Improving Literacy Through the Use of Technology for Struggling Students

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Abstract

This project explores how differentiated, project-based learning can promote increased literacy in students who are not diagnosed with learning disabilities but struggle with literacy. Technology provides opportunities to experience literacy instruction that extends to what is taught in a mainstreamed, traditional classroom. This project will explore what needs are to be met in order for struggling readers to be successful with their literacy in inclusive traditional classrooms pairing dialing phonemic awareness, phonics and sight words with Kidspiration, the use of the Internet, teacher-led and other project-based activities. A plan for evaluation is included as well.

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Chapter One

Project Proposal

Problem Statement

It is a human right for students with special needs to have access to information in our society (Crossman, 2012). According to the Individuals with Disabilities Education Act (IDEA) of 2004, students between the ages of 3-21 must be provided with a Free Appropriate Public Education (FAPE) that prepares them with the skills for future education, the work force and independent living (American Psychological Association, 2013). Many students in lower elementary schools struggle with a variety of literacy issues, such as fluency, comprehension, and phonetics. Since these students are found in nearly every public K-12 classroom in the United States it makes literacy an important educational issue (Henry, Castek, O'Byren, & Zawilinski, 2012). There is a lack of differentiation and project-based learning that engages student interest and motivation (Craver, et al., 1998) because some teachers don't know how to integrate them into their curriculum. Differentiated instruction is most productive by using an 'eclectic' approach which will allow teachers to choose from many sources (Huong, 2012). In addition, there are many challenges for teachers to integrate technology into their literacy instruction. There are many struggling readers who may not have the technical resources or support, or the know how to use technology. There is a need for remedial differentiated project based activities incorporating the use of technology. Differentiated project-based learning can promote increased literacy in children who are not diagnosed with learning disabilities but struggle with literacy. Technology provides opportunities for these

struggling students to experience literacy instruction that both extends and expands what is possible in a traditional, inclusive classroom.

Rationale/Importance of the Problem

Unfortunately, many students go without the help they need. Many students who struggle with reading sit in mainstreamed, general education classrooms. These students are performing below their potential which is often not recognized because their limitations are not being accommodated and difficulties increase. Weikle and Hadadian (2003) state that children with disabilities are receiving education in more inclusive settings, and teachers expect these students to have the same interaction with technology as their peers. This explains why both students in regular and mainstreamed classes should be learning at the same pace. This is not always true in all classroom settings. Struggling readers often slip through the cracks. They are unable to succeed in school because they do not have the required skills in specific reading areas, which in turn, also affect other academic areas. Since literacy is the building block of all other subjects where reading and writing are required, lack of literacy can lead to school dropouts and lack of employment. Employment that may be available to these individuals may be minimum wage positions. The low self morale and the inability to work where reading and writing predominates in most jobs in the workforce will lead to students that are unsuccessful and unable to perform in today's society.

In incorporating project-based learning with technology components promotes working with peers and technology. Students who struggle with literacy and do not have access to technological project-based learning will encounter more obstacles and issues with their increased literacy. This may also be due to the lack of resources and support of

the institutions, and the limits of time. Many private schools are limited to certain amounts of funding and cannot provide the classrooms in their schools with the appropriate types of technology they require. This trickle-down effect from lower elementary to the upper years of school only become more difficult for those students who do not get the help they need in the beginning stages. This will affect middle to high school as well. Schools lose their credibility, parents spend money on tutoring for their children (if they are able to afford it), and students learn to accept failure. Educators need to provide these skills to students in order to increase the students' quality of life.

Background

The issues that exist of mainstreamed students who are struggling with literacy issues can be shown in different classroom settings. It has been observed that students are more engaged with the skills when technology is incorporated. There seems to be an interest that takes students away from a simple scenario when it becomes entranced with technology. Today people live in a digital, technological world, and it is important to be kept up with the times. Many schools are investing money in different types of technology – from SmartBoards, handheld devices to digital cameras. When given an interest inventory at the beginning of the year, many include video games or computer usage on their list of favorite things to do.

It has been observed as well that classrooms use their SmartBoard daily and other modes of technology daily. The students are focused and are very eager to participate. The students in this classroom are struggling readers, and some have also been diagnosed with autism, sensory processing disorders and Attention Deficit Hyperactivity Disorder (ADHD). They are engaged most of the time and attempt the skill or activity without any

hesitation or reservation. The literacy level of these children with the struggling readers, and those who have been diagnosed as special needs vary from below average to exceedingly high.

In many public schools in Michigan, reading resource rooms are provided and also offer a 'pull-out' option for students with special needs, however those options are now changing. Ben-Yehuda, Leyser and Last (2010) state that many "educational systems around the globe in developed and developing nations are undergoing major reforms and changes…[including] the movement toward the progressive inclusion of students with disabilities… mainstreaming, integration, inclusion…" (pg. 17). In these school systems, they are working towards proving inclusive classrooms, meaning they are proving special needs students with non-inclusive teaching methods. They also found that there were many variables and factors when faced with using inclusion: how it will impact other students, behavior problems, the lack of time and resources, and teacher training and experience (Ben-Yehuda, Leyser and Last, 2010).

Weikle and Hadadian (2003) state that children with disabilities are receiving education in more inclusive settings, and teachers expect these students to have the same interaction with technology as their peers (p. 181). This explains why both students in regular and mainstream classes should be learning and using technology at the same pace. This is not always true in all classroom settings. In addition, "provisions of the Individuals with Disabilities Education Act mandate that special education and related services be provided to children from birth to 21 years old" (Weikle and Hadadian, 2003, 181).

According to national data, many students are struggling to become proficient in reading and writing. With changes in the English language arts common core, standardized testing benchmarks have also been raised. Expectations for student academic achievement have been increased. Students with poor literacy skills are more prone to become high school dropouts, and are more likely to be underemployed (Okolo, 2013).

With students already receiving instruction in inclusive settings, and the mandate that special needs students receive the provided instruction they need, it is clear what teachers need to move forward with the ever changing technology that exists today. There is a fascination that children have with technology, and the different learning impairments that exist in a mainstream classroom. The background of these studies provides evidence that technology is essential if we want to help our students increase their literacy. If children with disabilities have shown examples of the efficacy of technology, this must also be the case with students that are undiagnosed struggling readers.

Statement of Purpose

The purpose of this project is to create project-based learning activities that integrate technology for teaching literacy for all first grade students with the focus on struggling readers. These project-based learning activities will have many components which will supplement and amplify a language arts/reading curriculum. Struggling students will have the chance to use different technologies, such as student centered projects that will include use of the Internet, self voice feedback intervention programs, e-readers, digital games, WebQuests, and SmartBoard activities. With the correct

implementation, and by using pre and post literacy assessments, I will hopefully be able to know where the students skill levels are, and observe the growth of the students' word recognition, phonetics, comprehension, and fluency.

I will create project-based learning activities at their instructional reading level. I believe that working with peers, in collaborative groups will foster a greater motivation for learning. According to Henry, et al. (2012) when students have a sense of empowerment, that have a greater sense of motivation and self confidence. I will also use independent activities and assignments which will hone in on different key skills such as reading response journals.

Objective of the Project

Audience

- Struggling readers in a first grade general classroom in a rural private elementary school in West Michigan.

Behavior

- After the lesson, students will be able to show an increase in fluency, word recognition and comprehension skills.

Condition

- Demonstrated on DIBELS Next, MAP assessments, running records

Degree

- 80 percent of students will increase (substantial or not) their test scores on the MAP and running records.

With the correct implementation, and by using pre- and post-literacy assessments such as the MAP, DIBELS Next and MEAP, I will hopefully be able to know where the students skill levels are, and observe the growth of the students' word recognition,

phonetics, comprehension, and fluency. I would also hope to see a growth in their feelings of success confidence and self worth. I am aiming to see an active increase of engagement and a desire to continue to grow in their literacy.

Definition of Terms

Attention Deficit Hyperactivity Disorder- One of the most common childhood disorders which can continue onto adulthood. Difficulty staying focused and paying attention, difficulty controlling behavior, and hyperactivity are some of the symptoms (National Institute of Mental Health, 1949).

Differentiated instruction – Diverse teaching which reaches students with different learning styles, different abilities to absorb information and different ways of expressing what they have learned (Scholastic, 2014).

Individuals with Disabilities Education Act (IDEA) of 2004 - A law ensuring services to children with disabilities throughout the nation. IDEA governs how states and public agencies provide early intervention, special education and related services to infants, toddlers, children and youth with disabilities (American Psychological Association, 2013)

Learning disability - A neurological condition that interferes with a person's ability to store, process, or produce information. They can affect one's ability to read, write, speak, spell, compute math, reason and also affect a person's attention, memory, coordination, social skills and emotional maturity (Learning Disabilities Association of America, 2005).

Literacy – Mainstream classroom – a preferred practice which is a regular classroom setting without restrictions; to be educated with students in the general education environment (Yell, 2010).

Project-based learning - An instructional approach built upon authentic learning activities that engage student interest and motivation, teaching students 21st century skills as well as content. These skills include communication and presentation skills, organization and time management skills, research and inquiry skills, self-assessment and reflection skills, and group participation and leadership skills (Department of Educational Technology, 2005).

Struggling learner - A student who has difficulty keeping up with classmates of the same age in a developmentally appropriate learning environment and does not qualify for special education, remedial or other school services (Robbins, 2006).

Technology integration - The use of technology resources such as computers, mobile devices, digital cameras, social networks, software applications, the Internet, etc. in daily classroom practices (Edutopia, 2014).

WebQuest - An inquiry-oriented online tool for learning, and a classroom-based lesson in which most or all of the information that students explore and evaluate comes from the World Wide Web (Educational Broadcasting Corporation, 2004).

Scope of the Project

This project will create one unit of study that includes student-centered activities in a 1st grade general education classroom at St. Mary's Visitation School. The purpose of this project is to create project-based learning activities that integrate technology for teaching literacy to all first grade students with the focus on struggling readers. With the

correct implementation, and by using pre- and post-literacy assessments such as the MAP, DIBELS Next and MEAP, I will hopefully be able to know where the students skill levels are, and observe the growth of the students' word recognition, phonetics, comprehension, and fluency.

Some factors that may influence the success of this project are the ability and lack of training that the classroom teacher would receive. St. Mary's receives many donations from parents and the community as funding is limited to purchase technological equipment, as well as professional development and training for teachers in classrooms. With the school being in a rural area, there are often issues with the wireless internet in the school. In the past, the internet has stopped working in the middle of online MAP testing, so there have been delays in obtaining test scores. This may hinder the effectiveness of the project based learning activities if this was to occur. Also, without support and resources from school administrators, including time and access to technology, a project like this one may not be successful.

Chapter 2

Literature Review

Introduction

Many struggling readers do not have the technical resources or support or the skills to use technology. There is a need for remedial differentiated project-based activities incorporating the use of technology. Differentiated, project-based learning can promote increased literacy in students who are not diagnosed with learning disabilities but struggle with literacy. Technology provides opportunities to experience literacy instruction that extends to what is taught in a mainstreamed, traditional classroom. In order to promote technological project-based learning in the classroom, many factors need to be kept in mind. This project will explore what needs are to be met in order for struggling readers to be successful with their literacy in inclusive traditional classrooms.

Theory/Rationale

Students with special needs deserve the use of technology in the classroom because it is a basic human right. "Because access to the information of our society and our world is necessary for our survival, it is therefore a human right. So the billions of people who are being denied access to information because they can't read or write are being denied their human rights" (Crossman, 2012, p. 51). Every child has the right to learn, and is unique in their specific way of learning, whether it be visual, auditory, or kinesthetic.

There is a need to eliminate the fear of disappointments in their feelings of inadequacy and replace it with positive esteem, and achievements. The use of technology can increase literacy achievements in these students. Crossman (2012) states that, "[a

student] and her friends are developing the very skills that will be required for successful K-12 learning as we move into the coming age of postliterate K-12 education," (Crossman, 2012, p. 52).

Students also respond better to active stimulus curriculum, and we need to help students with special needs to be more prepared to transition into mainstream with updated computer and other technology skills. In addition, we need to use more technology to keep the interest level of student's high. Because we live in a very digital, technological world, many schools are upgrading their uses of technology which makes this obstacle even more attainable. It has been known how important hands-on learning is to students. Learning through first hand experience will also allow students to use inquiry and make their own inferences. These different modes of technology will give these students the tools they need to be successful in school.

A constructivist approach would argue that active learning is the most optimal learning as students are engaged in learning by discovery. Because every learner is unique, use of differentiated instruction and technology certainly caters to all students. Each complex student can be encouraged with the use of technology in the classroom. All the various complexities of literacy ranging from a student's degree and ability of listening, speaking, and talking are building blocks to letter sounds, phonetics, constructing words and forming those words to produce sentences. This all amounts to the significant factors of what it means to be literate. The role of technology from this viewpoint shows that it is an integral part of learning. It fosters unique, complex, individual learning where each student forms their own understanding and learning outcomes using technology to express themselves in this digital world.

Research/Evaluation

What research is finding through incorporating technology into the classroom is that not only does it enhance lessons and engage students, it is building confidence for them as well. There are factors which influence the big picture. Identified below are examples of how the building blocks need to be set in place for technological project-based instruction to be successful in order to increase literacy in struggling readers. This framework consists of six (6) items: 1) The increased availability and expectations for technology in K-12 education; 2) Factors that contribute to the benefits from technology in K-12 education (including teacher professional development); 3) successful PD for technology integration; 4) Students' use of technology that improve learning; 5) Project-based activities that incorporate technology and 6) Project-based activities that will increase literacy. Without the first three factors, it is difficult to use technology effectively in project-based learning activities in the classroom. As described below, without the availability of technology and professional development, it is difficult to implement technology in the classroom. Those building blocks need to be in place before the other factors are implemented.

Increased availability and expectations for technology in K-12 education

Computer literacy is no longer enough, but being technologically literate is even more important in the 21st century. As mentioned earlier, students need to think critically, work in teams and produce and implement useful projects. Students need to be using technology across all subjects in order to obtain information technology skills, but will be able to use the skills to think, research and learn (Boone, 2009). "The No Child Left Behind Act mandates that each student be technologically literate by the eighth

grade and requires states to report proficiency levels to the federal government" (p. 68). Students must be actively engaged in rigorous and focused learning using the technologies of today to be creative critical thinkers.

ChanLin, Hong, Horng, Chang and Chu (2006) state that the use of technology has become a new trend for learning. In disagreement, rather than a trend, it is a curricular standard and benchmark that is here to stay. Whether teachers have accepted the logic for using technology in the classroom or not, the evidence is clear: students in today's society need to be technologically literate. Teachers from this study stated that they would be willing to accept an incentive: to invest more time in learning how to be creative with technology if class hours towards seminars (outside of work) could be reduced. Also, teachers who are working as a team will be more willing to use technology than if working individually.

Factors that contribute to benefits from technology in K-12 education

There is an obvious divide regarding the availability of technology between institutions that have it, and those that do not have the funding to acquire it. There is also a gap between the availability of technology at school, and the lack of technology in the students' homes. There also exists and issue of the obvious gap between the technical knowledge that some teacher do and do not possess in many schools across the United States.

Sandholtz and Reilly (2004) argue that if teachers are able to focus on the development of their curriculum, teachers are likely to effectively and creatively use technology without having to worry about the expectations of technical skills. By reducing these technical expectations, teachers can enhance their instructional use of

technology effectively. Personal technical skills are also a must to using technology as a teaching tool before trying to implement it into the classroom. If teachers' expertise is limited, then their ability to use it in the classroom is limited. When teachers expand their use of technology, such as their knowledge on literacy and math software programs, they become common and known. The students in this study became more involved in the creation of their own material, and using the Internet as a source. They have been able to use the Internet for research, and communicate with other students through email, use digital cameras. Their peers have been able to critique their work online, and also use presentation software to create their own books. In addition, subject content and curriculum are most significant with technology to support learning objectives.

Hew and Brush (2007) focused on strategies to overcome the barriers or factors that impede the use of technology. They discovered ways and ideas to overcome the lack of technology and access to technology, the lack of time and technical support. They also focused on technology integration plans, and the attitudes and beliefs of the teachers. Certain solutions included creating a technology setup in classrooms that involved more economical computer systems, having a shared vision, and provided professional development to name only but a few. When these barriers are overcome, technology can be successfully integrated into the curriculum.

Another factor that is a huge issue is the availability of technology to teachers. Norris, Sullivan and Poirot (2003) summarized their findings on the technology usage in K-12 schools, the access to computing technology between teachers and students in schools across the United States, and the relationships between the access to technology and its use by the teachers and students. Technology access and use was the largest issue

and predicted the technology uses of teachers were measures of the access and availability. The authors believe that certain people that do not support technology and its use to improve instruction are for the wrong reasons. If technology has not had a positive impact on teaching and learning, it is only because of the lack of technology access. It is predicted that if the access to technology is increased, technology will have a significant and positive impact on teaching and learning within the classroom.

Reinhart, Thomas and Toriskie (2011) found that students in low socioeconomic conditions were likely to be taught by teachers by a simple means of technology, whereas more prosperous schools had more support from teachers that integrated technology and helped develop higher-order thinking skills. The biggest concern was the availability of technology and how the technology was not being used in the most extensive way. The authors believe that it is imperative that teachers receive ongoing professional development. As education changes, so does the need for learning of new technology usage. The most important focus is the integration of technology and to promote higher-order thinking skills. The authors believe the school districts should support teachers with support and training which can improve these foci.

These barriers and factors, when overcome can result in an optimal increase in technological knowledge for both students and teachers. "The skilled technocrats of the future reside in the pool of students being taught today…. and will provide the leadership in a technological world that demands highly developed critical thinking skills" (Reinhart et al., 2011, 191). Sadly, the study demonstrates the minority of students, as teachers from schools that struggle with resources do not promote higher-order thinking skills with the use of the integration of technology.

Successful teacher professional development for technology integration

Before any implementation of any technological programs within the classroom, the educator needs to know how to use technology effectively within the classroom. Many teachers receive professional development within their schools, to keep up with the times, and provide the most up-to-date knowledge of certain software as well as technological devices. Some teachers do not feel as comfortable using technology in their classroom and often seek the advice from their coworkers, or sometimes refuse to incorporate technology. With the proposal that technology will increase literacy among struggling readers, it all begins with instruction, and how it is taught. The most important place to begin is teacher preparation (Karchmer, 2001).

Many teachers may have numerous years of teaching, but have limited experience incorporating technology into their everyday routines and practice (Marino, Black, Hayes & Beecher, 2010). This author believes that the teachers' content knowledge many not have a positive effect on student achievement, but the interactive nature of technology and how it enhanced the curriculum. The authors found that interactive, hands-on materials improved the reading performance in struggling readers, particularly those with reading disabilities.

Trained specialist teachers may be able to provide training to their coworkers. In a rural area of the United States, a group of at risk academic children were studied who were found to be in high poverty areas and isolated geographically. Studies have shown that these children can be helped by further helped more explicitly outside of their regular classroom (Vernon-Feagans, Amendum, Kainz & Ginsburg, 2009). Evidence was

provided that a trained specialized teacher could improve the reading outcomes in the students.

Vernon-Feagons, Kainz, Hendrick, Ginsberg & Amendum (2010) propose that by emphasizing the development and evaluation of professional development programs for teachers, it will improve the reading and instructional practices in students. Intense training programs for teachers "learning while doing" can produce more knowledge and practices in teachers. Children who were impaired readers could be helped by the classroom teacher with the consultation from research staff (Speece, Case & Malloy, 2003).

A study was conducted where students received instruction through face to face meetings for three days, then biweekly meetings through the use of technology. A laptop computer and webcam were given to each experimental teacher who received instruction and training from a TRI (Targeted Reading Intervention) consultant (Vernon-Feagans, Amendum, Kainz & Ginsburg, 2009). This real time instruction helped the teacher and student deal with the issues at hand. The intervention was cost effective, and was just as effective as face to face consultation when teaching letter-word identification and Word Attack. This professional development via webcam every two weeks was effective in helping the teacher, and aiding the struggling reader.

Students' use of technology that improves learning

In a small rural school in Byron Center, Michigan, NWEA testing is administered. This is a computerized assessment taken 3-times-a-year. Significant gains in both language arts and mathematics have shown dramatic improvements in test scores in both

of these areas. Prior to these assessments which are given early fall, winter and spring, the educator has promoted the use of technology in her room which is used daily.

Crossman (2012) speaks of a child who gained from technology in a holistic way which compares very closely with some autistic children in a first grade classroom at St. Mary's Visitation School in Byron Center, Michigan. He explains that by using all her senses, this student uses technology to help her. When beginning kindergarten, she did not know how to read or write. The message to her from the school was, "Since you don't know how to read or write yet, Jessica, you really don't know anything of value, you have no useful cognitive skills, and you have no real ways to process the experiences and/or the data that enter your brain through your senses…" (p. 49). This school did not focus on all her senses simultaneously, she was only able to use her sight, "and instead of experiencing information interactively – as a two way street that she could change by using her interactive technologies – she was going to have to experience information as a one-way street: by absorbing the text in front of her without being able to change it. This is a perfect example of why a mainstreamed school needs the hands-on technological learning – to help children like Jessica. It is schools like this one that would be a detriment to all children who have these special needs or struggle with literacy.

Fang (2006) discusses the importance of helping struggling elementary and secondary students develop literacy skills and motivation. Many computer related technologies include creating photo journals supporting phonics, virtual guided oral reading practice, hypertexts to study different stories and texts, and using live video chats. Software such as Inspiration is used to help organize information, and the use of handhelds can help record and chart data which is observed and animate cell structures in

science called ‘Techno Books.’ There is a focus on reflecting on the meaning of literacy today, and how new technologies can be used to impact the development in areas of word recognition, fluency, comprehension, vocabulary, reading and writing across the curriculum. Students are able to develop literacy, writing skills and motivation in a computer-related technology environment.

Craver and Burton-Radzely (1998) state that in using technology to promote literacy, a national survey of special educators believe that:

> Across the board, interviews state that technology allows students with disabilities to accomplish things they otherwise could not do without difficulty, or could not do at all. They say that technology increases students’ access to educational material and helps develop literacy skills. It motivates students to learn, increases ability to focus on material and improves student attention span. Technology also increases task completion, eases teacher monitoring demands, and raises the level of student independence. (pgs 16-17).

On the flipside, a study conducted by Slavin, Lake, Davis and Madden (2010) found that technology had minimal impacts on struggling readers. Computer-assisted instruction software and modern instructional technology did not benefit children’s specific needs in reading. They recommended that programs should provide extensive professional development for teachers and are more effective than programs that provide technology and other involvement that do not change the daily teachings of teachers.

Fasting and Halaas Lyster (2005) found that by using MultiFunk, a computer program to assist reading has the capability to support the development of literacy skills in a vast group of struggling readers and spellers. The teachers came to the conclusion

that the struggling readers needed supporting dialogue to understand what reading strategies they possessed. The authors of this article also found that the results do not suggest that the computer technology they used was effective without the support of a teacher.

Project-based activities that incorporate technology

Dow (2007) discusses that with the help of a library media specialist, educators can discuss plans to integrate technology into the curriculum. Students can become knowledgeable in learning how to locate and evaluate information that they search for and become independent learners. Students can also control their own learning and solve problems. This can be conducted through project-based learning activities, which are assessed after a one page contract is signed by teacher and student stating that the activity is both information and technology literate. This learning activity can be electronically stored for review and assessment. New learning outcomes for students include blogging, wikis and podcasting if students and teachers what to stay current with Web-based communities. The information retrieved by the student can be shown in different activities that are presented in an exhibit, library media center, or Web-based resources.

Karchmer (2004) argues that school may be the only place students have access to the Internet, so it is imperative that they receive the biggest opportunities during the school year to interact with it. The Internet may also be the most powerful classroom tool giving students unlimited libraries, and connections to the curriculum and the real world. Collaborative Internet projects are used which connect classrooms all over the map. Students share their findings via the Internet through essays, book reviews, poems, and other written work. Technology has to be taught in a meaningful way which will

stimulate student thinking or support background knowledge, and used "as a tool for achieving higher-level thinking and a means of supporting background knowledge" (p. 333).

In West Virginia, the West Virginia K-8 techSteps Technology Literacy Initiative, a project based approach, was implemented. This aligns with the National Educational Technology Standards. This approach includes technological activities for each grade level, and aligned with their curriculum. Technologies, such as the Web 2.0 tools were used to elaborate what students learned (Boone, 2009). Students created digital stories that could be used for personal narratives or for history units. Students build on their own knowledge and experiences and monitor their own learning by using rubrics. Students are very successful being able to communicate and collaborate certain technology concepts.

Some other forms of project-based learning can be with the creation of a WebQuest, which is an inquiry-based lesson in which learners obtain information mostly or completely from the Internet. Some students in West Hartford, Connecticut created graphic organizers to share their ideas and plans for their WebQuest. A technology literacy teacher and library media specialist help the students learn how to evaluate Web sites. Students were required to learn Microsoft FrontPage, and to select media from different sources. These students also used a rubric to self-assess themselves based on content and design (Van Leer, 2003). Using course outlines, this unit was also tied to their curriculum standards, was differentiated for each student, and fostered much creativity, planning, and critical thinking.

Technology is shaping peoples' lives and could be a key role supporting development of critical thinking in today's classrooms. Given the adoption of Common Core State Standards (CCSS), technology is not being taught as subject, but is incorporated into CCSS in the classroom. Students are expected to express themselves using digital literacy and technology is also integral to conceptions of literacy with the use of adaptive testing such as the Smarter Balance assessments. The use of technology is definitely where the future resides.

Project-based activities that will increase literacy

With a strong emphasis on hands-on technological activities, struggling readers who have not been diagnosed will increase their literacy rates after working on project-based technological activities within a mainstreamed classroom. They will have the chance to use student centered projects that will include use of the Internet, self voice feedback intervention programs, e-readers, digital games, WebQuests and SmartBoard activities. By using pre and post literacy assessments, I will hopefully be able to know where the students skill levels are, and observe the growth of the students' word recognition, phonetics, comprehension, and fluency. These project-based learning activities that I will create will be at their instructional reading level. I believe that working with peers, in collaborative groups will foster a greater motivation for learning. I will also use independent activities and assignments which will hone in on different key skills such as reading response journals.

Summary

Research shows that technology is a fundamental part of education in today's world. Much emphasis is put on creating critical thinkers and preparing students to

evaluate and synthesize innovations based on information that they have collected through a classroom setting. Technology is not only seen as a tool, but a means by which student's of today's world grasp concepts with greater interest. Students today have the potential and ability to work at a quicker and faster pace. Educators need to be capable to challenge students and enrich, empower and nurture what is already evident and existing in today's time. The growth of technology has grown much over the years and teachers who have been in the work force for many years need to be one step ahead of what these students are already aware and capable of. By removing technical issues, and focusing on the curriculum and materials that need to be taught, it is imperative that educators maintain their professional development. Where socioeconomics are an issue, it is the district that needs to step up and support educators and provide students with the knowledge that the No Child Left Behind Act instituted.

Teachers should be capable of educating the students in a creative, engaging manner, and to provide a learning environment that is conducive to all learners. By using project-based differentiated activities, all students may be successful, creative, innovative, and engaged. This will allow for the natural growth and development of their literacy skills which includes fluency, word recognition, phonetics, and comprehension.

Conclusion

Based on the results of these studies, I will be creating project-based activities for students in my first grade, general education classroom. These activities will be student-centered and focus on critical thinking skills, as well as to build on previous knowledge, promote classroom dialogue, and focus on lower elementary literacy skills. These activities will hopefully encourage students and foster confidence and engagement. The

students will hopefully show growth in their literacy skills after being immersed in this unit of study.

Chapter 3

Project Description

Introduction

This project explores what needs are to be met in order for struggling readers to be successful with their literacy in inclusive traditional classrooms. There is a need in education for remedial differentiated project-based activities that incorporate the use of technology. Those students that have not been diagnosed with a learning disability but struggle with literacy can benefit from differentiated project-based learning by increasing their literacy rates. Technology provides opportunities to experience literacy instruction that extends to what is taught in a traditional all-inclusive classroom.

Within this chapter the components and a description of the literacy/technology unit and lessons will be presented. Evaluations of the unit are also included and will be shared with staff and administration.

Project components

Project plans

Students begin the school year being taught our school reading and writing program which consists of Houghton Mifflin reading series and a writing workshop written by Deanna Jump and Deedee Wills. Within the reading series, there are different ELA components which consist of daily phonemic awareness, morning message, writing prompts, phonics and fiction and non-fiction articles which are the focus for the week. In addition, I created a differentiated unit where the students are able to work to the best of their ability at an instructional level. These activities focus on reading, prewriting/writing skills and other creative, hands-on projects.

Participants

This project will be implemented in my first grade classroom at St. Mary's Visitation School starting the fall of 2014. Both males and females will participate in the

study. After NWEA testing and DIBELS Next testing, students will be diagnosed as above level, on level or below level readers. Convenience sampling will also be used after observing one-on-one teaching/learning during guided reading time, as well as administering running records to determine their reading level. This is appropriate as in the past, I have noticed differences in student ability and as a teacher, I want to make sure they are off to a good start at the beginning of the year.

Technology used

Within St. Mary's Visitation School, each classroom is equipped with one SmartBoard, one document camera and one classroom computer. There is a computer lab which consists of 15 desktop computers. For the purpose of this unit, much of the lessons will be conducted in the computer lab. In the lab there is also a projection screen hooked up to a "teacher computer" where lessons can be explained and modeled.

Students will become familiar with different types of technology throughout the year which will consist of the usage of Kidspiration software, the Internet, digital games, WebQuests and SmartBoard activities. Prior to this unit, students will gain familiarity with Kidspiration software. Kidspiration combines pictures and text to create graphical organizers. It helps develop vocabulary, recognition of words, reading comprehension and helps build writing and critical thinking skills.

Students will use the Internet by selecting links for their animal searches, and later on in the year for a WebQuest unit. SmartBoards are integrated throughout the curriculum in all subjects, but the focus in this project will be during language arts. I use many lessons from SmartExchange to enhance areas of studies and to motivate and

engage students. During lab time, students will also have opportunities to use educational websites to challenge their current reading skills.

Unit outline

The first couple weeks of school are spent focusing on getting to know each other in class. It is important for students to feel comfortable in the environment that they are learning in. Prior to the beginning of this unit, students will gain familiarity with Kidspiration software. Kidspiration is very easy for students to manipulate. Graphic organizers can be created by adding text or drop and dragging clip art. When clicking on "Writing View," the text or clipart is changed into an organized list where students can expand their ideas. It also has interactive whiteboard support. This software is very appropriate for our goals of this unit. Students will utilize an "All About Me" graphic organizer (see Appendix A) which allows each child to drop and drag images into different categories that identifies who they are, and what they like to do. After modeled on the SmartBoard projector, and after receiving assistance from me, the class will work individually in the computer lab and complete the graphic organizer, print out a copy and share their organizers with the class. During the prewriting phase, students are able to graphically create webs to organize their ideas. They are able to insert pictures and/or text depending on their skill and/or literacy level. The point to using this software is to understand how to manipulate the software, and have students engaged and excited about reading and writing.

This unit contains some project-based activities, as well as whole group activities which will be teacher led. This unit consists of approximately three thirty-minute lessons a week in addition to morning routine phonics/phoneme work. The project-based

activities will give students choices in developing their own creativity and understanding by synthesizing their own products. These assignments are differentiated and focus on multiple intelligences and 21st century literacy skills. Students are encouraged to be creative, critical thinkers, to communicate, use different types of technology, and relate their experiences to themselves and their world.

The first portion of the unit will focus on a character education theme. With the anti-bullying policies that have been implemented in schools and other issues treating others the way we'd like to be treated, I thought it would be a good idea to start the year off reading *The Rainbow Fish* by Marcus Pfister. With using the theme of this book, and with the use of technology, our class will cover phonemic awareness, sight word recognition, and constructing sentences. Our morning routines focus heavily on phonics, phonemic awareness and high-frequency/sight words from our reading series.

After reading *The Rainbow Fish*, the class will discuss what they understood from the book. Using the SmartBoard, and Kispiration software, the class and I will create a web which will identify different adjectives given by the students that describe the Rainbow Fish. We will also go through the book again together and identify specific words with specific letter patterns.

In our reading program, there is much emphasis on phonemes and sight word recognition. Our sight words for the week will be created into a SmartBoard memory match activity that the class can work on all together as a group each morning, given that our class is very small.

The class will go to the computer lab three times a week for thirty minute periods during the first week and create a graphic organizer using Kidspiration. A premade

beginning, middle and end template is available for students. Students will work on this activity in pairs. They will be able to retell this story including the beginning, the middle, and the end of the story using a graphic organizer so they may increase their oral language and reading comprehension skills. I will reread the story to the class and show the pictures as I go through a quick retell by using the words beginning, middle and end. Working in pairs, they will select the appropriate graphic organizer and drop and drag their pictures to the appropriate areas. If students are able, a differentiated approach would be also to include labels and/or short sentences. After they complete their sequencial graphic organizer, they will use what they learned to create a visual retell of the story and talk to one another to help each other.

The following week, in addition to the daily routines including phoneme, phonics and memory match game, students will create a rainbow fish out of different materials such as paint, paper, glitter and foil. They will take a digital picture of their fish using my iPad, and print them out with my assistance. Students must find 5 adjectives that describe their fish and write them on their printed copy. Their creative fish will be displayed in the hallway along with their digital copy. I will upload their digital pictures onto the computers in the lab for later use.

The third week in the computer lab, in addition to the daily routines including phoneme, phonics and memory match game, I will provide a hotlist of different websites that students may use to find interesting deep sea creatures. With a partner, students will find an interesting fish and write down 3 interesting facts about their special fish. The groups of students will be conveniently paired by the teacher. Students will use the

projector in the lab with my assistance to present their sea creature and their favorite facts.

During that same week, students will be paired in groups of 3 or 4 and create props for their role-playing activity. They will be responsible for creating a new ending to the story of *The Rainbow Fish*. A block of class time will be given for creating props, and a block of class time for creating and writing their skit. Skits will be video recorded. Different classes will be invited to watch these videos in the first grade classroom.

During other times of the day at the discretion of the teacher, students are able to use the listening station to read audio books which include books that focus on respecting others.

- *Have you Filled a Bucket Today* by Carol McCloud
- *Rainbow Fish* by Marcus Pfister
- *Chester's Way* by Kevin Henkes
- *Frog and Toad are Friends* by Arnold Lobel

To culminate this unit, in the computer lab, students will copy and paste their "*Rainbow Fish* creations" that they took with my iPad, and that I previously uploaded into a common folder. They will use a Microsoft word document to create a poster. I will model this using the "teacher computer" in the lab on the projector. They may be creative as they wish with their poster, but must include their picture and other sight words and appropriate adjectives for their fish. Students will be able to write creative sentences about their special fish.

Pairing the morning routines of daily phonemic awareness, phonics, and sight word memory on the SmartBoard with the differentiated *Rainbow Fish* projects based on

students' instructional level, students hopefully will find success in reading, prewriting/writing skills and other creative, hands-on projects.

In addition to this unit, ongoing assignments during the year will focus also on online literacy games. I have found that websites such as www.starfall.com and www.funbrain.com can be fun yet educational. Starfall has differentiated literacy games. During our lab time, I would like to use these websites between our Kidspiration and WebQuest units. These websites are also encouraged to be used at home.

Assessment

By using pre- and post-literacy assessments such as NWEA and DIBELS Next, I will hopefully be able to know where the students' skill levels are and observe the growth of the students' word recognition, phonetics, comprehension, and fluency. These project-based learning activities will be at their instructional reading level. I believe that working with peers, in collaborative groups will foster a greater motivation for learning. I will also use independent activities and assignments which will hone in on different key skills such as reading response journals.

Each assignment will be submitted, informally assessed by the teacher and put into a student portfolio. After the completion of the activities, the portfolio will be marked as complete vs. incomplete based on each task. Each student will receive continuous feedback during the completion of each project.

Project objectives

The main goal of this unit is to increase literacy in struggling readers in my classroom. In order for this unit to be successful, students need to be actively engaged. Upon the completion of this unit, the following objectives and standards will be met:

First Grade Michigan Grade Level Expectations

Word Recognition

- **R.WS.01.07** use strategies to identify unknown words and construct meaning by using initial letters/sounds (phonics), patterns of language (syntactic), picture clues (semantic), and applying context clues to select between alternative meanings

Comprehension

- **R.CM.01.01** make text-to-self and text-to-text connections and comparisons by activating prior knowledge and connecting personal knowledge and experience to ideas in text through oral and written responses

Writing Genre

- **W.GN.01.01** write a personal narrative using illustrations and transitional words such as before, after, now, or finally to indicate a sequence of events, sense of story (beginning, middle, and end), and physical descriptions.

Writing Process

- **W.PR.01.01** with teacher support, set a purpose, consider audience, and incorporate literary language when writing a narrative or informational piece; begin to use specific strategies including graphic organizers when planning.

Writing Attitude

- **W.AT.01.01** be enthusiastic about writing and learning to write.

ISTE Technology Standards

1. Creativity and innovation-Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

2. **Communication and collaboration**-Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

3. **Research and information fluency** - Students apply digital tools to gather, evaluate, and use information.

4. **Critical thinking, problem solving, and decision making**- Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

5. **Digital citizenship -** Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

6. Technology operations and concepts - Students demonstrate a sound understanding of technology concepts, systems, and operations.

Common Core State Standards for Michigan, Grade 1:

Reading Standards – Informational Text

6. Distinguish between information provided by pictures or other illustrations and information provided by the words in a text

7. Use the illustrations and details in a text to describe its key ideas

Production and Distribution of Writing:

6. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences

Research to Build and Present Knowledge

7. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

With this project I hope to increase student literacy scores on the NWEA and DIBELS Next assessments. I also want to see reading and writing improvements. When actively engaged in fun, educational, technological projects, I hope to see visual improvements through daily classroom observation.

Not only do I hope to increase literacy rates, I hope to see that students will know how to operate the basic functions of a computer, and how to convert their organizer into a narrative writing piece. Students will know how to present their work to an audience and be enthusiastic about reading and writing, and learning to write.

Project evaluation

Data collection and instruments

After gaining familiarity with the Kidspiration software, SmartBoard memory, and taking digital photos, students hopefully will be able to create their own products with ease. This unit portion will be covered in the fall. Other activities such as

WebQuests, other SmartBoard activities and Internet usage will also play an important part in the success and implementation of this unit.

After the activities are completed, I hope to see 95% of struggling readers increase their NWEA and DIBELS Next reading scores. Students are tested at the beginning of the school year, in the winter, and again in the spring with both assessments. I hope to see this 75% increase in test scores when the winter assessments are taken. The NWEA assessment is a computerized, adaptive assessment, whereas DIBELS Next is a reading assessment that focuses on phonemic awareness, nonsense words and fluency, and is a one-on-one assessment with the teacher.

Ongoing student/teacher conferring will occur frequently to ensure the students are on the right track. Observations made through our guided reading groups will also measure increases in literacy in regards to sight word recognition, decoding strategies, and fluency.

Data analysis

I will analyze the data provided by NWEA and DIBELS Next assessments three times a year – the beginning of the year, winter, and spring. The data of each student is recorded online. Data is constructed into linear or bar graphs to easily view student achievements (see Appendix B). The data is a qualitative numerical data which displays the student score, district grade level mean, and the norm grade level mean. Initially, analysis of data can be made after comparing the beginning of the year scores and winter scores. Data will also be collected after the end of the year assessment to show the academic growth of each student throughout the whole year. I will be able to hopefully conclude that project-based lessons such as Kidspiration, WebQuests, and educational

Internet games will improve struggling students' literacy by observing increases in their scores.

Implementation issues

Using technology can have its limitations. Some factors that may hinder the success of this unit are the ability and training that a classroom teacher would receive. I am very familiar with Kidspiration, WebQuests and educational games, and I think the students in my class would benefit greatly. We would run into problems where we would have classroom guest teachers filling in, or students moving on to other grades where they wouldn't be receiving this type of helpful technology.

St. Mary's receives many donations from parents and the community as funding is limited to purchase technological equipment. I would hope that we could stay current with our software and hardware as things become outdating and need to be replaced so often.

With the school being in a rural area, there are often issues with the wireless internet in the school. In the past, the internet has stopped working in the middle of online MAP testing, so there have been delays in obtaining test scores. This may hinder the effectiveness of the project based learning activities if this was to occur. Also, without support and resources from school administrators, including time and access to technology, a project like this one may not be successful.

Reserving access to the computer lab may be another challenge, as it is available for other classrooms as well. It would be a good idea to have a computer schedule mapped out for each classroom.

Plans of implementation

One thing that I feel strongly about is keeping current with technology and also being competitive with surrounding public schools that excel in all academic areas. Being a small rural school, we as a staff need to demonstrate that we are striving to be the best educational institution in the surrounding area. With a school improvement plan in place, we will be working on goals for the next upcoming school year to improve our technology, science and social studies material. This past year we purchased Common Core reading and math materials and the MEAP scores reflected much growth over the last year. Next year, I will be teaching a first and second grade split. Knowing all the abilities of my previous first graders, I want to implement technological project-based learning to build on previous skills and help struggling readers grow in their potential abilities. The research I have found within this project and other reading of interest solidifies my knowledge and I am very convinced that I will find success in the growing achievement of my students after implementing this unit.

I plan on sharing my lessons and findings with my colleagues. We meet every Monday after school. I hope to give them bi-weekly updates on the success of my unit. I want to explain why I find it important to implement technology, and explain how I am using it in my class. I will explain what the lessons look like, and how it is important to give choice given the different types of learners we have in our classrooms. It is my goal that other teachers will choose to implement technology in their rooms too. Of course, activities can be made to be grade specific, and focus on what the teachers may be currently teaching at the time. I would like to demonstrate my students' improvements not only through the NWEA and DIBELS Next assessments, but by small anecdotal

records while observing them working on this unit, and also how their literacy will hopefully show increases during their guided reading time.

Parents will be notified on the assignments we will be working on, and how we are using technology to enhance and integrate it into the curriculum. I want parents to understand that their children are not necessarily in front of a computer screen all day, as it is not the case, but instead will be using digital means to explore and be creative. Students will be able to explain to their families what they are doing in class, and how they feel technology has empowered them, and their literacy skills have shown exceptional growth.

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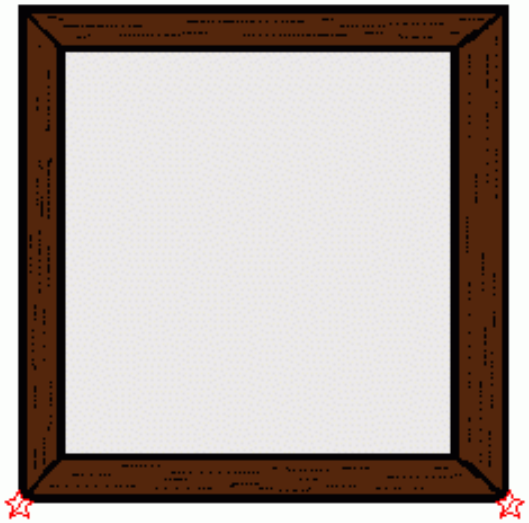
Appendix A

Kidspiration Graphical Organizer

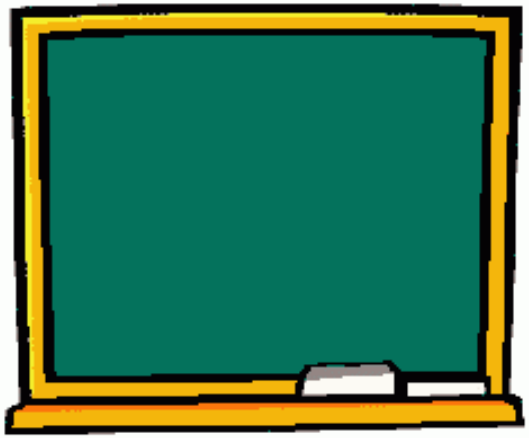
Me



1 Use pictures and words to tell about yourself.

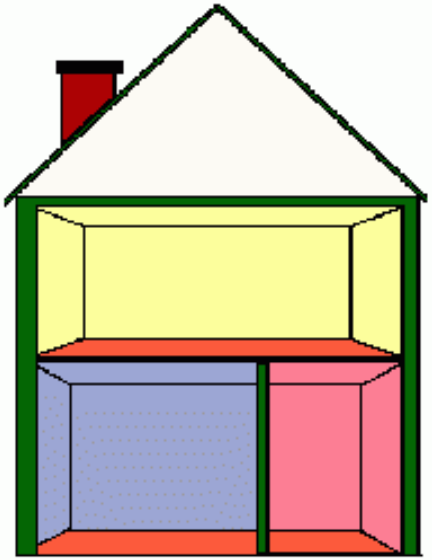
2 Go to Writing View and add a sentence for each idea.

School

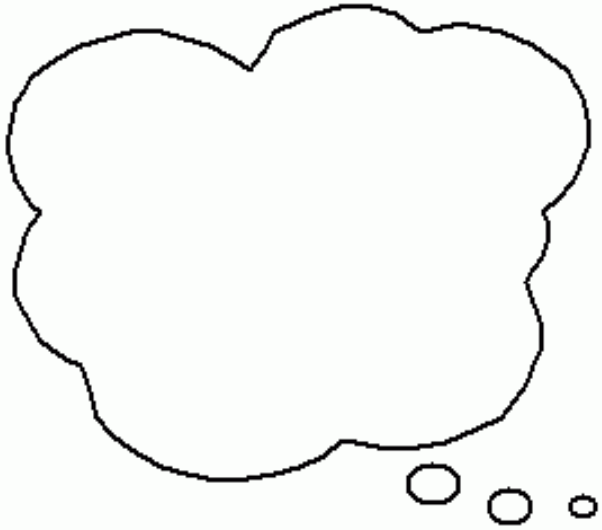


Things I like

Home



Things I'm good at

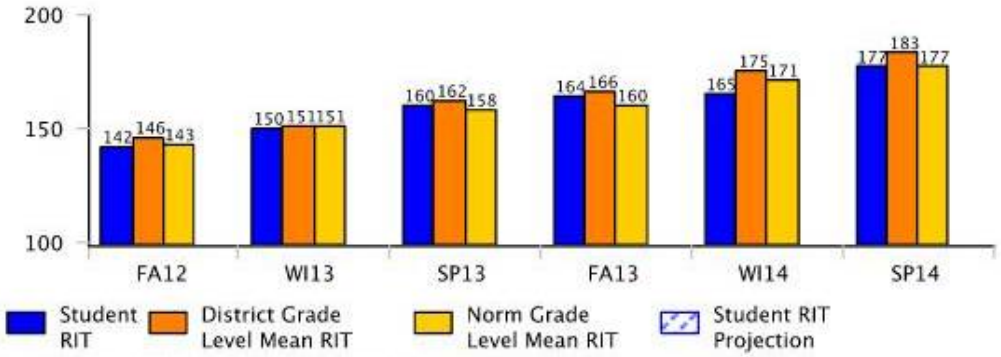


Things I don't like

Appendix B

Example of NWEA Assessment

Reading



Term/ Year	Grade	RIT (+/- Std Err)	RIT Growth	Growth Projection	Percentile Range
SP14	1	174-**177**-180	13	17	42-**50**-58
WI14	1	162-**165**-168			26-**33**-42
FA13	1	161-**164**-167			52-**61**-70
SP13	K	157-**160**-163	18	15	48-**58**-67
WI13	K	147-**150**-153			36-**46**-57
FA12	K	139-**142**-145			37-**48**-59

Reading Goals Performance - Spring 2013-2014

Foundational Skills	LoAvg	Language and Writing	Avg
Literature and Informational	Avg	Vocabulary Use and Functions	HiAvg
Lexile® Range	87-237L		

GRAND VALLEY STATE UNIVERSITY
ED 693/695 Data Form

NAME: Katherine Fredrickson

MAJOR: (Choose only1)

_____ Adult & Higher Education	_____ Educational Differentiation	_____ Library Media
_____ Advanced Content Specialization	_____ Education Leadership	_____ Middle Level Education
_____ Cognitive Impairment	X Educational Technology	_____ Reading
_____ College Student Affairs Leadership	_____ Elementary Education	_____ School Counseling
_____ Early Childhood Education	_____ Emotional Impairment	_____ Secondary Level Education
_____ Early Childhood Developmental Delay	_____ Learning Disabilities	_____ Special Education Administration
_____ TESOL		

TITLE: Improving Literacy Through the Use of Technology for Struggling Students

PAPER TYPE: (Choose only 1) **SEM/YR COMPLETED:** _____

__X__Project

_____ Thesis

SUPERVISOR'S SIGNATURE OF APPROVAL_____

Using key words or phrases, choose several ERIC descriptors (5 - 7 minimum) to describe the contents of your project. ERIC descriptors can be found online at: http://www.eric.ed.gov/ERICWebPortal/Home.portal?_nfpb=true&_pageLabel=Thesaurus&_nfls=false

1. Literacy
2. Technology
3. Project-based learning
4. Struggling readers
5. Kidspiration
6. Differentiated learning
7. Mainstreamed classroom
8. SmartBoard
9.
10.