Technology and Learning to Read

Final Project for

LT785- Research Methods in Educational Technology

Submitted by: Casey Krogman and Sarah Anderson

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**I. Statement of Research Question/Problem**

* What does research indicate about the effect of technology on learning to read?
  + Does the use of technology help or hinder most students while learning to read?

**II. Summary of Literature**

  Technology has been integrated into our lives since the invention of the wheel. Technology has been joining education since the invention of the radio. According to audiobookquest.com, books were first recorded to records in the 1950s. Those books were then transferred to cassette tapes in the 1970s. Now audio books can be downloaded onto MP3s, PDA’s, and iTunes.  According to Rhodes and Milby (2007), for children with disabilities, the physical turning of the pages of a book is no longer necessary.  This is true as students can learn to read with multiple forms of technology that are available. Audio books, electronic talking books, and interactive books are new alternatives to traditional books that can help students learn to read. These new forms of books can help improve student fluency, comprehension, and vocabulary. Computer screens are spaces for encountering multiple modes and forms of meaning making that converge in powerful ways to enhance children’s language and literacy acquisition by making content memorable (Labbo, Love, & Ryan, 2007).

In our research, there seemed to be two areas of research about the effects of technology on learning to read and literacy.  One area was research into the types of technology tools that may help children who are initially learning to read and struggling students.  The other area was research into the idea that the use of technology meant a new type of literacy was required.

           The articles listed many different tools that can be used to assist students in learning to read. Electronic talking books were a major tool that was mentioned in multiple articles in slightly different forms. The basic concept was books were read to students while students could see images and interact with different sections. Electronic talking books, electronic books and e-books are all addressed in-depth below.

           A study was done in Australia to see if students categorized as reluctant readers were more inclined to do independent reading when they were reading electronic talking books (ETBs) on the computer at home. “Research evidence is available to show that ETBs can facilitate comprehension through the use of narrations, illustrations, and some animations (Doty, Popplewell, & Byers, 2001), and it follows that increased comprehension should promote interest and motivation to read”(Oakley & Jay, 2008). Many of the components in ETBs are similar to what students are used to when watching television. There are many benefits associated with the use of ETBs. Oakley and Jay (2008) say benefits include exposure to print, visual word recognition, the removal of decoding barriers, and the stimulation of reading for pleasure. When students feel successful and can understand what they are reading it will make reading seem fun, leading to an increased motivation to read. Many times books are thought to be un-cool or nerdy but reading books on the computer with sound, video, and animation is seen differently. Electronic talking books are seen as cool as they have all of the before stated components.

            Electronic books do not have to be accessed through CDs or the Internet. Teachers can make their own electronic books to help students increase fluency, vocabulary, and comprehension. Teachers can use PowerPoint to make electronic books. All they have to do is type in the text, add images, and then use the recording tool to provide students with the audio.

While this sounds relatively simple, it can be very time consuming. Students can use the electronic book to hear their own fluency and then listen to the teachers recording. This allows students to see where they currently are and where they should be at. Electronic books have all of the same benefits as audio books with some added benefits. “The use of computer-based electronic storybooks provides the same benefits as audiotaped books, with the added advantage of technology supports and increased interactivity” (Rhodes & Milby, 2007). These electronic books can help students increase their fluency with repeated reading and listening sessions. Comprehension can also be increased as students associate the images and interactive components with pieces of the story.

A study of electronic books compared oral comprehension after reading an electronic version of a story (Pearman, 2008). The same students were asked to read the story again in a traditional book format. The study showed the students’ average comprehension score was significantly different from the average comprehension score after reading the traditional book. The results were also significant when comparing the average scores of just the low level group (Pearman, 2008). Pearman (2008) also noted that students were more engaged when reading the electronic versions of the books: including four children with ADHD.

            E-books are a lot like ETBs and electronic books but are offered only online. These are helpful to teachers who do not have large budgets but want to offer students new books to read with the some audio component to help struggling readers. There are a few websites that offer free e-books. Most books are centered about students in the primary grades. E-books also allow teachers to modify books for students with special needs. One special education teacher who made use of an online directory of e-books stated, “Using Bookshare, I request a novel or textbook and within days I receive it in digital text. We can prepare lessons in advance to add comprehension questions and create a unique study guide to address a student's particular learning challenge (Chernek, 2009).”

            Accelerated Reader was also discussed in the research. Accelerated Reader is a computer based program with comprehension tests that students can take after reading books. If the school has the Renaissance Package, they can also test student vocabulary knowledge. The Accelerated Reader tests are very common and used in many schools.

Two of the articles we found were about the idea that technology means students must learn to read and comprehend differently in order to understand reading and searching on the Internet. Barone and Wright (2008) stated in an article that the greater use of technology in our society means children must learn new reading skills and have exposure to the technology that requires them to use those special skills. Another article by Henry, (2006) concurs with Barone and Wright, adding, “For too long, too many in the reading community have seen the Internet and other ICTs as a technology issue, not as a reading comprehension issue.” Henry (2006) also adds that searching for information on the Internet means students need to comprehend differently. Henry (2006) also suggests several ways to teach students how to search for information. These tips included modeling a proper use of search terms and skimming of results and brainstorming search terms with students prior to actually searching. Henry (2006) also included a framework for searching on the Internet:

A framework of essential search skills emerges with immediate application to the reading classroom:

1. Set a purpose for searching.

2. Employ effective search strategies.

3. Analyze search-engine results.

4. Read critically and synthesize information.

5. Cite your sources.

6. How successful was your search?

**III. Summary and Conclusions**

Technology is not going anywhere. It is integrated into everyday life and now education. Computers, CD players, and Smart Boards are just a few examples of how technology has been integrated into the educational world. The digital era we are now in provides many new ways to teach students how to learn, specifically how to read. The new technology not only helps students learn how to read but it can help struggling readers gain confidence in their skills and make reading fun again.

The research also shows that the emergence of technology also means students need to learn a new literacy. Searching on the Internet and making sense of the information that can be found there is one area students especially need to learn about. Students who are not shown how to search and read on the Internet won’t be able to make as much sense of what they find.

Overall, the technology tools discussed in the research have been proven to increase student reading fluency, vocabulary, and comprehension. Confidence in one’s ability to read can make all the difference in world. Teachers need to stay up-to-date with the new technology that is available to help students learn how to read, both in a textbook and in the nonlinear format of the Internet. Teaching students how to read is important, and technology tools can help students achieve their reading goals, so long as the technology is integrated properly and students understand how to use it.

**IV. Application or Effects in a Typical School**

Most of these programs can easily be implemented into typical schools and some already have been such as Accelerated Reader. E-books are becoming more popular and are even offered through local libraries to people who have valid library cards. With the ease of access to this information teachers can easily apply it in their classrooms, even if it is only at story time to begin with. There are articles that teach how to make electronic books. With the technology that is available, teachers have the ability to make their own electronic books, which means integrating technology into reading can be done relatively easily.

The implications of this research also means that as children learn to research, it is important to show students how to search for sources and how to make sense of what they find. Technology is a rapidly growing tool for education, so we need to make sure students know how to use it to its fullest potential. The growth of technology also means that the way we read is changing and students need to experience the type of literacy required for the use of technology.

This research shows that technology is changing the way children learn to read. Students are learning to read using an increasing amount of technology tools, which allows them to hear the pronunciations and meanings of words and to answer comprehension questions as they read. These new tools also mean children who have computers at home have more access to reading materials online. In order to find reading materials online, however, means children need to be taught how to search for the item they are looking for. As in the example used in one article, if a student doesn’t know how to search for information, they will not make progress in finding what they are looking for.

**V.  Reference List**

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**APPENDIX A. Research Article Analysis**

**Sarah Anderson:**

Bibliographic Citation (APA Style)

Oakley, G., & Jay, J. (2008). "Making time" for reading: factors that influence the success of multimedia reading in the home. *The Reading Teacher, 62*(3), 246-255.  Retrieved April 7, 2010, from Research Library. (Document ID: 1601902391).

**Type of Research**: \_\_\_ Descriptive                      \_\_\_ Correlation

    \_\_\_ Experimental                      \_\_\_ Causal-Comparative

    \_\_\_ Historical                           \_\_\_ Quasi-Experimental

    \_\_\_ Meta-Analysis                  **\_X\_\_ Survey**

**Evidence from article you used to determine Type of Research**

The article is survey research. All the information is gathered through surveys from parents and students. Students were deemed reluctant readers using the Elementary Reading Attitude Survey (ERSA). This article is also applied empirical research. It is empirical because the authors took multiple surveys over a 10 week period from the selected group which they tallied. The authors used research from other studies to back-up the information they found. It is applied because the authors focused on small and specific group of students between the ages of 8 and 11 who were not interested or reluctant to read at home.

**Purpose of the Research**

The purpose of the research was to see if electronic talking books (ETBs) would improve motivation and interest in reading for reluctant readers. The authors wanted to find out what student, parents, and teachers involved thought of electronic talking books (ETBs) as a home reading program. They also wanted to learn the barriers, as well as the factors to implement the program.

**Instruments Used**

1.   Elementary Reading Attitude Survey (ERSA)

2.   Surveys created by the authors

3. CD-ROMs containing the electronic talking books

**Validity and reliability of Instruments Used**

The research is all done through surveys and informal interviews. While it gives a lot of information that could be considered reliable, it is only surveys and opinions from people. I do not have the most confidence in the results given.

**Subjects**

The students who participated were all between the ages of 8 and 11. Students came from varying economic backgrounds as one school was in a prosperous area, another in a middle income area, and the third in a lower income area. A common factor between students was that they were all classified as reluctant readers using the Elementary Reading Attitude Survey (ERAS).

**Results and Conclusions**

While there did not seem to be an improvement in students attitudes toward reading or an increase in motivation for reading traditional text, there was proof that a majority of students who participated in the program read more when ETBs were available.

The opinions of students, parents, and teachers were varied. For the most part students enjoyed ETBs. The biggest complaint was the narrator’s voice was not good. Some parents thought it improved motivation in student reading while others thought students were not "working" just listening. Teachers did not have comments as most of the time the principal took over the program.

**Possible Influence of Extraneous Variables**

Some of the extraneous variables include parental involvement and support in the program. Some students said they enjoyed the time they spent with their parents while using the ETBs.

Teacher support of the program was lacking due to principals taking over the project. Teachers were not in a position to support the project as the building principals took the lead on the project.

Availability of computers at home would determine if students could read with the CDs or not (taking turns depending on how many people need access to the computer a night). The level of reading on student’s priority list with all of the other activities such as sports, church, or TV, would have an effect on how much they read.

**Possible Threats to Internal and External Validity**

 The validity can be easily compromised since this is all done in survey or opinion fashion. If parents had problems while they were in school they may have a skewed attitude towards education.

The amount of time allotted for the survey would have an effect as well. It was stated many times that if there was more time the results could have been more conclusive.

The different genera’s available for students to read could affect their want to read. If students don’t like reading mysteries they may be less inclined to read the story on the computer due to personal choices.

**Generalizability of Results to Local Issues**

This survey can be pretty easily generalized as many students between the ages of 8 and 11 lose interest in reading. While this research was inconclusive students seemed to be more interested in reading when they could read with the computer. If they had access to books in genera’s they enjoyed their interest level in reading the on computers would be even more interested.

**Casey Krogman:**

**Bibliographic Citation (APA Style)**

Pearman, C. (2008). Independent reading of CD-ROM storybooks: Measuring comprehension with oral retellings. *The Reading Teacher, 61*(8), 594-602.  Retrieved April 7, 2010, from Research Library. (Document ID: 1474543491).

**Type of Research**:\_\_\_ Descriptive                       \_\_\_ Correlation

    \_\_\_ Experimental                    \_\_\_ Causal-Comparative

   \_\_\_ Historical                          **\_X\_ Quasi-Experimental**

   \_\_\_ Meta-Analysis                  \_\_\_ Survey

**Evidence from article you used to determine Type of Research**

            I believe this study is quasi-experimental because of two main things.  The first is that an independent variable was manipulated to measure its effect on a dependent variable while other variables were controlled.  The second reason I believe this is quasi-experimental research is because the students were not randomly assigned to groups, but rather assigned based on their scores on a prior reading assessment.

**Purpose of the Research**

            The purpose of this study was to research the difference in reading comprehension when the format is changed from the traditional text to an interactive program with pronunciation demonstrations and vocabulary meanings available at the click of a mouse.

**Instruments Used**

            The students were first divided into reading levels based on the STAR Early Literacy diagnostic assessment.  The groups were low, medium, or high readers.  These groups were used to determine which CD-ROM each student was given.

            Students in each group were given two different books to read.  The CD-ROMS given to the students were interactive storybooks which featured the same stories as the books.  Each CD-ROM had pronunciations, pictures, sound effects, and definitions that were accessed by clicking on them.  The CD-ROMs’ narration modes were deactivated so the students’ comprehension of independent reading could be assessed.  After reading, the students were asked to retell the story in their own words.

**Validity and reliability of Instruments Used**

            The main instrument used in this study was student interviews.  The interviews were all conducted by the same person and taped to be rated by two other raters.  All the raters were trained in the use of the same scale to judge the students’ retellings.  The inter-rater correlation was 0.84, which is a strong correlation.  The student summaries that were scored differently by the raters were gone back through and a score was agreed upon by the raters.

**Subjects**

            The subjects of this study were second grade students in a large rural school in the southern region of the United States.  The sample size was fifty-four children with 29 male students and 25 female students included.  The sample included Caucasian, black, and Hispanic children, however most were Caucasian and only one student was black.  The students had regular weekly computer exposure since kindergarten.

**Results and Conclusions**

            The results of the study showed that there was a significant difference between the average retelling score after reading the electronic text and the retelling score after reading the traditional text, with the average retelling score after the electronic text being higher.  The scores of the three groups were also compared.  The results of the t-test comparisons of the high and medium groups did not show a significant difference between the means of the electronic text scores and the means of the traditional test scores.  The t-test comparing scores in the low group did show a significant difference however, with the average retelling score being higher for the electronic format of the text.

The author mentions the difference between the results of this study and another study, however explains the difference based on the different ways the studies were set up.  The other study used two separate groups-one control group who read the traditional text and one experimental group who read the electronic text.  An interesting result mentioned in the article is in regards to four students with ADHD.  The students flipped back and forth in the traditional text and looked around the room often.  However, when the same four students read the electronic text, they were observed to follow along with the cursor and not look around the room as much.

The main conclusion the author cam e to was that beginning or struggling readers could benefit from the use of CD-ROM texts.  This conclusion was based on the idea that students were able to select words they didn’t know to be pronounced for them, thus comprehending more.  The author also stated that students could benefit from hearing the meanings of words they didn’t know.

**Possible Influence of Extraneous Variables**

            There were a few students in the low level reading group who did not have access to a computer at home-this may have affected how well the student performed on the diagnostic test.  The author also mentions that it is possible the pictures in both the electronic and traditional texts may have helped the student retell the story to a point.

**Possible Threats to Internal and External Validity**

            The main threat I would think of for external validity is whether the sample is representative of the population.  There were 94 second graders at the school, however only 54 students were included because 25 students were English as a second language students who were not included (the other students who were not included did not bring back parent permission forms).

            A possible threat to internal validity would be whether the students’ retellings of the stories were influenced by their comfort level with the interviewer.  It was also mentioned that the results might have been influenced by the students’ experience, or lack of, with computers.

            Another threat to validity may be that students essentially did repeated readings of the stories.  Each student read the same story twice.  Depending upon the order they read the versions, the score on the second reading may have been higher because it was the second time they had read the story and not because of the particular version they read.

**Generalizability of Results to Local Issues**

            I believe this study could be generalized to our local area.  I would feel more comfortable with the results however, if the sample size was larger.  It is also important to keep in mind that the students in this study were a certain age, so the results of this study may not apply to other age groups.

**APPENDIX B: Team Members’** **Shared Participation in Writing the Final Paper**

**Anderson:**

* 4 Articles:
  + "Making Time" for Reading: Factors That Influence the Success of Multimedia Reading in the Home
  + A vocabulary flood: Making words "sticky" with computer-response activities
  + Stories About Struggling Readers and Technology
  + Teacher-Created Electronic Books: Integrating Technology to Support Readers With Disabilities
* One article analysis
* Reference List
* Formatting

**Krogman:**

* 4 Articles:
  + Free Digital Library Promotes Reading Independence for Middle School Student
  + SEARCHing for an answer: The critical role of new literacies while reading on the Internet
  + Independent Reading of CD-ROM Storybooks: Measuring Comprehension With Oral Retellings
  + Literacy Instruction With Digital and Media Technologies
* One article analysis
* Statement of research question
* Research for articles

**We both contributed to the summary of the literature, summary and conclusions, and the application of the research in the typical classroom.**