

A Grant Proposal to Study the Benefits of  
Reading Software for Students with  
Reading Learning Disabilities

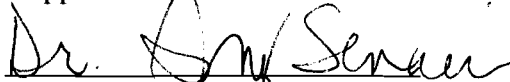
by

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ABSTRACT

This grant addresses the need for a service delivery model to bring assistive technology into the secondary classroom in order to improve student achievement, assessment and independent living skills of students who have reading learning disabilities. The goal is to establish a mobile assistive technology program at the secondary level to provide teacher, student and parent training, and to expand research on successful models for implementing assistive technology. The grant funding will be used to purchase assistive technology equipment, train teachers, involve parents and collect and report data. Achievement data and teacher, parent and student pre and post surveys will be collected and evaluated to determine the success of the program. Results of this program will be disseminated to the grant foundation and professional organizations in special education, learning disabilities, and technology. The grant proposal outcomes

improve competencies of students with reading learning disabilities and enhance the professional development of special education teachers.

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## Chapter I: Introduction

Fifty percent of students receiving special education services through the public schools are identified as having learning disabilities (*24th Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, 2002* as cited in National Center for Learning Disabilities Fact Sheet). The majority of all individuals with learning disabilities have difficulties in the area of reading (*President's Commission on Excellence in Special Education, 2002* as cited in National Center for Learning Disabilities Fact Sheet). Reading is critical skill that students must master to academically successful. Failure to obtain this skill increases the student's risk for dropping out of school and being unemployed as an adult.

The following example demonstrates how a student with a learning disability may read this sentence: The purpose of this project is to provide assistive technology to students with reading learning disabilities.

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 Thed      hisq      odroviqe a      noloby      ents  
 mith      isapiiities.  
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A person without a disability finds the above task to be discouraging, impossible and hopeless. New techniques in brain imaging has produced an abundance of evidence to supports a neurobiological basis for reading disabilities (Miller, Sanchez, and Hynd 2003). These differences prevent students with reading disabilities from processing information in the same way as their peers and make reading an almost impossible task.



Despite early intervention efforts many students reach middle and high school several grade levels behind. Once a student reaches the upper grades the difficulty of reading material increases and reading becomes essential to access content knowledge. Students with learning disabilities have the capability to comprehend information in texts but because they are unable to decode the individual words they are unable to access information from text. As a result the student not only fails meet grade level reading expectations but falls further behind their peers in other subject areas. Repeat failures to meet grade level expectations because they cannot read even though they have significant knowledge of the subject area leads to frustration, low self esteem, high drop-out and limited post-secondary options.

Students with learning disabilities are eligible to receive special education services where they often receive intensive remedial reading instruction that results in only marginal success. Unfortunately this success is not enough to meet the rising demands of the *No Child Left Behind* that requires all students to meet state determine proficiency standards. Without the proper resources students with reading learning disabilities may never be able to read at their grade level. Requiring students with learning disabilities to read without assistance is like requiring someone who can't walk to travel a mile without a wheel chair.

The technology discussed in this proposal has the potential to increase proficiency of these students, improve students' access to general curriculum, accurately assess their abilities, provide students with independence in reading, improve students' self concept and expand their post secondary opportunities. The technology discussed in this proposal is text to speech programs, specifically Kurzweil 3000 screen reader. Kurzweil 3000 is a

computer software program that has the capability to recognize text and convert it to speech. Despite the potential of this technology, research is lagging on the best the practices for implementation of this technology in schools to students with reading learning disabilities. This proposal address barriers to implementation of these technologies including 1) teacher mindset 2) availability and high cost of assistive technology 3) eligibility 4) teacher training 5) student abandonment of technology (Mull 2003). This proposal strives to overcome these barriers to create a model that could be replicated by other schools.

### ***Statement of the Problem***

The educational needs of students with reading learning disabilities are not being met. Assistive technology that reads texts to students could significantly improve school performance and expand students' with reading learning disabilities post secondary opportunities. Current educational research has not yielded an effective method for delivering assistive technology services to these students.

### ***Purpose of the Proposal***

The purpose of this proposal is to obtain the financial resources necessary to develop an effective model for delivery of assistive technology to secondary students with reading learning disabilities.

### ***Assumptions***

This proposal is written in response to a request from the Learning Disabilities Foundation of America. (Appendix B) At this time, there are no plans to submit the proposal for funding so the grant is being written for a hypothetical middle school special education program.

### ***Definition of Terms***

*Assistive technology:* Part A Sec 602(1) of 1997 IDEA act defines assistive technology as “any piece of equipment or product system... that is used to increase, maintain or improve functional capabilities of individuals with disabilities.”

*Learning Disability:* Definitions of a learning disability vary among sources. Donald Hammill compared various textbook, government and private organizations definitions of learning disabilities. He concluded through his analysis that the National Joint Committee on Learning Disabilities is the closest definition to becoming the consensus definition in the literature on learning disabilities. In 1988, the NLCLD (1988) defined learning disabilities as:

“*Learning disabilities* is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and used of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social perception and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbance) or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions of influences.” (Hammil, 1990, p.77)

*Reading learning disability:* Current literature on reading disabilities varies greatly as to what learning problems constitute a reading disability and how reading disabilities should be assessed. For the purpose of this proposal reading disabilities characterized by an unexpected difficulty in reading in children and adults who otherwise possess the intelligence, motivation, and education necessary for developing accurate and fluent reading (Shaywitz, 2004). These difficulties are normally characterized by difficulties in reading and spelling, but also include difficulties with phonemic segmentation, rapid and automatic recognition and decoding of single words, articulation, and anomia (Miller, Sanchez, and Hynd, 2003).

### ***Methodology***

Chapter two will review current literature in the fields of reading instruction, reading learning disabilities, and assistive technologies in order to greater clarify the need for assistive technology funding. This chapter will address the historical, philosophical, financial and technological barriers that have previously prevented the use of assistive technology by students with reading learning disabilities. Chapter three will discuss the grant project's goal to create a mobile assistive technology lab and training program that will serve as a model for future assistive technology programs. Chapter four will address the implementation of the grant. This chapter will include timeline, budget, evaluation and dissemination plans.

## Chapter II: Literature Review

This chapter will discuss current knowledge in the fields of learning disabilities, reading instruction, and assistive technology. In the area of learning disabilities this chapter will examine the school performance of students with learning disabilities, the impact of school failure, and the neurological origins of reading disabilities. This chapter will also summarize the issues related standardized assessments for students with reading learning disabilities. In the discipline of reading instruction, this chapter will scrutinize current literature and educator practices for struggling readers. Finally this chapter will analyze the barriers that have limited the use of assisted technology, the need for research in the use of assistive technology for students with reading learning disabilities and the potential success of assistive technology for students with reading learning disabilities.

### ***School Performance***

Nearly 2.9 million students are currently receiving special education services for learning disabilities in the United States. Learning disabilities account for fifty percent of students receiving special education services through the public schools (*24th Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, 2002* as cited in National Center for Learning Disabilities Fact Sheet). The majority of all individuals with learning disabilities have difficulties in the area of reading (*President's Commission on Excellence in Special Education, 2002* as cited in National Center for Learning Disabilities Fact Sheet). Despite legislation designed to increase the quality of education services available to students with reading learning disabilities, two-thirds of secondary students with learning disabilities are reading three or more grades levels behind and twenty percent are reading five or more grade levels behind (*The*

*Achievements of Youth with Disabilities During Secondary School*, National Longitudinal Transition Study-2, 2003 as cited in National Center for Learning Disabilities Fact Sheet).

Given these statistics is not surprising that twenty-seven percent of children with learning disabilities drop out of high school compared to eleven percent of the general student population (24th Annual Report to *Congress on the Implementation of the Individuals with Disabilities Education Act*, 2002 as cited in National Center for Learning Disabilities Fact Sheet) and two-thirds of high school graduates with learning disabilities were rated "not qualified" to enter a four-year college (*Students with Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes*, NCES, 1999 as cited in National Center for Learning Disabilities Fact Sheet). Only thirteen percent of students with learning disabilities have attended a 4-year post-secondary school program. "Reading is a fundamental skill on which academic success, secure employment and personal autonomy depend" (Calhoon, 2005, p.424). Special educators need to design methods to improve reading instruction for older students with reading disabilities. Failure to do so will continue result in students that will fail in school and ultimately drop out of high school (Calhoon).

### ***School Frustration and Self-Concept***

Not all students with learning disabilities struggle with poor self-concept however many are affected by their negative perceptions of their reading ability (Elbaun & Vaughn, 2003). Academic achievement and school success consistently have been linked to a student's self-concept. Difficulties in reading increase the likelihood that a student will experience other failures both in and out of school which may decrease their self-

esteem (Elbaun & Vaughn). The poor self-concept of some students with learning disabilities puts them students at risk for developing more serious problems. “There is no causal link between learning disabilities and substance abuse, however the risk factors for adolescent substance abuse are very similar to the behavioral effects of LD, such as reduced self-esteem and academic difficulty.” (*National Center for Addiction and Substance Abuse*, 1999 as cited in the National Center for Learning Disabilities Fact Sheet, n.p.).

### ***Reading Disabilities and the Brain***

There is an abundance of evidence to supports a neurobiological basis for reading disabilities (Miller, Sanchez, & Hynd, 2003). Medical researchers have found the brains of people with reading disabilities to have significant abnormalities. Differences include asymmetry of the left temporal-parietal lobe and undersized corpus callosum (Miller et al). There is also evidence that these neurological abnormalities are genetic because reading disabilities tend to run in families (Miller et al). Additionally, researchers have been able to use functional brain imaging to compare the brains of normal readers and readers with a disability while they were reading. Using this method medical researchers have consistently found that the left hemisphere of the brain fails to function properly during reading (Shaywitz & Shaywitz, 2003).

### ***Assessment***

The *No Child Left Behind (NCLB)* act of 2001 requires students in grade three through 8 to be tested in the areas of reading and mathematics by 2005-2006 school year and science in the 2007-2008 school year (Goertz and Duffy, 2003). The law also increases school districts accountability mandating all students meet state determined

“proficient” levels by 2013-2014 (Goertz and Duffy). The majority of students with learning disabilities primary deficit is reading, the same area *NCLB* strives to improve (National Center for Learning Disabilities, n.d.).

The Center on Educational Policy (2006) conducted a survey of state departments of education as well as school districts and testing students with disabilities to be one of the biggest challenges with standardized testing. The forty-nine states that participated reported only thirty-five percent reported a narrowing of the achievement gap between students with disabilities and non-disabled students, twenty-two percent reported no change and fourteen percent or seven states reported a widening in the gap. Among school districts who participated forty percent reported the gap stayed the same, twenty-five percent reported a narrowing of the gap and fourteen percent reported a widening of the gap. Four years after *NCLB* there really hasn't been significant improvement in achievement for students with disabilities. Though *NCLB* act has now been modified to include alternate assessment, students with disabilities that are not severely cognitively disabled are required to take the regular test with or without accommodation. Many of the states surveyed found these tests inappropriate because students were required to take grade level test despite being unable to complete grade level work.

Students with learning disabilities are required law to be provided with testing accommodations. *NCLD* (n.d.) policy on test accommodations favors IEP team choosing appropriate testing accommodations.

“Decisions regarding accommodations must be made by the student's IEP team or placement team... The accommodations that students receive on State assessments should be similar to those routinely



provided during classroom assessment. Neither the State Education Agency (SEA) nor the Local Education Agency (LEA) can limit the authority of the IEP team to select individual accommodations/modifications needed by a student with LD to participate in State assessments.”

The Wisconsin Department of Public (n.d.) instruction has defined appropriate accommodations for state standardized tests to include:

“...use of equipment or technology that the student uses for other tests and school work (It is inappropriate to use audio taped, videotaped, or any other type of electronic versions of the WRCT or WKCE reading test.) [and] read directions and items for WKCE tests (mathematics, science, and social studies only)”

### ***Current Instruction Methods***

The majority of research on reading instruction focuses on need and success of early identification and intervention for struggling readers (Mathes, 2003). Current models for reading instruction advocate a three tier approach. The first tier is improved classroom instruction in general education. The second tier is more intense intervention delivered in small groups. In the tier model only after the first two tiers have failed would a child be considered reading disabled in the Third tier services are delivered through special education in greater intensity and duration than secondary intervention (Mathes).

The problems with is approach is research indicates the same strategies used in early intervention don't work when a student reaches middle school. In recent years the approach has been “to bombard struggling readers with phonemic awareness and phonics

instruction” (Ivey & Baker, 2004, p.36). Phonemic awareness and phonics instruction can play a significant role in improving the reading of young readers; however there is little evidence to support greater abilities in older students. (National Reading Panel 2000, as cited Ivey and Baker).

Another trend in instruction of students with learning disabilities is inclusion into the general education classroom. The percentage of students with learning disabilities who spend more than eighty percent of their instructional time in general education has more than doubled, from twenty-one percent to forty-five percent since 1992. (*24th Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act*, 2002 as cited in the National Center for Learning Disabilities Fact Sheet) Movement into general education classrooms has occurred despite students with reading learning disabilities failure to meet the demands of general education. A study conducted by the University of Kansas Center for Research on Learning revealed that low achieving readers with a high incidence of learning disabilities plateaus after the seventh grade (as cited Shumaker et al., 2006). According to this study typical students progress in reading abilities from year to year and are able to successfully access the curriculum. Overtime this gap widens and students are unable to access the general curriculum and meet the demands of required courses for graduation from high school.

The knowledge base for helping struggling readers is disproportionately focused on instruction and remediation (Edyburn, 2004). Research on remedial approaches in secondary instruction reveal that though reading programs have accelerated students reading growth, they have little to close the reading gap or normalize the reading skills of students with RD to the level of their non-disabled peers (Calhoun, 2005). If remediation

is successful then there would be no high school students who couldn't read. Educators faced with students who can not read look to instructional methods and materials instead of exploring the possibility that there are technologies that could help students to compensate for their deficits in reading (Edyburn, 2004).

### ***Barriers to Using Assistive Technology***

Part A section 602 of the 1997 reauthorization of *Individuals with Disabilities Education Act (IDEA)* requires the school districts obligation to evaluate students assistive technology needs, purchase the technology, and train the student and staff to use the technology. Despite legal obligation to provide assistive technology several barriers have limited the use of assistive technology. Charlotte Mull and Patricia Sitlington (2003) reviewed current literature on the use of assistive technology and identified five barriers to using assistive technology with students with leaning disabilities: teacher views, availability and high cost of assistive technology, eligibility, teacher training, and student abandonment of technology.

Traditionally, there have been two views of the function of assistive technology in the life of a person with disabilities. The first function is the assistive technology as a cognitive prosthesis (Mull & Sitlington, 2003). As a cognitive prosthesis the technology replaces and ability that is absent or limited for a person with a disability. The other view is that assistive technology could be a cognitive partner (Mull & Sitlington). As a cognitive partner the technology supports a person's efforts to accomplish or perform a task. Teachers who view assistive technology as a cognitive prosthesis assume that the technology does the task for the student. While teachers with the cognitive partner believe the technology assists student learning.

The second barrier to the use of assisted technology is limited resources. Yeunjoo Lee and Luis A. Vega (2005) conducted a study of 600 special educators and their views at the barriers to using assisted technology. Seventy percent of the participants reported out of date computers and equipment as a barrier to use assistive technology. In times of tight budgets and economic hardship, funding is biggest challenges to assistive technology adoption in special education classrooms.” (Lee & Vega).

There are three primary sources for a person with disabilities to find funding Medicaid, public school system through special education, and the Department of Vocational Rehabilitation (Neighborhood Legal Services, 2006). All three agencies are state regulated so requirements can vary. Medicaid is only obligated to cover technology that is medically necessary. The Department of Vocational Rehabilitation provides services necessary for gainful employment so they are not usually involved in educational planning until the student is 16. DVR is not obligated to provide services if “comparable” services are available. As a result they are often hesitant to provide services when a student is still eligible for special education (Neighborhood Legal Services).

For students, special education remains the best funding source. However though schools are required by IDEA to evaluate a student’s assistive technology needs but they do not necessarily have to provide the technology. The U.S. Supreme Court, in *Board of Education v. Rowley*, ruled that a school is not required to provide the "best" education possible or one designed to maximize potential. Under this decision, the IEP committee must approve an assistive technology device only if it is needed to ensure reasonable educational progress in the least restrictive setting (Neighborhood Legal Services, 2006).

This creates the third problem, eligibility. With limited budgets, school districts must make choices about who is eligible to receive assistive technology services. The National Assistive Technology Institute (NATRI) found that assistive technology was more likely to be used by students with autism, hearing impairment, or visual impairment than students with learning disabilities (Hasselbring & Bausch, 2005). Others studies have found with access to assistive technology students with learning disabilities are able to meet grade level expectations and no longer are eligible for special services (Anderson-Inman, and Knoz-Quinn, 1996).

Teacher training is one of the most significant barriers to the implementation of assistive technology in the classroom. In Lee and Vega's study of teacher's knowledge of assistive technology forty-one percent reported lack of knowledge and training has a significant factor in using technology in their classroom. They did not know how to use devices and what other assistive technology was available. Lee and Vega found that teachers who had forty hours or more training in assistive technology seventy two percent agreed that assistive technology was important part of their daily routine. While seventy four percent of the teachers with out training disagreed that assistive technology was an important part of their classroom routine. The teachers identified time as a significant factor preventing them from researching assistive technology or receiving training. Additionally, eighty-seven percent reported that their teacher preparation had not emphasized the use of assistive technology.

Lack of teacher training is a significant barrier in itself, however it also a major cause of technology abandonment (Mull and Sitlington, 2003). In order for a student to keep using the technology the student must be able to identify the benefits of the

technology. The use of assistive technology is not enough to dramatically improve a student's literacy skills or competence. Students with severe reading learning disabilities need instruction and practice with assistive technology and teachers must be adequately trained to provide instruction with assistive technology in order to maximize success (Forgrave, 2002).

### ***Text to Speech Programs***

Speech synthesis programs translate text that appears on the computer screen into digitalized speech (Elkind, 1998). There is a broad range of technologies with this capability. The least sophisticated are basically audio books for the computer or talking storybooks. These are usually CD-Rom that uses multi-media approaches to read a book to a child and have interactive activities that relate to the story. The two best-known sets of talking storybook programs are the *Living Books* series from Broderbund and the *Discis Books* series from Discis Knowledge Research Inc (Elkind). The Living Books is designed for younger children and is designed with interactive animated graphics. Disc Books series has a broader age range and contains few graphics (Elkind).

More recently, computer based texts have been made available online. Textbook companies have developed online textbooks and supplementary materials with the capability to be read text aloud (Balajthy, 2005). Other companies are making E-books or electronic files are available for purchase on the internet and can be read with special text reading software. The most common program is Microsoft Reader.

Perhaps the most useful of these text to speech programs are talking word processors (Balajthy, 2005). Talking word process have been available for quite some time, however, technology advances have made them more interactive and improved the

sound quality (Balajthy, 2005). Depending on the specific technology text can be read from documents from compatible word processing programs or text typed directly into the speech synthesis program. The most advanced programs can read text that has been scanned onto the computer and web pages. Students can instruct speech synthesis programs to read only selected words, whole lines, or an entire text selection. These programs allow almost any text to be able to be read aloud.

### ***Kurzweil 3000***

The most advanced of these programs is Kurzweil 3000 but also the most expensive (Balajthy, 2005). Kurzweil 3000 is a stand-alone program and includes a built-in scanning and optical character recognition (OCR) software that enable efficient creation of digital files from printed texts (Kurzweil Educational Systems, 2004). The scanning component allows a textbook to be scanned and then displayed in color on the computer screen, complete with the original page layout, including pictures and graphics. Kurzweil 3000 also has a web browser with which allows the reader to point and click to have a webpage read aloud to them. Other features include point-and-click reading aids that allow the user to click on a word and then on an icon at the top of the screen in order to obtain a dictionary definition, a list of synonyms, or a syllabic pronunciation in order to aid in word identification. The user can take notes by highlighting sections of the text and importing the highlighted material into a separate text file. She can also attach notes to relevant sections of the text, write notes in an on-screen notepad, and add voice recordings of her own (Kurzweil Educational Systems). Kurzweil 3000 costs about US\$1000 per station with a multiple license (Balajthy).

Kurzweil Educational Systems reports their software Kurzweil 3000 helps student develop fluency skills and decoding skills. This software also allows students participate more fully in the classroom by providing meaningful access to curriculum materials, actively engaging students in the reading process, and helping students to keep up with their assignments. Additionally, Kurzweil 3000 as an accommodation for test taking can assist teachers in accurately assessing a student's abilities by evaluating a student's knowledge not their reading and writing ability (Hecker, et. al., n.d.).

### ***Success with assistive technology***

Reading aloud is an approach that is often used with beginning readers but is less commonly used with older students an important part of teaching methods targeted to struggling readers. As texts become more difficult and more obscure in later grades oral reading helps students understand texts that silent reading would have made incomprehensible (Balajthy, 2005).

Text to speech programs have an advantage over methods because the software can be used to read a variety of reading material that is readily available from a multitude of sources. Users of these programs receive both visual and auditory feedback as they are following the text on the computer screen and hear it spoken. The immediate speech feedback allows students to correct their reading errors by clicking on a word they do not know in order to hear the correct pronunciation of the word (MacArthur, et al. 2001).

Text-to-speech programs reduce the frustration of inaccurate decoding for students with learning disabilities and allow for more complete comprehension of the text (Anderson-Inman, 1999). "Text-reader software creates a more level academic playing field for



students who do not decode or comprehend well enough to read grade-level texts independently.” (Hasselbring and Groin, 2004, p. 128).

Critics of using this technology are concerned that students using text-to-speech software will rely on the technology and not develop reading skills of their own. Several studies have found that the use of this software is not only assistive in nature, but also provides remedial benefits. Higgins and Raskind (2000) found that students with word recognition problems, who used speech synthesis software while reading stories on the computer, demonstrated significantly improved decoding and word recognition skills. Other studies have found that combined visual and auditory presentation of text by TTS software improves comprehension, especially for struggling readers. Disseldorp and Chambers in 2002 studied the effects of TTS on readers of various abilities, finding an overall average of 7% improvement in comprehension, with poorer readers benefiting more than better readers (as cited in Balajthy, 2005).

“The use of speech synthesis software may increase students' motivation to read by presenting them with a more successful reading experience. When students with learning disabilities are motivated to spend more time reading, studies have shown that increased reading skills (such as phonological decoding and word recognition) and improved overall reading ability result. Thus, the use of speech synthesis technology in middle and high school classrooms can assist students with learning disabilities in becoming more independent readers and can help them experience greater reading success.” (Balajthy, n.p.,2005).

***More research is needed***

Although assistive technology has made a dramatic difference for many students with physical impairments, research suggests that the potential remains untapped for the larger group of students receiving special education services because of learning disabilities (Hasselbring & Bausch, 2005). The National Reading Panel concluded in 2000 that though initial studies the use of computer technology in reading instruction is promising, that little research attention has been given to the topic of how computer technology could help struggling readers. The use of assisted technology to help students with reading disabilities has been overlooked in current literature (Edyburn, 2004). Research needs to be conducted to develop affective models of implementing reading technology with struggling readers as well as the best practices to train teachers how to instruct students in the using assistive speech synthesis programs (Forgrave, 2002).

Assistive technology can increase independence, quality of life and self esteem for a people with disabilities (Duhaney and Duhaney, 2000). Assistive technology increases learning opportunities in the general education curriculum. (U.S. Department of Education, 2000 as cited in Forgrave 2002).

***Needs Assessment***

The literature discussed in this chapter presents a significant problem is in service delivery to students with reading learning disabilities. Current practice and research does not address that students with reading learning disabilities may never be proficient readers. Lack of research into the possibility assistive technology for these students has not only denied these students the opportunity to read independently but also has contributed to school failure, negative self concept and limited post secondary

opportunities. This project hopes to address the need of more research in using text to speech programs with students with reading learning disabilities.

The greatest barrier to providing this technology and researching its potential is funding. Funding is needed not only to purchase software and computers but also to develop a successful service delivery model. A significant portion of the funding for this project would address the need for teacher training to effectively use the technology in their classrooms and to promote teacher and parent awareness of assistive technology's role in enhancing reading instruction. The following chapters will address the expected outcomes of the project and methodology for completing those objectives.

### Chapter III: Project goals

This chapter will outline the projects goals. The purpose of this project is to meet the needs of students with reading learning disabilities with in a school and expand the body of knowledge with in field. These goals and objectives will serve as project benchmarks for the accomplishment of this purpose.

#### ***Goal 1: AT Lab***

A large portion of the funding of this grant will go the creation of a mobile assistive technology computer lab. This lab would be located in the special education resource room; however students will have the availability to take computers to regular education classrooms. In this phase of the grant, the project coordinator will purchase quality useful durable technology including, headphones, lap-top computes, docking stations, printers, and microphones as well as Kurzweil 3000 software. The project coordinator with the help of teachers and staff will develop a system in which students will be able to use laptops in other classrooms.

#### ***Goal 2: Teacher Training***

Lack of teacher training has been identified as a significant barrier for successful implementation of assistive technology. To address this concern, a portion of the grant will be use to train teachers to use assistive technology is their instruction as well as methods for teach students with reading learning disabilities how to use the technology. In order to accomplish this goal the grant will provide teachers with software and hardware in their classrooms and professional development lead by Kurzweil consultants. Professional development sessions will not only train teachers on using this technology

but also inform teachers about the benefits, challenges and success of using assistive technology.

### ***Goal 3: Parent Involvement***

Parent involvement in this project is critical to the success of the project. Students need to be encouraged by not only teachers but also parents to use the technology. It is anticipated that increased parent involvement could improve students' motivation to use the technology and maximize the benefits of the technology. The project will inform parents about the benefits and success of assistive technology each semester at parent nights, create parent interest in encouraging their students to use the technology and host parent workshops for parents to see and experiment with the technology.

### ***Goal 4: Data Collection***

This project aims to become a service delivery model that could be adopted by other schools and recognizes that in order to accomplish this goal significant data collection is needed. The project will collect data through pre and post parent, teacher and student surveys as well as student achievement records to demonstrate the success of the project. Changes in student, parent and teacher perspectives in using assistive technology and the overall satisfaction of students, teachers and parents in relation to student achievement, self-esteem and independence will also be collected.

Completion of these goals improves the success of the technology implementation and expands current research and practice within the field of learning disabilities. The following chapter will address the methodology and implementation of this project including a timeline, budget, evaluation plan and dissemination plan.

## Chapter IV: Methodology

This chapter will outline the implementation for the project upon receiving the grant. The timeline, budget, evaluation plan, instrumentation, data collection, and dissemination plan will be discussed in detail.

### *Timeline*

Table 1 outlines a one year timeline for the completion of the project. The project is set up to be completed in an academic school year. Table 1 indicates month by month the projects activities, the goal the activity relates to, the people involved and the expected outcomes. The first phase of the grant indicated in blue is the initial set up and creation of the assistive technology lab. The second phase indicated in orange will begin teacher and student training and the initial data will be collected. The third phase, in purple, will include more advanced teacher training but is mostly a period in which students can use the technology to become more familiar and comfortable using the technology. The final phase indicated green with mark the conclusion of the project. During this phase student, parent, and teacher surveys will be collected and final achievement data will be accumulated.

Table 1: Timeline

Month	Activity	Goal	People Involved	Expected Outcomes
June	Purchase computers, scanners and software	#1	PI, School District technology department, school administrators	Useful advance technology is purchased
July	Set up lap-top station in special education classroom	#1	PI, School District tech. Dept. Special Educations teachers, school administrators	Creation of mobile assistive technology station
August	Kurzweil 3000 Foundations: In-	#2, #4	All classroom teachers, Special	Increased teacher knowledge of how to use

	house workshops for teachers Pre and post survey of perspective before and after workshop		Educators, Administrators at the school, PI	assistive technology in their classrooms for students with learning disabilities. Data from pre/post surveys
September	Collect basic data from students, demographic and previous grades	#4	Special Education Department, School Guidance Office	Baseline achievement data
October	Student pre-survey Student Training	#2, #4	Students, Special Education and Regular education teachers	Data collected on students feelings about school, confidence, independence and self esteem.
November	Student Use Parent's Night to demonstrate technology, Parent perceptions survey	#3, #4	Parents, Special education department, School Administrators	Data on parent attitudes and perceptions on assistive technology
December	Student Use Data collection 1 <sup>st</sup> semester student progress	#4	Students, Special Education Department, School guidance office	Data on student progress, expected increase in student achievement
January	Kurzweil 3000 Advanced In-house Teacher workshop, Teacher Survey	#2, #4	All classroom teachers, Special Educators, Administrators at the school, PI	Increase teacher knowledge of assistive technology in the classroom and more widespread use of assistive technology.
February	Student Training/ Use	#2	Students, special education department	Increased student independence
March	Student Use	#2	Students, special education department	Increased student self – esteem
April	Student lead open-house for Parents Parents post-survey	#3, #4	Students, Parents, Special Education Department, Regular education teachers, School Administrators	Feedback from parents and students on success of using assistive technology.
May	Achievement reports Student and Teacher, Post Survey Final Report	#4	Students, Parents, Teachers, School Guidance office	Increased student achievement. Satisfaction and positive attitudes among parents, teachers and students.

## **Budget**

Table 2 outlines the financial resources needed to facilitate this project. The bulk of the budget will be used purchase hardware and software for the mobile assistive technology computer lab. The following section will address the budget in greater detail.

Table 2: Budget

<b>Personnel</b>	
Program Director, 2 Summer Stipends for planning and preparation 160 days@ \$75 per day = \$6,000	\$6,000
Guidance Counselor Stipend for Data Collection 25 days @ \$75 per day	\$1,875
Kurzweil 3000 Consultant 1 consultant for 1 day workshops x 4 workshops @ 2,000 per workshop= \$8,000	\$8,000
Special Education teachers, stipend for Parent night 3 teachers, 2 evenings @ \$50 per evening (4 hours) = \$300	\$300
<b>Total</b>	<b>\$15,175</b>
<b>Services and Supplies: Equipment</b>	
PC Laptop Computers and docking stations with tax and shipping Sony - VAIO Notebook with Intel® Centrino™ and Dock VGN-A690 30 @ \$2,944.94 Best Buy = \$88,010.80	\$88,010.80
Laser Printer and scanner combination with tax and shipping Hewlett-Packard - Network-Ready Color Printer/ Copier/ Scanner/ Fax 7410 31 @ \$496.53 Best Buy= \$15,392..43	\$15,392.43
Headphones with Microphones Altec Lansing - Closed Earcup Stereo Headset with Microphone AHS-602 30@ \$99.99 Best Buy = \$3,119.40	\$3,119.40
Kurzweil 3000 for Windows Color Learning Lab Pack 30 @ \$2,695.00 = \$80,850 Kurzweil 3000 for Windows Professional Color 31@ 1,495.00 = \$46,345	\$127,195
<b>Total</b>	<b>\$233,717.63</b>



<b>Miscellaneous Supplies</b>	
Copying: Surveys, Instructional Worksheets, Parent Letters 30,000 @ \$.05 = \$1500	\$1500
Misc supplies, data collection	\$200
Postage- Parent invitations and surveys 600@ .37 = \$222	\$222
Misc. decorations Parents Nights	\$300
Lunch for 4 in-service sessions: catered at 10 dollars a person = \$800	\$800
Parent Night Reception: desserts, coffee, and punch 100 parents @ 5.00 per person=\$500	\$500
<b>Total</b>	<b>\$3,332</b>
<b>Service and Supplies :Travel</b>	
Round-Trip Airfare to Learning Disability Conference in Philadelphia = \$265	\$265
Lodging 4 nights @ 145.00 = \$580	\$580
Meals 4 breakfasts @ \$10.00 = \$40.00 3 Lunches @ \$10.00 = \$30.00 4 Dinners @ \$20.00 = \$80.00	\$150
Ground Transportation- Car Rental 4 days @ 38.00 = \$152	\$152
Misc. (Gas, tips, etc...)	\$100
<b>Total</b>	<b>\$967</b>
<b>Total</b>	

### ***Budget Narrative***

Personnel expenses represent only a small portion of the actual amount requested. Most personnel will be provided through existing jobs within the school district. However the program investigator, special education teachers and school guidance counselor will have increased responsibility as a result of this project so stipends will be provided. Also the teacher in-services will be led by the Kurzweil Company's experts. The company does offer workshops that teachers could travel to attend instead of the in house workshops. The travel expenses to do that would far exceed the company's fee of \$2,000 per 15 person workshop.

The largest amount of the requested budget would be used to purchase the necessary equipment to create a mobile assistive technology lab. Though desktop computers would be inexpensive, they would severely limit the scope of this program. With laptop computers students will be able to take computers from the special education classroom to regular education classrooms. This expands the student's opportunity to be with their peers and receive general curriculum. The compact size of the lap-top will allow students to be able to work at their desk not be isolated from the rest of the class. Thirty docking stations are necessary because the nature of a student with learning disabilities, the process needs to be as simple as possible the docking station provides the easiest way to connect the computer to the internet, scanner, and printer without having to worry about students transporting a bunch of wires. One of the reasons students have abandoned assistive technology in the past is the cumbersome complex nature of previous technologies. The laptops are essential to making the technology convenient simple to use as possible. The computer software reads text out loud so it is necessary to provide headphones for all the laptops so students can listen to the materials without distraction and without distracting others. Thirty-one laser printer and scanner combinations will be purchased. One will be networked to all the laptops by the docking stations. This printer will allow students to print out papers and tests completed in the Kurzweil 3000 program, as well as allow the special education teacher to scan text into the Kurzweil program. The additional scanners and printers will be put in each teachers' classrooms so they can scan text and tests into Kurzweil at their classroom computer.

The Kurzweil 3000 program is one of the most advanced text to speech programs available. It works with standard Microsoft Windows and Office Suite programs making

it the most users friendly and easy to implement. The program has a variety of features including the ability for students to complete tests on the computer, read books and write papers. Kurzweil 3000 has a record of success since the company began in 1996. Kurzweil also offer extensive training. They have set workshops or will send a representative to do in house workshops. This program will train all teachers in our school to use the technology so it was more cost effective to pay a Kurzweil representative to do an in house work shop than to pay for travel expenses for all the teachers. The workshop is in two segments, basic and advanced use. Training teachers is an essential part of ensuring that students use and benefit from this technology. In the past lack of teacher training has prevented the effective use of the technology. In order for the teachers to be able to upload student readings to the program the will need a copy of the software themselves as well as a scanner to scan coursework into the text reading software. The program has requested 30 scanners and 60 product licenses for this reason. Thirty of the licenses will be for professional licenses for teachers and the other will be student use licenses.

A small portion of the budget will be used to provide supplies to allow for data collection and to host parent information nights. This money will be used to print surveys, record keeping documents, and instructional materials. Also we would like to provide refreshments at both parent nights and the teacher training sessions.

The remaining budget will be used to allow the program investigator to travel to the *Learning Disabilities Association of America* annual conference in Philadelphia, Pennsylvania to present a workshop on implementing an assistive technology program

and the results of student, teacher and parent pre and post surveys as well as student achievement data.

### ***Evaluation Plan***

Table 3 outlines the projects strategy for evaluating the projects success as well as collecting data that will advance the field of assistive technology. Evaluation procedures will include the use of pre and post surveys of students, parents and teachers as well as the consolidation school achievement data collected on the students involved.

Table 3: Evaluation Plan

Goals	Assessment Tools/ Strategies	Timeline	Responsible Party
Assistive technology lab	Pictures taken for reports	August	Information Technology Department
Teacher Training	Pre/post surveys after teacher in-services	August and January	PI, Independent Consultants
Parent Involvement	Pre/post surveys, after parent's nights	November and April	PI, Special Education teachers
Data Collection	Baseline achievement data collected pre/post intervention	August and May	School guidance department, PI

### ***Instrumentation***

The surveys used to evaluate the outcomes of this project will be developed by the project coordinator. Table 3 indicates when the surveys will be given. Students, parents and teachers will be given different surveys. The surveys used will be contain questions in regard to demographic information, prior experience with assistive technology, initial attitudes and beliefs, and their perception of the results of using the technology in the areas of achievement, self-esteem and independence.

This project will also look at student achievement data as collected by the school faculty and staff this includes but is not limited to report cards, progress reports and standardized tests. No specific assessment was chosen because achievement data is collected from year to year. This data indicates student achievement throughout the year. The project will compare existing data from prior years to the data collected after the assistive technology intervention.

### ***Subject selection and description***

At this time the project is being written for a hypothetical middle school special education program. If this project were implemented researchers would respect all laws in accordance to the protection of human subjects. Parental consent would be obtained for all the students who participated in this project. The students would be selected if they had been identified as having a learning disability and were one or more grade levels behind in reading. The parents and teachers of these students would then be asked to participate in the study.

### ***Data Collection Procedures***

Data will be collected at the times indicated in table 3. Table 1 outlines more specifically the people involved in various phases of data collection. The project coordinator will determine the procedures involved in the data collection and include these procedures in project reports.

### ***Dissemination plan***

Table 4 outlines the projects plan for disseminating information to the school district, grant foundation, and professional conferences. These reports will in greater detail discuss the methodology, results, and recommendations of this project.

Table 4: Dissemination Plan

What	When	To Whom	Responsible party
In-progress report	November	ACLD Foundation School District	PI
In-progress report	May	ACLD Foundation School District	PI
Final Report	August	ACLD Foundation School District	PI
Presentation	March	LDA Conference School District	PI

The purposed methodology is essential for the success of this project. This chapter outlined in detail the necessary timeline, budget, evaluation and dissemination plans necessary to meet the grant foundations requirements, yield the most accurate data, and maximize the technology's benefits to the students. Financial support is essential for implementing the discussed methodology. It is imperative that the project be completely funded so that the project can be implemented in its entirety.

## Chapter V: Discussion

This chapter will reexamine the limitations of the study and the importance of this proposal. Finally, this chapter will include recommendations for changes in current instructional practices and opportunities for future study.

### ***Limitations***

This proposal is written in response to a request from the *Learning Disabilities Foundation of America*. (Appendix B) At this time, there are no plans to submit the proposal for funding so the grant is being written for a hypothetical middle school special education program.

### ***Conclusion***

This proposal will address the lack of research in using assistive technology with students with reading learning disabilities and hopes to create a successful service delivery model that could be implemented by other schools. This program has the potential to not only dramatically impact the school success of the students involved but also increase the knowledge in the field of learning disabilities.

Quality equipment and superior technology are needed to make this project a success. The primary barrier to supplying the technology to students and researching the potential success of the technology is funding. Funding this project does more than simply purchase equipment it provides for the training of educators and students to use the technology and funds the collection, evaluation, and dissemination of data that could significantly change the educational experience for students with reading learning disabilities. Common problems experienced by students with reading learning disabilities

including accessing the general curriculum, low self concept and limited post secondary opportunities might all be improved with research generated from this proposal.

### ***Recommendations***

Instructional practices that promote intensive remediation for struggling secondary readers are failing to advance students' reading to grade level. Students with severe reading disabilities may never be able to read at a level that is competitive with their peers. Unfortunately, their inability to read prevents them from accessing information in a variety of content areas. The current instructional paradigm that emphasizes remediation at the secondary level should be replaced with a philosophy that students with reading disabilities should be taught strategies to access meaning of the text even if they can't decode the words. Text to speech technology allows students who cannot decode words to still access the information in the text. This ability to learn from text has the potential to unlock many struggling readers' hidden talents. Perhaps the next Leonard Da Vinci, Walt Disney, Winston Churchill, or William Yeates is in a classroom somewhere unable to reach their potential because they aren't able to decode words in a textbook.

After a review of the literature, it is clear that the potential for these technologies is just beginning to be explored. Research grants should be given to programs such as this so that educators can maximize the benefits of this technology. Future research could identify which students would benefit most from the technology, which technologies are most effective and continual improvement of the technology to make it more portable and user friendly.



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## Appendix A: Letter

Ms. Jean Peterson, Executive Director  
Adults and Children with Learning Disabilities Foundation  
4156 Library Road  
Pittsburgh, PA 15234

Dear Ms. Peterson,

This is my submission of the grant proposal titled “The Greatest Natural Resource” for the grant cycle of 2007. The grant proposal components follow your guidelines outlined on the Learning Disabilities Association Website. We have enclosed additional requested supplementary materials in the Appendix.

The aim of this grant proposal is to alleviate and advance the competencies of secondary students with reading learning disabilities through the use of assistive technology. Assistive technology is very expensive and currently students with learning disabilities are not eligible to receive funds that provide assistive technology to people with more severe disabilities. Additionally a successful implemented assistive technology program requires teacher and parent training and support. This project would benefit students with learning disabilities by providing them with independent access to text. The ability to access text will improve reading comprehension, assessment and achievement of students with reading learning disabilities. Student success in reading will result in greater self confidence and successful post-secondary opportunities.

Current research proves the success of assistive technology with students with exceptional needs. However more research is needed on how to implement a successful assistive technology program at the secondary level. This project will serve as model to other school districts considering expanding their use of assistive technology.

Please find our materials for your review. We look forward to hearing from you. If you have any questions, please do not hesitate to contact us.

Sincerely,

Jennifer A. Masters  
Graduate Student University of Wisconsin Stout

Enclosures

Appendix B: Grant Foundation Proposal Request



Document "Appendix B" unavailable