paper	Percentage Remembered	Facts Remembered: PowerPoint Slideshow	Total Facts in PowerPoint Slideshow	Percentage Remembered
1	6	17	35.2	11	20	55
2	4	16	25	5	15	33.3
3	5	26	19	19	24	79
4	3	25	12	10.5	21	50
5	2	3	66	15.5	20	77.5
6	5	9	55.5	3	9	33.3
7	20	12	160	7	11	77.7
8	4	N/A	N/A	10	9	111
9	3.5	16	21.8	7	11	63.6
10	4	16	25	15	22	68.1
11	7	21	33.3	17	29	58.6
12	3	24	12.5	17	21	80.9
13	8	46	17.3	7	19	36
14	3	16	18.7	7	11	77.7
15	8	33	24.2	13	21	61.9
16	11	27	40.7	11	21	52.3
17	3	31	9.6	19	29	65.5
18	9	19	47.3	14	8	175

N/A – not available