

MICHIGAN STATE UNIVERSITY

Research Proposal Project

CEP-822

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17/08/2011

Does the integration of interactive multimedia technologies in first and second grade increase students' motivation to read during their daily one hour reading period? Does it augment vocabulary and improve comprehension?

Focus and Rationale

Audience:

I work for an association called APDE that manages seven private schools in Guatemala City. I want to share my investigation with the board of directors and principals of all seven schools. At the end of each year all the schools have a two week period of professional development, I would like to take advantage of this occasion to present my research results to all the elementary school teachers as well.

Sources:

I first got inspired to do this project by learning about [PBS Kids' raising readers](#) campaign that focuses on building reading skills using media across all platforms to close the literacy achievement gap.

ISTE's Journal of Research on Technology Education (JRTE) has a few interesting articles about this:

- Commercial Software Programs Approved for Teaching Reading and Writing in the Primary Grades: Another Sobering Reality. JRTE, 2009; 42(2): 197-216
- Digital Games in Education: The Designs of Games-Based Learning Environments. JRTE, 2007; 40(1): 23-38
- Interactive CD-ROM Storybooks and Young Readers' Reading Comprehension. JRTE, 2001; 33(4): 374-384

I've also found a book on Multimedia and Literacy Development by Adriana G. Bus and Susan B. Neuman. One of the chapters is online: "Cognitive processes during reading: implications for the use of multimedia to foster reading comprehension". Unfortunately, I don't live in the US and ordering the book would take too long and be most expensive.

The [Reading Online Journal](#) from the International Reading Association has all sorts of articles about using technology to enhance reading instruction.

Description:

Does the integration of interactive multimedia technologies in first and second grade increase students' motivation to read during their daily one hour reading period? Does it augment vocabulary and improve comprehension?

Each day of the week all of the students at the all-girls K-12 school where I work, have a one hour reading or studying period, it consists mostly of reading silently by themselves. For my lower elementary kids, it can be difficult and boring at times. I often hear teachers say that they have a hard time keeping the students motivated to read and that they end up doing something else instead, like coloring or drawing on their notebooks. I believe that acquiring good reading skills is very important for a countries development. Guatemala has a low literacy rate and unlike other societies very few people are known to be "book lovers". Some of it has to do with our socioeconomic problems, buying books can be expensive! But with all the online resources accessible at present, not having money will no longer be an excuse. Since I started working in education this has

been a concern of mine. With the help of my sister, we design a children's poetry page: www.mundoemilia.com, knowing little about all the research available on how to enhance reading instruction.

I would like to work on a theoretical/empirical research study on how integrating multimedia technologies can motivate and develop young children's reading skills like fluency, vocabulary and comprehension. It would be a longitudinal study with repeated measures. I'm still defining the variables and the methods to get the data I need. On a small scale, I would be very happy if I could just improve the quality and results of my school's reading period, and find out that there's a positive relationship between technology and reading. On a larger scale, I have found that there's a lot of interest in research focused on the impact of applying technology in helping children learn to read, so I would like to contribute my findings with the world. There is still much to be explored by schools, technology developers and researchers.

"Technology can help make a good reading program more effective, but its value depends upon the quality of the overall reading program and the thoughtful implementation of technology to enhance reading instruction."
INDUS - Training and Research Institute.

Literature Review

Introduction

Does the integration of interactive multimedia technologies in first and second grade increase students' motivation to read during their daily one hour reading period? Does it augment vocabulary and improve comprehension?

Since the existence of the written word, teachers and researchers have been actively working on developing and improving methods to help others how to read. In our highly technological society, it is no surprise that many educators have started using different types of technologies with their students hoping to successfully reach upper reading levels. This literature review shows a glimpse of the many projects being done with reading and technology in lower elementary grades.

Perspectives

When it comes to technology in education you can always find opposing perspectives on whether including technology will or will not make a significant difference.

The first part of this study asks if there's any evidence that multimedia technologies motivate or engage students to read. In Guthrie's (2001) article on reading motivation and engagement, he explains that "Devotion to reading spans across time, transfers to a variety of situations, and culminates in valuable learning." He also emphasizes that "an engaged reader comprehends a text not only because he or she can do it, but because he or she is motivated to do it".

It is said that the most important factor that influences reading motivation is home environment. They found that the cultural practices established by parents as well as the reading material that parents keep in their home greatly influenced the reading achievement of the children. (Jones & Brown, 2011) So when does technology motivate reading? It isn't hard to notice if you work at a school that kids get excited with technology. For example, a teacher says that hooking her class up with students from other parts of the world motivates her students to focus on their grammar and pronunciation. "It just makes them work harder," she says. The Internet allows her students to engage with an authentic audience. (Ash 2001) In a study about digital storytelling making reading fun and entertaining, data was gathered in qualitative form through observations and it was concluded that all subjects were enjoying their experience. (Mutalib, Aziz, & Shaffieji, 2011)

As mentioned before there's a relationship between students' motivation to read and the level of comprehension and amount of vocabulary. Again, we find perspectives where technology plays an essential role and others where it is just one of the many elements used. First, a study affirms that CD-ROM storybooks can support the development of the five essential elements of reading instruction identified by The National Reading Panel: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Specific features inherent in these texts, audio pronunciation of text, embedded vocabulary definitions and animated graphics can be used to support readers' development of various reading skills. (Pearman & Lefever-Davis, 2006) There are also several

success stories about struggling readers and technology, like: electronic text and literature discussion blogs. (Anderson & Balajthy, 2009)

However, not everyone agrees that technology is the solution to all our problems. Even though computer use has been linked to benefits, teachers must be cognizant of the reasons for using technology in the classroom and make informed choices about the specific educational benefits and drawbacks of software programs. The manner in which programs are used is crucial. (Lovell & Phillips, 2009)

Katie Ash (2001) also brings an interesting point of view on using technology, "My bias is that a caring adult will always read a book aloud better than a computer can," she says. "We have to be thoughtful about where the technologies fit best." "One of the cautions is that it's not about doing the same thing with new tools. It's about doing new things or difficult old things with tools that make it easier".

As an Educational Technology Coordinator who wants to improve reading skills with technology it is important for me to have a thorough understanding of the nature of the reading process, and of factors that may lead to failure in reading. Multimedia approaches to improve comprehension of specific content will be effective in so far as they promote the construction of a correct, coherent representation of the presented information. (Bus & Neuman, 2009)

Pedagogy

Teaching someone to read can be hard and having to teach several children with all unique characteristics is no small challenge. If learning to read is a process, when does a child become a reader? If the predominant models of learning to read remain based in print alone, many students who can't read may come to believe they can't learn. (Edyburn, 2007)

The purpose of reading is to comprehend a written message. Individuals are readers when they are able to understand the message of the text. (Doty et al. 2001) Another element of reading well is vocabulary. Why is vocabulary learning so important? To understand a text, one must understand the words that represent the ideas or concepts. Studies confirm the high correlation between vocabulary knowledge and reading comprehension. (Dalton & Grisham, 2011)

Many of the articles presented many technologies that could assist reading instruction. This is a good thing since the availability of materials will play a determining factor in how engaged children are in reading. (Jones & Brown, 2011)

The use of e-books is becoming increasingly popular. However, according to a study students' response to enjoyment questions is the same between e-books and printed books. This leads to the conclusion that content, theme, setting, and plot may have a stronger effect on children's reading motivation than format. The wide selection of titles possible through online e-book websites is motivational for children. This is similar to the freedom of choosing any book from the classroom or school library collection. One benefit in use of e-books is improved access to a greater number of reading selections. (Jones & Brown, 2011)

Another article mentioned the use of audio recorders to have student-teachers read sets of vocabulary words, then created matching PowerPoint presentations with the words and burns them onto DVDs for the students to take home and listen to. (Ash, 2011)

Podcasting is used to help students practice fluency. According to the teacher "One of the really neat things to do is have the kids edit their own podcasts. Then they can literally see the pauses or mistakes they made in the editing program and correct them". (Ash, 2011)

Assessment

Over time many forms of assessment have been used to evaluate reading skills. In one of the studies the students were assessed through story retellings and 10 open-ended comprehension questions. Retellings were scored in accordance with Morrow's (1985) 10-point scale. There were six comprehension questions to answer. Three of the questions were literal, and the other three were inferential or critical. (Doty et al. 2001)

In another study students completed a mapping activity in their respective groups and shared their ideas with the class. Students then completed a comprehension test. They also completed a survey to measure their enjoyment. The primary data were the scores on the comprehension tests and the answers to the survey items. The observation data were secondary. (Jones & Brown, 2011)

In reading there are different skills that can be measured but comprehension alone is a family of skills and activities. As a result, comprehension in its different forms cannot be quantified and assessed easily along a single dimension -unlike phenomena such as height, weight, strength, and perhaps even basic reading skills such as vocabulary and phonological awareness. (Kendeou et al. 2005)

Conclusion

During the search for possible resources for my literature review, I acquired a profound respect for the constant research that others have been doing in this field. Even within our increasingly visual world (Kress, 2003), words remain our primary means of communication. (Dalton & Grisham, 2011)

Understanding the processes and factors that may lead to the success or failure in reading has convinced me that making informed choices on selecting the different types of technologies to assist reading instruction is critical. In my research I will try to blend different methods and technologies to compare results. Although multimedia technologies will have an important role, they will serve as a complement to a series of well thought activities directed by the teacher. The purpose of the students going to the computer lab during their one hour reading period is not to just sit there in front of a PC the whole time with no objective.

There is a lot of information about the topic I chose, which at first was a little overwhelming but at the same time comforting to know that there's a lot of interest in helping students read better and that several technologies are being tested.

I'm convinced that I want to focus my study in younger children. Many studies show that if we help kids improve their reading skill before they reach middle school, it is more likely that they will catch up or exceed their grade or age reading level.

I will also concentrate in this first study on two reading skills: comprehension and vocabulary. Reading is a complex process and wanting to improve all its components with technology is too big a task for a single study. I picked comprehension because we want students to understand the message; it is the whole purpose of reading. I also chose vocabulary because it directly impacts comprehension, and there are many ways that multimedia technologies can help students increase students' vocabulary.

In my research, I have not limited myself to a specific tool or media. This is because comprehension skills are not specific to the medium in which narratives are presented, but are similar across different media. (Kendeou et al. 2005)

Research Design

Research Questions

The primary research question is *“Does the integration of interactive multimedia technologies in first and second grade increase students’ motivation to read during their daily one hour reading period?”* Because students’ motivation and engagement to read impacts comprehension and vocabulary, two sub questions are also examined *“Does the integration of interactive multimedia technologies augment vocabulary?”* and *“Does the integration of interactive multimedia technologies improve comprehension?”*

Procedures

All first and second grade students within a school will experiment two types of one hour reading periods for a month. Instead of having their normal period of reading silently in the classroom, twice a week students will go to the computer lab and use digital books and interactive reading games.

As mentioned in Anderson and Balajthy’s (2009) article *“Stories about struggling readers and technology”*, it is important to find *“just the right”* books. This means books are on the student’s reading level and are of their interest. Prior to starting the process, the teacher must find out the students reading levels to identify and select the appropriate resources.

Similarly to Jones and Brown’s (2011) comparison with e-books, students will have to read using printed books and interactive multimedia resources. The teacher will pick a theme for each week. The children will have the option to choose from a list of different resources preselected by the teacher according to the theme and reading level. Each week of the study will have two phases:

- 1) Reading a book about the topic silently in class like it’s traditionally done.
- 2) Reading a digital book and playing games about the topic individually in the computer.

Observers will videotape both sessions and will take field notes. Students that have difficulty reading or have a history of not being able to cope well in their normal reading periods will be more closely observed when assisting at the computer lab.

To answer the principal question on whether including multimedia technologies motivates students to read more, the data gathered through observations and enjoyment surveys during and after the kids have a traditional or technology infused reading period, will be used to compare the children’s behavior and know if they were more willing to read the proposed books and join the activities with or without technology.

In order to prove that motivation has a positive impact on reading comprehension and vocabulary. The teacher will also compare the comprehension and vocabulary test results after each phase and find out if the students score higher when they read digital books and played vocabulary games or when they read printed books in class.

At the end of the study, students will take the same reading level test that the teacher used at the beginning. Both test results will be compared and a conclusion will be reached if adding multimedia resources will improve the quality and effectiveness of the school's reading program during the time that the students have their one hour reading period.

Assessments

Resembling Knezek and Christensen's (2008) study an individual reading diagnostic assessment would be administered by the teacher to obtain each student's reading level. These results would be then compared at another time in a pre-post fashion. The test created by the General Office for Evaluation and Educational Research of the Guatemalan Ministry of Education would be used. This test measures levels of comprehension and vocabulary.

Studies confirm that there is a high correlation (0.6 to 0.8) between vocabulary knowledge and reading comprehension (Dalton & Grisham, 2011). For vocabulary assessment, taking into account the strategies mentioned in "eVoc Strategies: 10 Ways to Use Technology to Build Vocabulary", students will learn new words with online vocabulary games, take advantage of online word reference tools and use language translators.

Just like in Jones and Brown's (2011) report, at the end of each weekly phase students will be administered a comprehension test and an enjoyment survey. Although the test will be helpful for collecting data, it is important to remember that "a computer-based test is not a replacement for well-considered reading activities, and a key component in blending technology with books is the maintenance of community building." (Anderson & Balajthy, 2009)

Design Rationale

The approach described in this research design will be highly beneficial to the school's reading program because it doesn't pretend to discredit the current method but to complement it with the use of technology. Instead of deciding to only use interactive multimedia technologies in all reading periods, the study blends both traditional and new ways. Through observations and surveys, advantages and disadvantages of each method can be discovered. Although the use of multimedia can be effective in many aspects, the human component in assisting readers is vital.

It is important that this study is intended for first and second grade students. Like Edyburn (2007) mentions in his "Technology-enhanced reading performance" paper: "*Reading researchers are well aware of the achievement gap. The Matthew Effect (Stanovich, 1986), based on a Biblical metaphor about the rich getting richer, means that although young children may display small differences in reading ability, over time the differences become much larger. Effective readers exponentially become more proficient and learn more while poor readers fall farther behind.*" If the school starts improving its reading program with younger students, it is more likely that many of the problems that it currently has with older grades would be reduced in the coming years.

This research design will also help in getting to know each students reading level. This will benefit students because the teacher can then select the “just right” books and multimedia resources for each.

Incorporating technology in the actual reading program will support student learning not only because it provides an efficient instructional resource but also because it develops students' technological skills. In the end this design will help build a better structure for improving reading achievement during the one hour reading period that all students have.

Annotations

- 1) Anderson, R., & Balajthy, E. (2009). Stories About Struggling Readers and Technology. *The Reading Teacher*, 62 (6): 540-542

Summary: Presents different cases of students having difficulty with reading and how technology helped them overcome their problems. Some of the technologies used were: e-books, blogs, and specialized software.

- 2) Ash, K.,(2011). Boosting Literacy: To improve reading skills, many teachers are harnessing the technology they already have. *Education Week - Digital Directions*, 22-24

Summary: Talks about how schools instead of investing in prepackaged software, they can use what they already have and free Web 2.0 tools that can be more flexible to satisfy students' needs.

- 3) Bus, A.G., & Neuman, S.B. (2009). Multimedia and literacy development : improving achievement for young learners. Chapter 4: 57-70

Summary: Explains how with the aid of multimedia reading comprehension can be improved. It provides an overview of the cognitive processes that take place during reading comprehension.

- 4) Dalton, B., & Grisham, D.L. (2011). eVoc Strategies: 10 Ways to Use Technology to Build Vocabulary. *The Reading Teacher*, 64(5): 306–317

Summary: Describes 10 vocabulary strategies that use technology to support the wide reading, direct instruction, active learning, and interest in words that are essential to vocabulary development. Presents a great variety of tools that combine with the strategy presented.

- 5) Doty, D.E., Popplewell S.R., Byers, G.O. (2001). Interactive CD-ROM Storybooks and Young Readers' Reading Comprehension. *JRTE*, 33(4): 374-384

Summary: Study that analyzes if there is a difference in the level of young readers' reading comprehension when one group of students read an interactive CD-ROM storybook and another group of students read the same story from a conventionally printed book.

- 6) Edyburn, D. L. (2007). Technology-enhanced reading performance: Defining a research agenda. *Reading Research Quarterly*, 42(1): 146-152. Retrieved from <http://ezproxy.msu.edu/login?url=http://search.proquest.com/docview/62041937?accountid=12598>

Summary: Discusses how teachers still demand that certain children read like their more normally achieving peers and insist that the only way to read is by using the same visual, perceptual, and cognitive functions as everyone else. Also outlines four categories of issues that are believed to be fundamental to understanding the efficacy of technology for enhancing reading performance.

- 7) Guthrie, J.T. (2001). Contexts for Engagement and Motivation in Reading. *Reading Online*, 4(8). Available: http://www.readingonline.org/articles/art_index.asp?HREF=/articles/handbook/guthrie/index.html

Summary: Discusses engaged reading and its consequences. The particular focus is on the contribution of children's motivation. Instructional contexts that foster reading engagement and motivation are presented.

- 8) Jones T., & Brown C. (2011). Reading engagement: a comparison between ebooks and traditional print books in an elementary classroom. *International Journal of Instruction*, 4(2): 5-22

Summary: 22 third-grade students completed satisfaction surveys and reading comprehension tests on three separate reading sessions: one traditional print-based and two e-book titles. Indicators of reading engagement included motivation for independent reading and comprehension as measured by standardized tests. The primary research question was "What are the effects of electronic books on third-grade children's reading engagement?"

- 9) Kendeou, P., Lynch, J.S., van den Broek, P., Espin, C.A., White, M.J., & Kremer K.A. (2005). Developing Successful Readers: Building Early Comprehension Skills through Television Viewing and Listening. *Early Childhood Education Journal*, 33 (2): 91-98

Summary: In this article, they examine research findings on how comprehension skills develop in young children and discuss the implications of those findings for comprehension assessment and interventions. They focus particularly, on narrative comprehension.

- 10) Knezek, G., & Christensen, R. (2008). Effect of technology-based programs on first- and second-grade reading achievement. *Computers in the Schools*, 24(3-4): 23-41. Retrieved from <http://ezproxy.msu.edu/login?url=http://search.proquest.com/docview/61965814?accountid=12598>

Summary: Describes the Key Instructional Design Strategies (KIDS) project developed in Texas that focuses on the acquisition of reading skills at the first- and second-grade levels through the use of computer-assisted instruction (CAI). Areas addressed in the study were oral language development, awareness of sound, symbol, and structure, skill integration reading comprehension strategies, vocabulary, spelling and writing. Research results show that in 25 rural public school districts professional development and technology-intensive classroom learning activities were effective in fostering reading accuracy at the first and second-grade level and reading comprehension at the second-grade level.

- 11) Linebarger, D.L., McMenamin, K., Wainwright, D.K. (2009). Summative evaluation of Super why! Outcomes, dose, and appeal. Annenberg School for Communication, at the University of Pennsylvania.

Summary: Study about the impact of young student's literacy skills using the television show Super Why! A program that uses a narrative framework, participatory requests, and pseudo-contingent feedback to solve problems through storybook reading.

- 12) Lovell, M., & Phillips L. (2009). Commercial Software Programs Approved for Teaching Reading and Writing in the Primary Grades: Another Sobering Reality. *JRTE*, 42(2): 197-216

Summary: Reports the results of an evaluation of 13 commercially available, authorized software programs for teaching reading and writing in the primary grades. Most software programs were judged to be

noninstructional, in that they did not track student progress, provide feedback, or adapt to suit student needs. Twelve of the 13 programs were published in the United States, and one was published in Canada.

- 13) Mutalib, A.A., Aziz, N., & Shaffiei Z.A. (2011). Digital Storytelling Makes Reading Fun and Entertaining. *International Journal of Computer Applications*, 18(1): 20-26

Summary: An ongoing study, which determines whether digital storytelling is fun, entertaining and helpful for reading instruction. The activities involved in this study are described, including the development of digital storytelling that adapts the user-centered design approach.

- 14) Paredes, J. (2005). Animación a la lectura y tic: creando situaciones y espacios. *Revista de Educación*. 255-279

Summary: Critical analysis of the main methodological processes behind creative writing and storytelling through the use of information and communication technologies (ICT). Reorienting reading and writing activities using word processors, multimedia, electronic language programs, interactive storybooks and the development of web projects.

- 15) Pearman, C.J., & Lefever-Davis S. (2006). Supporting the Essential Elements with CD-ROM Storybooks. *Reading Horizons Journal*, 46 (4): 301-313

Summary: CD-ROM storybooks can support the development of the five essential elements of reading instruction identified by The National Reading Panel: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Specific features inherent in CD-ROM storybooks, audio pronunciation of text, embedded vocabulary definitions and animated graphics can be used to support readers' development of various reading skills.

Revision Summary

Focus and Rationale:

Suggestion: You will want to think carefully about what specific affects you are most interested in. That is, what counts as motivation and readings skills?

Changes: Instead of using the term “reading skills”, the study will focus on increasing vocabulary and improving comprehension.

Literature Review:

Perspective Suggestion: Overall, good. Needs to be organized to really highlight the similarities and differences in perspective rather than listing a number of different works.

Changes: I organized the section so it highlighted the differences in perspective on whether the use of technology motivates or engages students to read, and if has a significant impact on students’ capabilities or skills. [Go to Perspectives.](#)

Conclusion Suggestion: A good start, but a bit general and vague. The purpose of the conclusion section for this assignment is to be as specific as possible about which parts of your study have been informed by which people’s work.

Changes: I listed the specific parts of my study that were influenced by the papers and documents I read. These were: A) A combination of methods or a blended approach to using technology. B) Defining my age group. C) The reading skills that I wanted to focus on were comprehension and vocabulary. [Go to Conclusions.](#)

Research Design:

Procedure Suggestion: Good start. I see that students will use MM-books and print books, but more detail is needed to explain how this procedure will answer your three questions about students’ motivation, vocabulary learning, and comprehension.

Changes: I added three paragraphs that explain how the procedure will help answer the research questions. Motivation will be compared through observations and surveys after each phase or type of reading period. I will see if students decide to read more the proposed material when in the computer lab or in class. Vocabulary an comprehension will also be compared in each phase with tests and activities. [Go to Procedures.](#)