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Supporting Reading Instruction of High School Students with Learning Disabilities by Using Wynn Software

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ABSTRACT

SUPPORTING READING INSTRUCTION OF HIGH SCHOOL STUDENTS WITH LEARNING DISABILITIES BY USING WYNN

SOFTWARE

By

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July 2003

The purpose of this project was to create a student/teacher handbook, which contained information for the successful integration of the WYNN computer software into the general and special education classroom. Students with learning disabilities struggle with the general education curriculum and new technology provides an individualized approach to the accommodation of their needs. Research concerning learning disabilities and how the use of computers can support these students in the classroom was included.

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CHAPTER ONE

BACKGROUND OF THE PROJECT

Introduction of the Project

Reading, for many children in the United States, is the most important skill they will develop in their lifetime. Without reading skills, an individual is left to drift through life with a low paying job or worse, no job at all. Without the ability to read in our culture it is difficult to get through the everyday activities people who can read take for granted. Simple things like catching the correct bus, getting off at the right stop, getting a driver's license, and buying correct items at a grocery store all become much more difficult and time consuming without the ability to read. Teachers see students whose self-esteem is lacking because they struggle with the everyday lessons where reading is a must. Therefore, it is important to establish good reading strategies early so that problems such as low self esteem and falling behind in school work do not compound into larger problems.

The definition of reading is the process of extracting meaning from print which involves both visual perceptual and linguistic or language processes (Shaywitz, 1998). To successfully comprehend the printed page, a person must be able to identify the words, use expression and fluency all at the same time. Syntactic and contextual clues are also used. These skills develop easily in most students as they learn to read, while many other children face difficulties.

What causes this difference? Many questions have been in the minds of educators as they help intelligent children who struggle with reading. Educators and

psychologists working with these reading disabled students are also not always in agreement.

Purpose of the Project

The purpose of this project was to create a handbook, which would integrate assistive technology, specifically the WYNN software program into the high school curriculum. Presently, assistive technology is being used more frequently in the classroom to accommodate the teaching of reading. However, many teachers are often not aware of how assistive technology can be used in the classroom or the effects it may have on student success.

While the author was examining these strategies, a new computer and six boxes of WYNN software was delivered to the author's classroom. This program could be very beneficial to students if the challenge of understanding what it was and how it worked could be overcome. The author started to research this program and found that most teachers were unaware that the software existed, or of how it is used in the classroom. This project was developed as the author struggled to find answers to the many questions surrounding this program. It became apparent that these boxes of software were sitting in the district with the cellophane wrappers still on, a valuable resource sitting unused. How could the author of this project make it easier for other teachers to understand and use this software?

Significance of the Project

The significance of the project was to create a teacher/student handbook, which incorporated, reading strategies and technology for the benefit of students with learning disabilities. The term learning disability can refer to a variety of conditions. In order to be

diagnosed as having a learning disability, the child is usually two or more years behind peers in reading or math scores. The definition of a learning disability is given in the Individuals with Disabilities Education Act (PL94- 142). It states, “ A disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations,, (Gunning, 1998). The disability manifests itself as a reading difficulty in the majority of cases.

Reading skills are imperative for all high school students if they are to be successful in the many content areas required to graduate. Many average students struggle at school, but it seems even more challenging for some. Teachers are often at a loss as to how to help this child succeed in the general classroom. Reading is a lifelong skill and higher demands to read fluently and comprehend the text are putting pressure on these students to perform well. They must pass rigorous standards to graduate in the coming years, while teachers must find ways to help them be successful.

Overview of the Project

In Chapter Two, literature will be reviewed concerning learning disabilities. Also reviewed will be the benefits of using technology for learning disabled students to help them succeed in the special education or general education classroom.

Chapter Three describes the procedures and steps involved in the project. It also states the rationale for the development of the data. How the research was collected and used by the author will be included in this chapter.

Chapter Four contains the activities and strategies used in the handbook. This handbook was designed to be a reference tool in learning to use the WYNN computer

software. Student improvement and enjoyment of reading for these students is desired, as well as teacher ease in implementing and integrating curriculum into the WYNN software.

Chapter Five concludes the study with a summary of the project and the reflection of the author. It will also review the problems teachers may face when working with computers in the classroom. Recommendations for further research in this area will be discussed.

Limitations of the Project

This handbook was designed for high school general education or special education teachers who are in contact with students with learning disabilities. Every child involved in the project was diagnosed with a learning disability. This disability may or may not involve a reading problem, but a high percentage of learning disabilities do fall in this area. Shaywitz (1998) estimates that out of all children identified as learning disabled, eighty percent have reading difficulties.

The timeline for the project took place over a nine-month period. Technological limitations include problems due to the use of a new computer program and difficulties with the scanning process. The computer and program used were new to the author, so technological training was needed before the project could take place. This project only included ninth through twelfth grade students, and the site of this project was a high school resource room where reading and study skills were taught.

Most printed materials are copyrighted and teachers are cautioned to follow all copyright laws when scanning and using the WYNN software for student use in the classroom

Definitions of Terms

Significant terms used in the context of the project have been defined as follows:

- Automaticity:* The ability to perform a task automatically, or with little attention (LaBerge, and Samuels, 1974).
- Accomodations* The instructional modifications to enable students with special needs to be active members of the daily classroom routine (Stainback & Stainback, 1992).
- Bi-modal:* Uses visual and auditory input simultaneously (Freedom Scientific, 1998).
- Button:* Boxes located on the toolbar which perform functions when clicked on by the cursor (Freedom Scientific, 1998).
- Colored overlays:* The use of colored plastic sheets to aid in reading by blocking the glare of fluorescent lighting (Irlen, 1991).
- Colored Background:* The use of color in the WYNN software program to give print less interference from light for people with light sensitivity (Irlen, 1991).
- Cursor:* A visual on-screen graphic, usually an arrow, that represents the exact position in the document ((Freedom Scientific, 1998).
- ILS software:* Integrated Learning Software which has an assessment and diagnostic tool for student use on a computer (Miller & Miller, 2000).
- Learning Disability:* "A disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written,

which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations,, (Gunning, 1998) PL94-142.

WYNN Software: Acronym for “What You Need Now,, A computer software which uses a bimodal approach to help students read. (Freedom Scientific, 1998)

Scan: The process of transferring text into the WYNN software program (Freedom Scientific, 1998).

Scanner: The machine used to photograph and transfer text (Freedom Scientific, 1998).

Scotopic Sensitivity Syndrome: Light-based reading problem (Irlen, 1991)

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

A person must be able to extract meaning from the printed page to be a successful reader. This involves a wide variety of skills working simultaneously. These skills develop easily in most students as they learn to read, but in other students they do not. The purpose of this review of literature was to present the research regarding learning disabilities in children and how technology can help them succeed in the classroom. New technological advances help students develop the skills they are lacking. The benefits of technology and curriculum integration have many effects on the students such as increased motivation which helps students do better in school.

Research on Learning Disabilities

The term learning disability can refer to a variety of conditions. In order to be diagnosed with a learning disability, the child is usually two or more years behind peers in reading or math scores. In order to help children with this disorder, each child must be seen and analyzed on an individual basis.

Reading is the process of using both visual-perceptual and linguistic processes to extract meaning from the printed page (Shaywitz,1998). When one or more of these systems or processes is not functioning properly, a learning disability may become apparent. Children with learning disabilities suffer from impairments in three main categories, which are phonological or auditory deficits, visual deficits, and automaticity deficits.

According to several studies, the phonological deficit is the most common category of learning disability suffered. Shaywitz noted a common language delay or that the children in observation had particular trouble hearing rhyming words while trying to learn to read. Children with this difficulty tend to do poorly on reading readiness tests that are testing phonemic awareness.. The student must assemble the phonemes or sounds of letters before being able to identify the word correctly. This skill seems to be lacking in a learning disabled child or sometimes takes much longer to develop.

Phonological Deficit

In one study, authors Suk-Han Ho and Nga-Lun Ma (1999) investigated the efficiency of Chinese children's skill in employing phonological strategies. One experiment dealt with orthography-phonology correspondence in relation to reading performance. There were two groups of fifteen learning disabled children. The experimental group received an intensive training for five days in the computer laboratory on the use of phonological strategies in reading the Chinese characters or language symbols. The control group received no training. Both groups ranged in age from seven to eleven and were given the same pre- and post-training assessment on reading and dictation. The training was expected to improve reading only, but not the dictation skills. In the Chinese language there are both regular characters and irregular characters. Both groups read regular characters better than irregular ones and high frequency characters better than low frequency ones. The difference between these two groups seems to be that when the phonetic component of a Chinese character gives sound cues different from the usual pronunciation, poor readers have difficulty memorizing the character regardless of repeated exposure.

In conclusion, the study found these children are inadequate in using phonological strategies. The five-day training in phonological strategies was effective in increasing the readers' performance. The experimental group improved significantly in Chinese regular and irregular reading after the training, but not in the dictation. The control group improved significantly only in the word reading, but this was a smaller amount of growth. Learning disabled children read regular characters at 62.5% where as the average children read 85.1%. The irregular characters were 38.7% for low readers and 71.7% for average readers. These difficulties may be due to the child's inability to memorize phonological patterns in language. It was recommended that future training programs should put emphasis on teaching irregular characters and also develop strategies to help improve phonological memory skills. The education authority in Hong Kong is now using a reading program to train these children. It uses a visual memory approach, with daily teaching and assessment done by parents at home. It was reported that the use of this program was effective in improving reading, writing and dictation, but this program depends on strong parental involvement.

In another phonological study, Berninger (2000) used a longitudinal, multiple case study to test the response of seven boys in third to fifth grade, using an instructional intervention. It involved a phonological reading instruction in a science/reading workshop. Research on early intervention has shown that beginning readers can overcome problems with appropriate instruction when caught early enough.

The boys in the study were from middle-class families and all families had a history of reading problems. The boys qualified for a brain-imaging study because of their right-handedness, meaning they all had speech centers in the left-hemisphere. Each

boy had been diagnosed with a phonologically based reading disorder. This had been assessed by pseudo-word reading, phoneme awareness and phonological memory using the *Comprehensive Battery of Phonological Awareness* test by Wagner and Torgesen (1999). A case-study methodology was used to compare the boys' early development, instruction, and development of reading skills and processes over a two-year period. These boys were compared to "normal,, boys matched to the boys in the study, who all had equal IQ and were of the same age.

A brain-imaging study, which involved Berninger, (Richards et al.,1999) showed differences between the two groups of boys. The boys who were matched according to age and IQ scores had learned to read quite effortlessly. It was found that in chemical brain activation during language tasks that involved phonological processing there was a significant difference between the two groups. On the control tasks, such as tone discrimination that did not involve phonological processing, there was no difference. The authors of this brain imaging study concluded that brain chemicals do vary in individuals that suffer from learning disabilities.

The boys were given an individual writing tutorial before the science/reading workshop. Many of these boys had received training in phonics rules, but did not apply them to gain automaticity without verbalizing the rule. Thus, it would be applied to decoding in the natural flow of reading. Another goal was to increase spelling awareness and associated phonemes when they came to unknown words. Several strategies were used such as exposure to polysyllabic words which were intellectually challenging, therefore encouraging them to use their mental dictionary. This strengthened their application and flexibility of word usage. They also read orally from science texts, with

such themes as Astronomy or Endangered Species. They were excited and motivated with the content of the materials. They built hands on models and experiments and then wrote about what they had learned. Each week there was a guest speaker such as a chemist, a certified navigator in the U.S. Power Squadron who showed them how to navigate by the stars, and also a geneticist who showed them how to do karotyping of cells in genetic research. The boys would review daily reading logs in which they recorded reading for 15 minutes each day. They focused on silent reading skills using comprehension checks and discussed self-esteem issues related to learning problems.

The results, after post testing, found that the reading levels of four of the seven boys were at or above grade level. As a whole, the boys made improvements in phonological skills and maintained these gains a year following the workshop. However, this multiple case study did not have control over all aspects of these boys' education. It can be concluded that over a two year span it is possible to have phonological deficits improved in older students with severe reading disabilities. Improved comprehension was found only for oral reading, and they still had much difficulty with spelling.

Extreme difficulty in learning to name and write alphabet letters and in learning to associate sounds with letters indicates a serious problem. All the boys in the study had deficits in these defining language processes which are phenotypic markers for a learning disability. Markers are the language processes in the spoken and written word and the speed and automaticity of naming visual codes. Also included is the manipulation of phonemes in the mental picture of the brain and access to the mental dictionary. Deficits, over time, change from difficulty learning alphabet letters to learning words, and finally the rate and efficiency that one reads. Berninger believed that not all children, if given

early intervention, will turn out to have a learning disability. Some respond quickly, whereas others respond slowly and need intervention all through schooling. Many times the fast responders have only one or two phenotypic markers, while a slow responder tends to have several.

The boys in the study were given a brain scan a year later. The results showed improvement in brain chemical activation which involved abnormal lactate levels in the previous scan. This study by Berninger took place in Seattle, Washington and showed most learning disabled students are slow responders, but that they can learn to read and write successfully if taught slowly. They also require considerable effort and instructional assistance over time.

Another phonological study focused on the working memory of learning disabled teenagers. Palmer (2000) studied students who were believed to have poor phonological processing abilities. This study used three groups of sixteen teenagers in each group. One group contained students identified as having a learning disorder, while the other two groups were used as controls. Each group was shown the *Wisconsin Card Sorting Task*. (WCST; Lesak, 1995). This measures the picture span performance and is frequently used as a measure of brain functioning. The child must sort shapes, numbers, and colors. The experimental group was found to have lower levels of brain functioning compared to both control groups. Phonological recoding (visual to memory) requires attention allocation of phonological representations and also the ability to inhibit potentially interfering visual stimuli. Poor readers tend to read visually, while better readers tended to use phonological encoding. Palmer found that poor readers were delayed in developing the ability to block out the visual response. This ability to switch

strategies seems to be a prerequisite for complete phonological recoding to take place. It was suggested in this study that for some children these retrieval strategies are not fully developed. Therefore, one of the causes of a learning delay may be the lack of development of certain aspects of the brain which prevent efficient use of the visual and orthographic stimuli.

Palladino (1999) studied Edison-trait children. These children are exceptionally creative and bright, but they struggle to survive in our school system. Many are lacking in phonological awareness, and often times these children are inattentive listeners because they do not distinguish the short-duration sounds in a spoken word (Example: ba-da). What they hear has less information value for them and is more difficult for them to understand. According to Palladino, this is like someone listening to a story on a tape with poor sound quality as compared to someone listening to a new tape with clear sound. The person who listened to the clear tape will probably have a better comprehension and memory of the story, while the other person would not be able to recall and comprehend the story as well because they were distracted by the scratchiness of the tape.

Visual Deficit

The second deficit for learning disabled children is in the visual system. In research on visual deficits, perception was seen as an interactive process between the eye and brain. Meaning must be constructed based on the print selected by the eye and contributions of background knowledge by the brain (Kucer, 2001). If the child's visual information is perceived incorrectly it becomes impossible to gain comprehension or memory function.

In Irlen's book, *Reading By The Colors*, she reports there are many children who are learning disabled due to visual deficits in America today. These individuals have difficulty with reading and writing activities. They are usually struggling readers who are inattentive and reject reading activities whenever possible. Letters may appear reversed, rotated, inverted, or confused with other letters or words to these children. They find it difficult to copy, spell, or keep numbers in columns. Typically, these children survive in school by listening, memorizing, and talking. Some of these individuals have Scotopic Sensitivity Syndrome (SSS), which in itself is not a learning problem.

In 1981, Irlen studied the results when reading material was covered by transparent colored acetate sheets and also the effects of patented colored eye glasses that can be worn by SSS sufferers. People who suffer from SSS report an improvement in their reading ability when colors are used to aid their reading. This is because the glare created by light hitting a black and white page can make reading more difficult, and may sometimes cause the reader to experience letters moving on the page. This research can be particularly helpful when applied to helping children in school, because the glare produced by fluorescent lighting found in most schools can make it even more difficult for these children with SSS to read.

In a study done by Whitely and Smith (2001) they found that phonological processing problems appear to be the main cause of most learning disability cases, but there is sufficient evidence that visual disturbances contribute to the difficulties associated with reading problems. It was found that 50% of the learning disabled population experienced some form of eye strain or visual perception distortions of print.

There is some evidence that the pathway between the brain and eye may have a binocular instability which causes a visual distortion.

Black letters on white paper appear to cause the greatest distortion for some people. The use of the colored overlays is believed to help children who have primarily visual disturbances. If the child had a phonological and visual disturbance the colored sheets were less useful.

If tinted overlays can help even a small percentage of readers, then further research is certainly justified. It appears that early intervention would be the key for some children, before reading difficulties have a chance to compound themselves. The results of such research would have critical implications for the management of reading problems.

Automaticity Deficit

The third reading deficit common in learning disabled children centers around automaticity. Automaticity occurs at the point when a reader develops his or her skill to an automatic level. In the La Berge-Samuel's model (1974) this concept is used to explain why fluent readers are able to decode quickly with comprehension and other readers have great difficulty. The human mind does have limitations that vary from person to person. In this model the first component is visual memory, which involves the processing of the text visually. Then there is the phonological memory in which the visual codes are processed into auditory sounds. Finally, the brain processes and records this information in the episodic memory and semantic memory. These are the storage areas of the brain where information can be retrieved from at a later time. Automaticity should be thought of as an automatic response in the use of the retrieval systems of the

brain. In a learning disabled child, these systems are functioning in various degrees if automaticity fails to develop.

LaBerge and Samuels believed automaticity develops as the reading becomes fluent and more effortless. Word identification or decoding becomes faster and more automatic as it is committed to a person's memory. For learning disabled students reading is slow and less automatic which affects comprehension. Therefore, reading more often may help.

Reading comprehension requires understanding the meaning of words and it seems more children are advancing into our high schools without the skills to adequately tackle the curriculum. Confronted by this literacy problem, a school in Alberta, Canada decided to do something about it. In the Northern Lights School District the children were not learning to read fluently, and the teachers and administrators launched into a program to change the growing problem. (Joyce, 2001)

One of the components in the program was vocabulary development. Children were read stories and shown pictures to increase their vocabulary during brainstorming activities. These children ranged from the fourth grade through the ninth grade. Each child developed a personal vocabulary list and was responsible for learning those words. Students were encouraged to keep a file of unknown words and work on learning their meaning. There was a real feeling of personal accomplishment when the students had a stack of words learned. Automaticity developed as the students attained more known words and the more reading a child was exposed to, the more fluency and accuracy developed.

Accommodations for Learning Disabilities

Accommodations for learning disabled students are necessary to the student's success in the classroom. One of the challenges general education teachers face is how to make curricular adaptations so that these students can be active members in a general education classroom. Teachers may need to adapt lessons to fit a student's needs.

Shaywitz (1998) addresses the need to see a life-long management of the disability. The focus in the earlier grades was on remediation, but as a child advances in age accommodations become important. The technological advances in recent years have been great. The use of assistive technology with spell checkers, recorded books for the blind and the newest technology in voice support which the WYNN software incorporates all have effects on how today's students are learning and functioning. The WYNN software is a computer program that allows students to see and hear the text at the same time after the text is scanned into the program.

Benefits of Technological Intervention

Accommodations to help students succeed are necessary, especially in the upper grades. Computers can be very helpful, especially to students with learning disabilities, which have been shown in recent studies to be very beneficial in their efforts to read.

In his book, *Insuring Success for All Students: Programs That Work*, author Dougherty (1997) believes that no curricular program should remain in isolation. Everything needs to relate together in some way. This is easier said than done. Time constraints on a teacher along with the many subjects to cover make this a challenge. Teachers have been able to use computers to bridge this gap in some classrooms by

giving extra practice and assistance in almost any subject matter. It has proven to be a very affordable way of providing remediation.

In *Students at Risk in At-Risk Schools*, (Waxman, Walker de Felix, Anderson & Baptiste, 1992) the authors stated that the society of the United States has entered into the technological age, but the school system remains in the industrial age. The schools should be technologically advanced and be a supportive environment for learning. To do this teachers need to see each child as an individual with unique needs.

Since the introduction of computers into education in the 1970's and 1980's, this tool for instruction has become more complex. There are many adaptive devices for people with handicaps, which are listed in the book, *Integrating Computers into the Curriculum* by Behrmann (1988). Speech pathologists quite often use this technology to assess the three areas of speech: phonological processes, language performance, and determination of hearing aid prescriptions. Diagnostic tools have become more advanced with computer technology.

An ethnographic study done by Evans-Andris (1996) discussed the feelings teachers have toward the computers and technology in their classroom. She came to the conclusion, after doing much field research in nine schools, that teachers were not all that comfortable with the technology in their classrooms. The feelings of the teachers towards these technologies could have a large impact on the children's use of computers.

The Ontario Ministry of Education and Training (MET) funds technology and literacy studies. Their belief is that literacy and technological literacy go hand in hand. The research by Miller, DeJean & Miller (2000) was designed to compare learning through an Integrated Learning System (ILS) with learning in traditional classrooms. An

Integrated Learning System was defined as a program having an assessment and diagnosis of student skills. The computer program continuously monitored student performance and made adjustments for errors. Student and class data were then available for teacher use.

The purpose was to investigate the use of computers by identifying issues that impact the use of technology. This study examines the phonetic component in a software program called SuccessMaker. It was felt that this program matched the existing curricula and normal teaching practices. The belief was held that computer programs were helpful in building automaticity because the student could have the words read to them. Through surveys and observation it was concluded that some areas of phonics instruction actually competed with the classroom curricula, but for the most part teachers were pleased. Further research is needed to document how much benefit these strategies are to children.

Two types of computer support were tested by Underwood (2000) which were Integrated Learning System (ILS) compared to a free reading program or "talking book,,. Integrated Learning System (ILS) software was used in the experimental group. The program presents variable levels of sub-skill practice through vocabulary, sentence completion and comprehension activities. The second computer program to be tested was a disk-based story called a "talking book,,. It is in both electronic and paper format, and the electronic version can be set in different modes to individualize it to fit student needs. Part of the program is a non-interactive mode during which the computer reads the story out loud. In the interactive mode the text is read aloud and then the child may choose various pictures to click on revealing the character's thoughts. Some of these

pictures were entertaining, but irrelevant to the story content. The child may choose to hear an individual word spoken by clicking on that word. A positive correlation was found in the motivational factor between the students and their desire to work on the computer. The children enjoyed both kinds of software and showed a strong preference to them rather than the traditional classroom setting. Both groups also had learning gains, but not enough to show a differential advantage over the normal classroom. In the case of the “talking book,, software, it can provide a surrogate adult in the reading process. In any case, motivation does lead to learning.

Another study reported on the effectiveness of the design of “talking book,, software. Two versions of the software, Basic and Enhanced, were compared using both qualitative and quantitative methodologies. The Basic design replicated a traditional book with features such as whole word pronunciations, highlighting words or phrases as they were spoken for tracking cues. The Enhanced design provided more interaction by incorporating feedback and reinforcement for the students. The study hoped to find how these programs could be improved. The Enhanced design of the computer software was compared with the Basic design in a naturalistic setting of the classroom. Student access to word pronunciations can have a positive effect on learning. However, its overuse may discourage independent identification of unknown words causing the student to not fully develop context clues or appropriate word attack skills. Teacher tutoring may be needed to help develop these skills (Lewin 2000).

Children who were self-motivated enjoyed both kinds of software. The children who had lower skills actually enjoyed the Basic program more. They viewed the Enhanced program to be more academic and challenging therefore requiring more effort.

The study showed both programs to be beneficial and most students showed achievement gains. The conclusion could be made that the relationship exists between the reading level and the appropriateness of computer features that are utilized. The Basic software was successful in improving sight recognition of vocabulary for lower ability students. The Enhanced software was effective for the students who already had a sight vocabulary. These children may need support in independent word recognition by the teaching of self help skills at a higher reading level.

Computer assisted instruction was studied by McCullough (1992) to determine if use of a computer lab for twenty-four fourth and fifth grade Chapter One students would increase math skills. The control group in this study received traditional remediation services from a teacher without computer instruction in math. The conclusion made from the data collected showed there were no significant gains in performance. Many studies do show a positive correlation, but the author felt the children's learning disabilities could be a factor.

Smith and Woody (2000) found that learning styles of students determined whether Computer Assisted Instruction would be successful or not. If the student was a visual learner it tended to be more effective than if they were an auditory learner. The results showed that students learn best when both auditory and visual stimuli were used in a lesson.

Another study by Swan, Mitrani, Guerrero, Cheung & Schoener (1990) found a positive correlation between a student's locus of control and their interaction with a computer. Many children with learning disabilities feel out of control or externally controlled. Working with a computer helps them to feel more in control of their

academic achievement. The computer allows them to work at their own pace and feel successful, which builds confidence and reading skills.

A software program called *WYNN: Software for People With Reading Challenges* by Freedom Scientific comes close to meeting the needs of learning disabled students.

WYNN is an acronym for "What You Need Now,.". If a student is having difficulty in a particular subject, the textbook can be scanned into the computer and an individualized program developed for that student. As the student reads the text it is possible to adjust the text size and background color to allow for visual deficits. When reading a difficult or unknown word, the student merely clicks on the word and a voice tells them what the word is. If he/she would like to hear the word said slowly then they can click again and the word is said slowly in syllables. It also gives a dictionary definition by print or speech. It is not considered to be an Integrated Learning System because the data used by the student must be scanned into the computer. The software does not track the student's progress or provide assessment, but is a tool that aids students in reading, writing and study skills. Textbooks, Internet or homework can be typed or scanned into the computer to provide a more reading friendly atmosphere.

The program is a bi-modal approach which targets primarily the visual and auditory senses. The WYNN software also provides a colored background to aid students with light sensitivity. In a study done by Whitely and Smith (2001) using color tinted overlays, they found that there is sufficient evidence that visual disturbances contribute to the difficulties associated with some reading problems. The authors found that 50 percent of the learning disabled population experienced some eye strain or visual perception distortions of the print. The use of the colored overlays is believed to help children who

have primarily visual disturbances. If the child had a phonological and visual disturbance the colored sheets were less useful.

Thirty-four school districts in Washington State were involved in a Learning Disabilities and Technology project funded through a grant called the Technology Literacy Challenge Fund. The project was administered through the Special Education Technology Center at Central Washington University in Ellensburg, Washington and evaluated by RMC Research Corporation in Portland, Oregon. WYNN software was one of ten technological products evaluated in the study from 1997 through 2002. Most students were in grades three through eight, although a few were in high school.

Black and Hallows (2003) found in this study that technology does improve the reading and writing of learning disabled children. The WYNN computer software was rated as being used a lot by fifty-nine percent of teachers in the study. Twenty-seven percent rated the software as being used a little and fourteen percent rated as not used at all. The teachers were asked to also rate how the WYNN software was used in the classroom. Eighty percent of respondents used the WYNN software to read text orally to students, while between fifty and eighty percent used the program for writing needs. Twenty-five percent used the outlining organizer to help students begin writing.

The study found that technology helps students to work individually and empowers them to develop products closer to their peers. This process enables them to feel successful in the classroom. It was found that their keyboarding, writing, academic and behavioral skills improved through the use of technological interventions.

Summary

Teachers work daily with students and must appreciate every child's gifts and talents. As students learn to read, it becomes apparent that one approach does not fit the needs of every child. As reported in these studies, some children have a specific learning disability related to their physical make up. Further research will hopefully provide more complete answers. Teachers should use varied approaches with as many different types of stimuli as possible. The research was very conclusive that competent readers had phonological skills which then gave way to automaticity. The readers who struggled had deficits in the area of vision, phonological skills and finally the ability to use these skills in a fluent and automatic response. Though these children may struggle with the specific skill of reading due to whatever hindrances, it must be remembered that many are very bright and educators cannot give up on these promising young students. As more research develops, hopefully each child with a reading disability will receive the proper attention needed to help them become a fluent, successful reader.

Auditory learners need to hear what facts they are expected to learn. In the case of a child with an auditory learning disability, he may need to hear the word slowly or more than once. By listening to a voice read the text the phonological and automaticity elements of a child's reading are also indirectly strengthened. When listening to the voice support the student can pick up the sounds of the letters and string them together to make known words. Then by listening to the text as many times as the student needs, the student also gains automaticity. This program allows a child to stop struggling with word attack skills allowing then to instead focus on the comprehension of the text. When older readers are still struggling with the pronunciation of a word, they cannot possibly

comprehend the meaning of the text. WYNN software can be customized to suit the individual needs of a learning disabled child, making school a more comfortable and enriching place to learn.

CHAPTER THREE

PROCEDURES

Introduction

This project creates a student/teacher handbook containing instructions and activities for use with WYNN computer software. It also provides lessons and activities used for a learning disabled child in the general education or special education classroom.

Each child is an individual and requires an individualized program to help them succeed, depending on whether they have an auditory, phonological, or visual deficit. This individualized approach is sometimes difficult for a teacher to adequately develop with so many students in the classroom.

Need for the Project

In the year 2000 the Yakima School District received the WYNN software as part of a Learning Disabilities and Technology project. A Technology Literacy Challenge Fund grant through the state's Office of Public Instruction provided the software at the middle school level. The teachers were to rate the materials used according to specific factors.

The author was hired in the fall of 2001 and did not participate in this study. However, in May of 2002, six boxes of WYNN software were deposited into the author's classroom. Also in boxes were a new computer, printer and scanner. That was what began the search for knowledge as to how the program worked and how this program was going to help students. A handbook with instructions for teachers and students was

needed to incorporate this program into the high school curriculum. A novel, *Lord of the Flies* by William Golding was used in the lessons.

Research Strategies

The library of Central Washington University was the main database of information for this project. The journals located on the second floor provided a rich source of journal articles that dealt with learning disabilities and related computer technology. The author was also able to locate journal articles by searching on the Educational Resources Information Center (ERIC) online database. An important source of information was the third floor collection of books and thesis studies by students at Central Washington University, as well as the completed masters projects on file in Black Hall. The journal articles used were all research based using quantitative and qualitative based methods. A wide range of opinions and conclusions were sought to give the reader factual information and an overview of the complexity of learning disabilities.

Summary

The author has been researching assistive technology to help learning disabled students succeed in the classroom. The first phase was to understand just how individual and varied these disabilities could be, as well as understanding the challenge of helping several students in the room at the same time. The student with an auditory/phonological deficit needs assistance in a different way than a student with a visual deficit. The second phase centered on the use of the WYNN software in the classroom and how it can benefit the student. The third phase was to create a handbook, which would help both teachers and students to learn the WYNN program through an assignment already part of the curriculum.

CHAPTER FOUR

THE PROJECT

The intent of this project was to create a handbook that contains lessons designed to help students and teachers learn the WYNN computer software within the content of literature. The Wynn software program was developed by Freedom Scientific, a computer software company, to aid in the process of reading for the many students who struggle in the classroom. The user is able to modify the reading process to match his or her strengths and weaknesses, thus making reading a more comfortable and enjoyable experience.

Word attack skills are imperative to an individual's ability to read. If these skills are low or non-existent, then the ability of the software program to be tailored to these needs allows the student to shift his focus away from word attack into comprehension. When the text is too difficult for successful word attack to take place, the software program literally does this for the student. This enables the student to concentrate on comprehending the text for an upcoming test or lesson rather than becoming frustrated at the lack of success when reading alone.

In the project, *Supporting Reading Instruction of High School Students With Learning Disabilities: Strategies That Work Successfully in the Classroom By Using WYNN Software*, lesson plans for students with learning disabilities were developed and presented in Chapter Four. In order for students and teachers to become familiar and comfortable with the software, lesson plans were developed using an Eisenhower High School required novel, *Lord of the Flies* by William Golding.

SUPPORTING READING INSTRUCTION of HIGH SCHOOL STUDENTS BY
USING WYNN SOFTWARE

Linda Kilgore

July 2003

Central Washington University

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WHAT IS THE WYNN SOFTWARE PROGRAM?

The WYNN software program was developed by Freedom Scientific, which is a company located in Palo Alto, California. The software aids in the reading of text and study skills for the many students who struggle to comprehend the printed page. The user is able to modify the reading process to match his or her strengths and weaknesses, thus making reading a more comfortable and enjoyable experience. The text must be scanned by the teacher into the program. The computer voice can be customized to match the listening and reading needs of the user. Other features include a talking dictionary and thesaurus, book marking and highlighting, word prediction, text or voice annotation, and access to the Internet with reading and study tools. The rotating, color-coded toolbars make it easy for an inexperienced learner to use the software.

Word attack skills are essential to an individual's ability to read. If these skills are low or non-existent, then the program can be tailored to meet these needs which allows the student to shift his focus away from word attack to comprehension. When the text is too difficult for successful word attack to take place, the software program literally does this for the student. This enables the student to concentrate on comprehending the text for an upcoming test, rather than becoming frustrated at the lack of success when reading alone.

The WYNN software incorporates different learning styles of students, particularly visual and auditory learners. It is assumed that visual learners need to be able to see the information that is being presented. They learn best by using their eyes to process information. Some of these students benefit from the use of color to help them on

a task such as highlighting main ideas. The WYNN program provides choices for colors in the selection of background colors, highlighting and the use of bookmarks in the text.

These students sometimes learn better by writing what they need to know about a text. A visual learner is sometimes weak in the auditory area. The Visual Presentation tool bar can be adjusted to make reading more comfortable for the student by adapting to the student's visual strengths. The student can adjust the font size, color of the text and spacing of the document to fit individual needs. As the task of reading becomes easier and more enjoyable, the comprehension also increases.

An auditory learner can also benefit by using this technology of today. By both seeing and hearing the text they are using a bimodal approach, meaning they are using both auditory and visual processes. This approach emphasizes the student's strength and helps to accommodate or strengthen their weakness.

Sometimes too much print becomes troublesome and distracting to this type of reader. Students may then benefit from using the masking feature of this software, which eliminates some of the text. This leaves a small window of print while blocking out other areas. This helps the auditory learner to process information better because it is in smaller chunks visually.

The WYNN software was designed to be a tool used at home or school to help people enjoy the ability to read, write, study and comprehend the written word. Students with reading difficulties struggle everyday to survive the school atmosphere, but with this program can become more successful in reading activities. This bimodal approach improves comprehension by allowing the reader to use strengths, but at the same time accommodating weaknesses with the help of the software program.

HELPING STUDENTS LEARN HOW TO USE WYNN SOFTWARE

The Wynn program has four toolbars, which perform various functions. The student could be learning how to operate these functions while at the same time completing a required Language Arts assignment. All students at Eisenhower High School in Yakima, Washington were required to read *Lord of the Flies* by author William Golding. Therefore the two assignments were combined into one process.

Before a lesson may be started, the book must first be scanned into the computer. This task is not as easy as it may sound. In the process some letters may not be read correctly by the scanner and must be fixed on an individual basis. After scanning takes place, tasks can be assigned which familiarize the student with each toolbar. It is for this reason only a few pages should be scanned at a time to allow the student to practice in each of the four lessons.

When the student has completed all four lessons, then the remainder of the book may be scanned. It is open to the teacher's judgement where to insert more directions or assignments as student needs arise. Most printed materials are copyrighted and teachers are cautioned to follow all copyright laws when scanning and using the WYNN software for student use in the classroom.

THE FOUR WYNN TOOLBARS

The BLUE toolbar

This is the File Management toolbar. These buttons open, close, save and print files. In the WYNN III program this toolbar can allow the user to connect to the Internet. The WYNN Wizard software has a scan button. After putting the document onto the scanner, just click on this button and the text will scan into the WYNN software. When using WYNN Reader scanning is not possible and a scan button does not exist.

The GREEN toolbar

This toolbar allows the user to make visual changes to the text. These include changes in size, font, spacing, and color of background. The changes in font, size, and spacing of the text can accommodate personal preferences when reading. The colored background can have significant effects on some readers. By using colored background the light waves are changed and the eye may experience less discomfort based on these individual differences. Black letters on a white background create the greatest contrast and cause many people to experience eye strain. If a background color bends the light rays differently, the eye may experience some relief while reading. The WYNN program was based on the current research concerning light sensitivity. The colored background can help some people view the print more clearly, thereby increasing comprehension.

The PINK toolbar

This is the Study toolbar. It gives buttons that will aid in understanding the text, such as a dictionary and a thesaurus. A bookmark, text or voice note may be added to the document. The highlighter allows the student to remember details by highlight important text. Another function is that it will break words down into syllables for a reader struggling with pronunciation.

The YELLOW toolbar

The Writing toolbar will help the student to write, edit and spell check the document, along with other word processing functions. The ability to “Cut, Copy and Paste,, is on this toolbar, along with the ability to change font style and appearance. A page to help students organize ideas when writing is found by using the Outlines button.

USING THE TOOL BARS IN TEXT

LESSON ONE-Learning To Use the Study Skills Bar

To the Teacher:

Objective: The student and teacher will become familiar with the toolbars and learn how to use the WYNN software program by using text from *Lord of the Flies* by William Golding.

Materials for the teacher: *Lord of the Flies* by William Golding and WYNN Wizard software with scanner, WYNN instruction manual

Materials for the student: paper and pencil

1. The teacher scans page 7 into the WYNN computer software. Follow the directions for scanning in the WYNN instruction manual. After scanning, the teacher will notice the scanned page looks different than the page in the text. The left margin is not indented as the text is. This will not be a problem. However, it is necessary to fix any errors or omissions of words in the text. The student will use this text on the computer screen to answer questions for all four lessons. Paper and pencil will be needed to answer these questions at this time while learning the tool bars.

LESSON ONE- (Activity for the Student).

Learning to Use the Study Tool Bar

To the Student:

Materials: paper and pencil

Instructions: After the teacher has scanned the text into the computer, the student is ready to begin. The assignment may be read from this handbook or scanned into the computer. A separate paper and pencil for answers will be needed.

1. Using the cursor, click on the Next button. The one with the arrow. Notice how the bar changes color, but the first 5 buttons stay the same (NEXT, READ/PAUSE, READ/WRITE, EXACT VIEW and OTHER DOC). Stop on the PINK tool bar. Click on the Read button. This will highlight a word as it is being read to you. Click again and it will stop reading.
2. Highlight the word “clambering,, with your cursor. Now click on the Dictionary button. Write on a piece of paper the basic and standard meanings of the word as given by the computer.
3. Highlight the word “multitude,, and click on the Spell button. Copy onto your paper what you see here.
4. Highlight the word “undergrowth,,. Click on the Syllables button. Copy the pronunciation on your paper.
5. Click on the Highlight button. Choose a color by clicking on it. You now have a colored pen for a cursor. Choose a sentence to highlight with each color, so three sentences are highlighted. Read these sentences to yourself. Go to the Highlight button and click the last icon. It is an eraser. Use to erase highlighting.

6. Click on the Highlight button. Highlight six words using different colors. Now go to the Lists button and choose an icon that shows a highlighter pen. Click on it and you will see your list. What words did you choose? Write the list on your paper. Now click on the other document page and it will go back and forth between the two pages.
7. Click on the Bookmark button. Follow the same steps as in #5. Use bookmarks to make a list. Write the list on your paper.
8. Click on the Notes button. In the space answer the following question. What did the boy with voice in the bushes, look like? Describe him using words from the above story. Copy your answer on your paper.
9. Click on the Voice button. Make a voice note, but click on the Cancel button and it will not be saved. Write on the paper what was said.

LESSON TWO-Learning To Use the Visual Presentation Bar

To the Teacher:

Objective: The student and teacher will become familiar with the toolbars and learn how to use the WYNN software program by using text from *Lord of the Flies* by William Golding.

Materials: *Lord of the Flies* by William Golding and WYNN Wizard software with scanner and the WYNN instruction manual.

Procedure:

The teacher scans page 8 and 9 into the WYNN computer software. Follow the directions for scanning in the WYNN instruction manual. After scanning, the teacher will notice the scanned page looks different than the page in the text. The left margin is not indented as the text is. This will not be a problem. However, it is necessary to fix any errors or omissions of words in the text. The student will use this text on the computer screen to answer questions for all four lessons. Paper and pencil will be needed to answer these questions at this time while learning the toolbars.

LESSON TWO- (Activity for the Student).

Learning to Use the Visual Presentation Bar

To the Student:

Materials: paper and pencil

Instructions: After the teacher has scanned the text into the computer, the student is ready to begin. The assignment may be read from this handbook or scanned into the computer.

A separate paper and pencil will be needed for answers.

1. Using the cursor, click on the Next button. The one with the arrow. Stop on the GREEN tool bar. Remember the first five buttons stay the same in each toolbar. The icons or a pictures on the toolbar show you where you will go when the click on them. If it says Read Only, then you are in the writing mode. If you click on Read Only then you will switch to the reading mode. Practice going back and forth between the Read Only/Write button. What is the author talking about in the story when he says “green feathers,,”? Write the answer on your paper.
2. Click on the Size button. How many different sizes are available? What size font is this document?
3. Click on the Word Space button. This button adjusts the amount of space between each word. How would that be useful to certain individuals?
4. Click on the Margin button. What size margin should your paper be set for an English writing assignment?
5. Click on the Font button. How many fonts are there? Which one do you prefer?
6. Click on the Mask button. These are your four options. How could these be useful to you? Describe how you or someone else could benefit from this toolbar.

Line Masking shades the entire page leaving the line the cursor is on unshaded.

Sentence Masking shades the entire page leaving the sentence unshaded.

Paragraph Masking shades the entire page leaving the paragraph where the cursor is unshaded.

No Masking leaves the page with no shading. The Read By button is only available here.

7. The Read By button is the last button on the GREEN toolbar. This allows words to be in the spotlight, much like a cursor. Try clicking the mouse as you explore the options of one word, three words, one line, one sentence or one paragraph. Does the Spotlight help you to read better? If so, describe how it helps and which Spotlight seems to work best.
8. Were there words that you were unsure of? If so, go back to the PINK toolbar and use the "Dictionary button,, to find the meanings. Use the Read button to have it read to you. Write the word and definition on your paper.
9. Find and click on the word "proffer,, in the story. Use the Dictionary button to find the meaning. Write the definition on your paper.
10. How are the boys feeling at this point in the story? How do you think you would feel? Compare your feelings with theirs on your paper.

LESSON THREE-Learning To Use the File Management Bar

To the Teacher:

Objective: The student and teacher will become familiar with the tool bars and learn how to use the WYNN software program by using text from *Lord of the Flies* by William Golding.

Materials: *Lord of the Flies* by William Golding and WYNN Wizard software with scanner and the WYNN instruction manual.

Procedure:

The teacher scans page 10 and 11 into the WYNN computer software. Follow the directions for scanning in the WYNN instruction manual. After scanning, the teacher will notice the scanned page looks different than the page in the text. The left margin is not indented as the text is. This will not be a problem. However, it is necessary to fix any errors or omissions of words in the text. The student will use this text on the computer screen to answer questions for all four lessons. Paper and pencil will be needed to answer these questions while learning the toolbars.

LESSON THREE- (Activity for the Student).

Learning to Use the File Management Bar

To the Student:

Materials: paper and pencil

Instructions: After the teacher has scanned the text into the computer, the student is ready to begin. The assignment may be read from this handbook or scanned into the computer.

A separate paper and pencil for your answers will be needed.

1. Using the cursor, click on the Next button. The one with the arrow. Stop on the BLUE bar. This bar contains the files you will be using. Remember the first five buttons are the same for all tool bars. Find the word “perspectives,, in the story and highlight it. Go to the dictionary by using the “Next button,, until you reach the PINK bar. Write the definition on your paper. Use it in a sentence.
2. The next button is the Scan button. It is used to copy text or pictures into the computer. This should only be used during scanning and under the direction of the teacher.
3. The NEW FOLDER button allows you to start a new file or document. Click on this folder and write a short paragraph about what you think it would be like to be with Piggy and Ralph on the island.
4. When finished with the paragraph click on the Save button. You should see a window with the word documents at the top. Type in your first and last name in the file name box. Click on SAVE. Now you have a word processing document that can be used for other classes. Click on the Close button.

5. Click on the Open button. You will see a window with several folders. Click on the Flower Parts folder. You will see a page about flowers. Now click on the EXACT/TEXT VIEW button. Describe the difference between the two pages. How are they alike? How are they different?

6. Click on the Close button. Now explore the other files by using the same steps as you did in #5. Describe in one or two sentences what you saw in each folder. How many folders were there? Close these files by using the Close button.

LESSON FOUR-Learning To Use the Writing Tool BarTo the Teacher:

Objective: The student and teacher will become familiar with the tool bars and learn how to use the WYNN software program by using text from *Lord of the Flies* by William Golding.

Materials: *Lord of the Flies* by William Golding and WYNN Wizard software with scanner and the WYNN instruction manual.

Procedure:

The teacher scans page 12 and 13 into the WYNN computer software. Follow the directions for scanning in the WYNN instruction manual. After scanning, the teacher will notice the scanned page looks different than the page in the text. The left margin is not indented as the text is. This will not be a problem. However, it is necessary to fix any errors or omissions of words in the text. The student will use this text on the computer screen to answer questions for all four lessons. Paper and pencil will be needed to answer these questions while learning the toolbars.

LESSON FOUR- (Activity for the Student).

To the Student:

Learning to use the Writing Tool Bar

Materials: paper and pencil

Instructions: After the teacher has scanned the text into the computer, the student is ready to begin. The assignment may be read from this handbook or scanned into the computer. A separate paper and pencil will be needed for answers.

1. Using the cursor click on the Next button. The one with arrow. Noticed how the bar changes color, but the first five buttons stay the same. Stop on the YELLOW bar. This is the writing tool bar. When writing a document it becomes necessary to use tools that help underline or move words to different locations.
2. Now use the Next button to find the BLUE bar. It is just one click to this bar. Click on the Open button. In the window you should see your file with your name on it. Click on this file and your story of Piggy and Ralph should come on the screen.
3. Now use three clicks on the Next button to go back to the YELLOW bar. Highlight a word and then click on the Cut/Paste button. The word will disappear, but now click on the Paste button and it will be where your cursor is.
4. Now highlight a word and practice using the Style button. Here you can make a word bold, use italics or underline it.
5. Now practice using the Find button. This button is helpful if you would like to find a certain word in your document. Maybe you find out that someone's name is wrong.

You can find the word and change it by using this box. If you use the Text Find button it will find the word in the text document. If you use the Mark-up button it will find bookmarks or notes. Click on DOWN if you wish to search from your cursor down. Click on UP if you wish to search from the cursor up to the beginning of the document.

6. Click on the Go To button. This page allows you to go to another page quickly. Your document is only one page. Remember to use it if you have a larger document.
7. Click on the Outline button. You will see a new document. Choose a title and outline the first thirteen pages in the book, *Lord of the Flies* by William Golding. Just practice and do the best you can. Click on the “Other button,,. This allows you to go back and forth between two documents. Print your outline by returning to the BLUE bar.
8. When writing a document, the Word Prediction button helps the writer to spell possible words. It is trying to “guess,, which word you are wishing to use. The more letters you can type correctly, the better able it is to help you.
9. Use the Spell Check button to see if your words are spelled correctly.
10. Your lessons are complete. What do you think of this program? Please write a paragraph on your paper explaining what you liked or did not like. Was it easy to learn? How will this program help you to read or write? Did the colored background help you? If so, which color helped the most?

LESSONS THAT MAY BE ADAPTED FOR STUDENTS USING THE WYNN SOFTWARE

The following lessons may be used with the *Lord of the Flies* theme by using the WYNN software program or they may be adapted to other literature. The advantage of the WYNN software is that whatever the curriculum the teacher is using, it can be adapted to the individual student by scanning the material into the computer. The student may then individualize the text to his/her needs by using the four WYNN toolbars. Most printed materials are copyrighted and teachers are cautioned to follow all copyright laws when scanning and using the WYNN software for student use in the classroom.

PREREADING STRATEGIES AND BACKGROUND KNOWLEDGE

The following exercises are meant to check the student's background knowledge prior to reading. It is important for students to warm-up before a lesson just as an athlete would warm-up before a competition. Many times sharing with a partner can be a great way to get discussion and experiences flowing from one to another. Shy students who may not open up in class may start to verbalize with a partner.

LESSON- Warm-up Prereading Exercise

Step 1: Read the title of the chapter and the introduction.

Step 2: Read the headings and the subheadings.

Step 3: Read the chapter summary.

Step 4: Read the questions at the end of the chapter.

Step 5: Find the main idea-This chapter is about _____.

Step 6. Do you have personal experience with this? _____.

The author gives permission for this material to be used or to be scanned into the WYNN software program.

LESSON- Prereading Strategies

Objective: The student will develop an understanding that what they already know influences what they comprehend when reading.

Materials: Questions should be typed or scanned into the computer.

This is an example of a prereading activity using *Lord of the Flies* by William Golding.

1. What do already know? Write down at least three facts that you already know about surviving in the wilderness.
2. What do you hope to find out about surviving in the wilderness?
3. Make predictions. Look at the pictures and chapter titles. What do you think you will learn from reading the story?

A WRITING TOOL: ANOTHER PAIR OF HANDS IN THE CLASSROOM

Imagine yourself writing a document on a Chinese typewriter. As you struggle to find a certain character on the keyboard you forgot what you wanted to write in the first place. This is the struggle many students have as they try to complete a writing assignment in the classroom. For them writing is a constant nightmare of symbols and letters hooked together in ways their working memory can not comprehend. Their handwriting is slow and spelling memory nonexistent making the end product or published paper nearly impossible.

What can be done for these students? Having the child dictate to a teacher or adult in the room can be extremely helpful. This way the adult can coach the child along with the writing format and ideas. More times than not the older child has already developed such poor self-esteem that they have little confidence in their writing. Sometimes this process works, but many times there are just not enough adults available.

The computer software available today can give the teacher an extra set of hands. Through the use of voice technology the student is able to hear what is being typed into the word processor. The limitation being that the computer can only be expected to say correctly what is typed in and spelled correctly. The student must have the ability to correct the spelling using the dictionary or have accessible help in this area.

The following lesson is an example of how this program may be helpful to a student doing a literature assignment for an English lesson. The students in the classroom were studying *Lord of the Flies* by William Golding. For the majority of students this was no major task. However, the struggling student thinking about how to

spell, write and edit their assignment has more to deal with aside from content of the assignment.

LESSON- Story Pyramid

Objective: The student will develop vocabulary words from, *The Lord of the Flies* text to provide a word bank for the following writing lesson.

Materials: The Pyramid page should be scanned into the computer for use by the student.

Source: Alverman, D. (2002). Content reading and literacy: Succeeding in today's diverse classrooms. Boston: Allyn & Bacon

Before assigning a writing assignment, it is necessary to build the student's word bank which will make the writing process easier. The Story Pyramid page can be scanned into the WYNN program to make an easily accessible assignment for students to build vocabulary related to the novel.

Story Pyramid

1. Name of the main character.
2. Two words describing the main character.
3. Three words describing the setting.
4. Four words stating the problem.
5. Five words describing the first event.
6. Six words describing the second event.
7. Seven words describing the third event.
7. Eight words stating the solution

Source: Alverman, D. (2002). Content reading and literacy: Succeeding in today's diverse classrooms. Boston: Allyn & Bacon

LESSON: *The Lord of the Flies* Writing AssignmentWriting Lesson Objectives:

1. The student will compare and contrast a theme of the novel in essay format using an introductory paragraph, a body consisting of three paragraphs and a conclusion.
2. The student will apply new knowledge of the novel to his/her own life experience.
3. The student will use the Wynn software to help process and edit the essay.

Materials:

The Compare and Contrast instructions page should be scanned into the computer. The student needs a paper and pencil to complete the assignment or they may use the word processor in the WYNN software.

Essay Assignment-Compare and Contrast (May be scanned for student access.)

Choose an essay topic from the choices below. Write a five paragraph rough draft. It should include: introduction, body and a conclusion. Turn it in for editing. Then write a final paper and turn it in for a grade.

1. Human Nature: Should society depend on the ethics of the individual or the political system?
2. The Human Capacity Towards Evil: What makes one-person do evil and another person not?
3. Authority: Can it be misguided? Is it bad or good for us?
4. Mental Checkmate: What does this use of authority mean in our daily lives?
5. Adolescence and Peer Pressure: What is group power versus the individual power?

THE IMPORTANCE OF VOCABULARY DEVELOPMENT

Reading comprehension constitutes meaning. Each teacher must decide how much classroom time to devote to vocabulary development. To teach the vocabulary is to teach the content. There is no value in spending time on a word if it is not necessary to the comprehension of the reading material. The teacher should find out what students already know about the subject. Decide what words are needed for comprehension of the subject and then provide multiple ways the students can learn their meanings. Sometimes students are able to learn vocabulary definitions, but then cannot transfer this knowledge appropriately to the text. Using these words in context then becomes an important learning task also. The following lessons are ideas that may be used to enhance vocabulary development in the content areas.

LESSON- Vocabulary for Prereading and During Reading, *The Lord of The Flies* by William Golding.

Objective: The student will learn the meaning of vocabulary words prior to reading the story to enhance comprehension. During the reading process the student will locate the word in context.

Materials: Source: *Lord of the Flies* by William Golding. Text should be scanned or the student may use a copy of the book to find the answers.

Instructions to the Student: Define the following words. Then write the sentence and page number where it is found in the book.

1. conch _____

sentence- _____

2. scar- _____

sentence _____

3. island- _____

sentence- _____

4. reef- _____

sentence- _____

5. clambering- _____

sentence- _____

6. proffer- _____

sentence- _____

LESSON: Vocabulary - Word Mapping or Word Web

Objective: The student will learn how to connect related ideas and vocabulary through using a graphic organizer such as a word web.

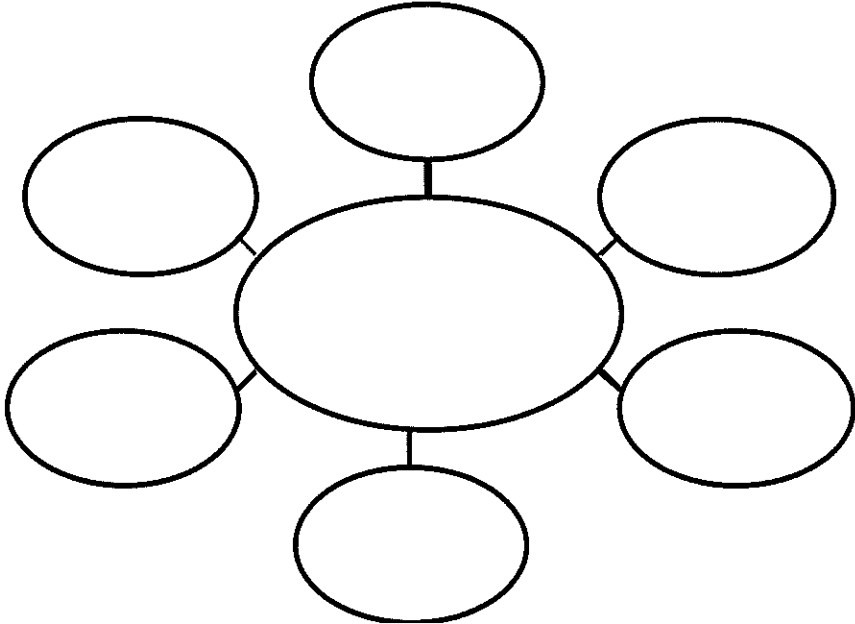
Materials: Word Web may be scanned into the WYNN software.

Source: : Alverman, D. (2002). *Content reading and literacy: Succeeding in today's diverse classrooms*. Boston: Allyn & Bacon.

In content areas such as science and history it is important to learn the relationships and vocabulary around key concepts. Many times teachers feel the students are connecting these concepts, but in reality they are not. A visual map or graphic organizer can be helpful in this area. Students enjoy starting with one key concept and then building other related ideas around that. This allows the student to connect his or her prior knowledge to the new vocabulary and meanings. It also gives the visual learner the visual stimuli needed, but at the same time the oral stimuli the auditory learner needs. As the student copies these words, the writing process helps to commit them to memory for future recall.

When the word map has been completed the students can work in pairs or groups to make sentences relating vocabulary words on the map. Each sentence should be read to a partner to edit accuracy and comprehension of the facts. The partners can then review with each other to see if comprehension of the lesson was complete.

Word Web



HAVING FUN WITH SONGS, POETRY AND RHYME

Phonemic awareness has been shown to be a very important indicator of reading success. The ability to hear the sounds within the words is important in a student's reading development. Teachers sometimes make the mistake of concentrating on these sounds only when a child is young, but for the late-bloomer or a child with a learning disability developing this skill is crucial. What can be done for the older child still needing to develop this skill? It is difficult to find age appropriate materials without seeming too childish.

The following lessons work well with the WYNN software program. The WYNN program offers support for the student by using the voice dictionary and study tool bars. Learning disabled students have trouble with spelling and this has been shown to be directly related to phonemic awareness. Research indicates a relationship between invented spelling and decoding, and that they make use of the same phonological awareness skills. Children do not realize that by using spelling exercises they are getting practice in sound-letter relationships (Cunningham & Cunningham, 1992).

Poetry and songs are a great resource to teach parts of language such as synonyms, similes and metaphors with older students. As the students listen to a popular song, they may also be learning phonemic awareness while listening to rhyme and rhythm.

LESSON-Making Words With Spelling and Rhyme

Objective: The student learns a new vocabulary word through the use of smaller words which have letters and sounds in common.

Materials: Use the blackboard or pieces of paper for the warm-up activity. The computer and WYNN software are used for word processing in the activity. The WYNN software will give the student support in the writing process by use of the oral spelling and dictionary help.

Warm-up Activity:

1. You predetermine the word such as “friends,,”. This will be the final word left at the end of the game. It could be a large vocabulary word from a science or history text to start a lesson and peak student interest. The word “friends,,” is taken from *The Lord of the Flies* by William Golding.

2. Make a list of shorter words that can be made from that word. (Ed, ride) Older students can help or make their own list. Look for any patterns which make rhyme. Make word cards from index cards and order them from the shortest word to the longest. An alternate activity is for students to manipulate individual letter cards to make each word.

Letter cards-e i d f n r s (friends)

Words to make: Ed, red, rid, end, fin, fine, fire, ride, side, send, dine, diner, rides, fires, friends

Rhyme patterns: -ine, -ide,

Extension Activity: Writing Using WYNN Software

Objective: The student will use the WYNN software as a word processing tool.

Materials: No materials need to be scanned for this activity. The student will use WYNN word processing only.

When finished making as many words as possible, ask the students what word is made by using every letter. They should have spelled the word “friends,,”. When all words have been used and all sound-rhyme patterns have been explored, the students should write and illustrate a story using the words created. In this lesson the students are to use the WYNN program to do word processing without the need to scan any materials.

LESSON: Poetry -Similes and Metaphors Using the WYNN Software

Objective: The student will build reading vocabulary and fluency by developing his/her own poem using either a simile or metaphor.

Materials: You may read poems aloud for discussion or scan into the WYNN software for student use. The student may open their own word processing document to create their own poem.

Poetry is a great way to get students to spice up their writing skills. It is in poetry that we find rich vocabulary, synonyms, similes, metaphors and rhyme. When these skills are developed fully the student becomes a much more creative and interesting writer.

Poetry seems to play a large role in high school literature classes.

Introduce poems by pointing out the difference between a metaphor and simile. Students seem to have fun with this while learning how to use creativity in their writing. These poems are rich with comparisons and the use of adjectives. The poems about the *Lord of the Flies* were found on the Internet.

The students write about their favorite activity or a book such as *Lord of the Flies*. Brainstorm vocabulary using vivid verbs to make the poem interesting.

Metaphor: The comparison of one thing to another. Example: Skateboarding on an asphalt sea.

Simile: The comparison of one thing to another, but using either like or as. Example: Simon's rage is compared to a storm. Ralph rages, as does the storm.

These are examples of poems written after reading *Lord of the Flies* by William Golding. Each poem contains a simile and was found on the Internet website.

Source: Aufdenspring, D. (2003) Poems about *Lord of the Flies* by Danielle Mentock

Website: <http://www.aufdenspring.com/ment.html>

Simon's Poem

Fear

LESSON: Learning Lyrics in a Song Using the WYNN Software

Objective: The student will learn the words of a song by using the WYNN voice support, if needed

Materials: Lyrics of a song should be scanned into the computer using WYNN software or the student may type in the words by using the word processor. A favorite holiday tune or a patriotic song could also be used. Lyrics to songs are being printed either on the Internet or sold with the song itself.

Extensions:

1. Read the poem or song lyrics to the students. Read them as a choral reading, partner read to each other or practice silently. Let the students practice until fluency can be heard.
2. The student will vary the rhythm, speed or dramatic feeling of a poem or song by changing vocal qualities therefore increasing fluency or automaticity. The student will learn the vocabulary words associated with poetry and song.
3. Ask the students to read the poem or song two different ways. Can the same song sound scary? Humorous? Somber? How can drama be added to make the poem sound different? The sound words such as: tsss, squish, whoosh, buzz, or bonk can be portrayed differently as sound effects.

The WYNN software can be used in almost any student assignment that can be scanned into the computer software or typed with a word processor. The toolbars allow the student to fit their individual needs comprehend the text. This allows for a greater understanding of high school curriculum.

CHAPTER FIVE

Summary

The purpose of this project was to create a student/teacher handbook, which contained information for the successful integration of the WYNN computer software into the classroom. Students with learning disabilities struggle with the general education curriculum and new technology provides an individualized approach to the accommodation of their needs. Research concerning learning disabilities and how the use of computers can support these students in the classroom was included. Lessons were developed using the adopted literature book *Lord of the Flies* by William Golding. The WYNN computer software can be used for any subject.

In the year 2000 the Yakima School District received the WYNN software as part of a Learning Disabilities and Technology project. A Technology Literacy Challenge Fund grant through the state's Office of Public Instruction provided the software at the middle school level. The teachers were to rate the materials according to specific factors. Thirty-four school districts in the state of Washington participated in the study. The goal of the study was to monitor the use of ten different software tools in the classroom. The majority of the classrooms reported that WYNN software was used successfully and found to be a versatile classroom aid for student use.

Conclusion

Some of the limitations of this project were the newness of the technology to the author. The author was hired in the fall of 2001 and did not participate in the Washington State Office of Public Instruction study. However, in May of 2002, six boxes of WYNN

II software were deposited into the author's classroom. Also in boxes were a new computer, printer and scanner. As the author began doing research, many questions became apparent in the implementation of this product into the classroom. It became apparent to the author that this was an untapped resource, available to many teachers but remaining unused due to the difficulty of trying to learn how and when to use the program. The author decided that a handbook with instructions for teachers and students was needed to incorporate this program into the high school curriculum. As a result, it was hoped that this handbook would make it easier for classroom teachers to implement the WYNN software in their own classrooms. Many characteristics of the program made it very easy to use for the average person, making the WYNN program an even more valuable resource in the classroom.

Another serious limitation was the time factor in setting up such a new program. Once the computer and program were set up for student use, text still needed to be scanned. Scanning can be especially time consuming for a busy teacher. Also a limitation was the fact that the school district had given the author a scanner which would not scan materials with WYNN II. The program as it was given to the author was incompatible and did not fully function. With the help of Freedom Scientific the author was able to get a thirty day trial software of WYNN III which allowed the scanning to take place. The scanner worked beautifully with WYNN III software, but not with WYNN II.

A further limitation of the program was the need for constant input of new classroom material by scanning. Most printed materials are copyrighted and teachers are cautioned to follow all copyright laws. The scanning alone takes much teacher or parapro time. However, a competent student or a student aid could be trained to scan materials.

Some teachers may prefer a software program that tracks the student's performance and gives data. The WYNN program is a modification of student curriculum, but does not track student performance or give any kind of data back to the teacher.

The WYNN computer software has many advantages for the student because the student has complete control over its functions. The language the student hears may be changed to Spanish to accommodate English as a Second Language student. Several other languages are available also. Writing and reading can be an overwhelming task for learning disabled children, but with these technological accommodations the student can break the task into manageable pieces. The student, therefore making the program individualized could adjust the WYNN software. The high school students that learned the WYNN software during this project had very favorable comments about the use of this software in the curriculum.

The biggest advantage that WYNN III has over prior versions is the ability to access the Internet. On the File Management toolbar is a button titled "Go To Web,,". This allows the user to access the Internet and visually customize information.

Recommendation

The lessons included in the project are a sample of the activities available when students are studying a novel in the general curriculum. Many other subjects such as math and science could be used to benefit students in the classroom. It is recommended that students adapt and modify the lessons based on the teacher's subject or content area.

This program has been implemented, but it is recommended that in further research the students be tested for a baseline or pretest score in reading. After successful use of the program, the students should be tested again for a posttest score.

In this project, the student reaction to the program was very favorable and students using the program made many positive comments. The student use of the WYNN program was limited to *Lord of the Flies* by William Golding. The students also used the program as a word processor because the scanner was not compatible to the program. This was a serious limitation to scanning more text. It would therefore be recommended that the scanner and the WYNN program be compatible to bring the program to full use. Overall, the program helped students to modify the difficult text found in today's high school classrooms.

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