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The use of Software Program Inspiration and its Effect on the Reading Comprehension of Students With Disabilities

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**The Use of the Software Program Inspiration and its Effect on the
Reading Comprehension of Students with Disabilities**

THESIS

**Submitted to the Graduate Committee of the
Department of Education and Human Development
State University of New York at Brockport
In partial fulfillment of the requirements
for the Degree of Master of Science in Education**

**by
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Abstract

This study will use the software program Inspiration to determine if its use will help students with disabilities improve reading comprehension.

Twenty two students from two sections of 10th grade English 15:1 special education classes participated in the study. The study consisted of comparing two sets of quiz scores using the same students.

The study consisted of the students reading a short story then creating web maps of the story plot. Following the completion of the web map, the students took a ten-question comprehension quiz. This was done for seven sessions. During another seven sessions the students took comprehension quizzes without the use of the web maps. The results of the quiz scores using web maps were compared to the results of the quiz scores that did not involve the use of a web map. A t test was used to analyze the data.

Results from the t test indicated that there was a significant difference between the mean scores of the quizzes involving the use of the concept map versus quizzes that did not involve the use of a concept map.

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CHAPTER I

Statement of the Problem

Purpose

The purpose of this study was to examine the effectiveness of the software program Inspiration in dealing with reading comprehension among students with disabilities.

Need for the Study

“We are a culture of print, and our educational structures are built around that premise. In the arena of language arts instruction, digital media tend to be seen as threatening, as potentially undermining the traditions of teaching and learning we have worked so long to develop.” (Meyer & Rose, 1994, p.293).

School districts across the United States have felt pressure to implement the use of technology across all grade levels and curriculum. New York State even possesses standards that are meant to mandate, or at least encourage, the use of technology in the classroom. Unfortunately, much of the technology that districts invest in is under-utilized. Computers and software programs may have great potential, but are often used for more simple tasks such as word processing.

There needs to be a more in-depth look at the positive uses of software programs that may help students reading and writing abilities. An example of a software program that is meant to help the organization skills of people is the program “Inspiration”.

Inspiration is a visual learning tool that aids students of any age to develop ideas and organize thinking. The creators of Inspiration maintain that the diagramming and outlining formats help students comprehend concepts and information. Visual learning is a good method for teaching thinking skills, and provides a way for students to organize and prioritize new information. The graphical aspects of the program may also prove to help students to reveal patterns, interrelationships, and interdependencies in new information. The creators of Inspiration also maintain that their program will do the following:

Clarify thinking –Students see how ideas are connected and realize how information can be grouped or organized. With visual learning, new concepts are more thoroughly and easily understood.

Reinforce understanding- Students recreate, in their own words, what they have learned. This helps them absorb and internalize new information, giving them ownership of their ideas.

Integrate new knowledge- Diagrams updated throughout a lesson prompt students to build upon prior knowledge and internalize new information. By

reviewing diagrams created previously, students see how facts and ideas fit together.

Identify misconception- Just as a concept map or web shows what students know, misdirected links or wrong connections reveal what they do not understand.

It will be interesting to see if the potential that this program claims to have may help aid students who have difficulties with reading comprehension and organization.

Research Questions

How will the software program, Inspiration, affect the reading comprehension of students with disabilities in a high school English class?

Definitions

1. **Concept Map-** a hierarchical diagram that represents a set of ideas beginning with the most universal and working down to the more particular. These ideas are linked by descriptive words that describe the relationship between these two.
2. **Idea Map-** visual brainstorming technique used to generate ideas and develop thoughts.

- 3. Web-** ways to show how different bits of information relate to each other.

Curriculum example: Language Arts story board- a visual layout of a project or presentation that helps in planning content and appropriate placement.

CHAPTER II

Review of the Literature

The Integration of Technology In the Classroom

We all realize that the use of technology has been integrated in all aspects of our lives. There has certainly been a substantial push to incorporate the use of technology in education. Ediger (1996) outlines the importance of integrating technology when he explains that technology is used in all facets of society, and elementary schools should not lag behind in preparing the elementary school pupil of today for tomorrow's technology-infused workplace. Technology may assist learners to perceive purpose in learning may be an incentive for pupils to become more active in their learning. Marlow (1996) echoes this when he explains that technology can assist pupils to attach meaning to ongoing lessons and units of study. Ediger's belief is that the use of computers may help students develop "wholesome attitudes toward learning." The use of the personal computer may also foster self-discovery and independence, as well as cooperative learning. The promotion of a more constructivist learning through the use of technology will be examined later in this chapter.

Technology is transforming education and society. Tapscott (1999) describes the effect of technology on the world of education when the author writes:

As a result of new technologies, educators will need to shift the way they think about teaching and learning: from linear to hypermedia learning; from instruction to construction and discovery; from teacher-centered to learner-centered education; from absorbing material to learning how to navigate and how to learn; from absorbing material to learning how to navigate and how to learn; from school to lifelong learning; from one size- fits – all to customized learning; from learning as torture to learning as fun; and from the teacher as transmitter to the teacher as facilitator. (p.6)

Ediger (1996) reinforces the importance that technology has in our society by explaining that technology is used in all facets of society, and schools should not lag behind in preparing the school pupil of today for tomorrow's technology-infused workplace. The importance of integration and technology training use among educators cannot be emphasized enough. Teachers need to be leaders in curriculum development and school administrators also "must perceive the necessity of implementing technology in the classroom" (Ediger, 1996, p.2). In order to make the integration of technology possible goals, plans, and budgets should be developed to use technology to its fullest. The importance of the integration of technology cannot be underestimated. Dede (1998) writes, "...properly designed and implemented computing and communications have the potential to revolutionize education and improve learning as profoundly as

information technology has transformed medicine, finance, manufacturing, and numerous other sectors of society” (p.1).

Dwyer (1996) in his article “Networking!” outlines the implications that technology has for our future. Dwyer writes, “We are experiencing one of the greatest transitions in human history” (p.1). “With all the uncertainty it engenders, a global community is emerging, born largely of digital communications and jet-powered transportation”(Dwyer, 1996, p.1). “This optimism around new social and economic possibilities stands in stark contrast to the realities we face today”(1996, p.1). Dwyer asks some key questions that help outline the implications that technology has, in addition to some of the problems that arise in attempting to incorporate technology into education when he states:

The promise of technology is that it will greatly improve the efficiency and effectiveness of our institutions and evolve as an avenue for lifelong learning and universal communication. But along with that promise come inevitable problems: How will schools keep up with the pace of change? How will we ensure equitable access to everyone? How will we deal with information complexity and quantity? What about standards for quality? Where in our curriculum do we help children navigate this new world? How do we make the minimum number of mistakes that we will surely make as we open school doors to this exotic future? (p.3)

Many of these questions cannot be answered at this point. However, what we do realize is that we now live in a technological society where virtually everything is affected by the computer. “In many instances they will only be answered through trial and error- we have not traveled this path before”(Dwyer, 1996, p.3). We

must promote the use of technology to make our children viable citizens of the future. "But above all, they must be answered by all stakeholders in our children's futures, working in concert"(Dwyer, 1996, p.3). "Educators cannot leave these questions to others; they must be the salient voices, the designers of experiments, the risk-takers, and the critics of results"(Dwyer, 1996, p.3). We as educators must promote the use of technology among our students.

"Realizing the Promise of Technology: Teacher-in-Residence at the White House" outlines the amazing implications of the use of technology in education in 1993 after President Clinton and Vice President Gore issued a new plan designed to guide America's use of technology. Driscoll (1994) states, "...the ability to unify text, graphic, video, and audio data into seamless, multidimensional formats will forever alter the way we communicate, and thus the way we think, learn, and teach." (p. 1). Driscoll reveals that there are phenomenal technological implications that will change the way students learn. Multimedia software, with its capabilities to merge text, audio, and video, will make obsolete the teacher's reliance on slides or overhead projector, and it will invite students to explore better ways to convey information. Even though the integration of technology has the potential to cause positive change, there are several obstacles that are frequently encountered. There are financial, political, and social barriers against the integration of technology. Driscoll outlines the barriers against change when he proclaims, "Economics, politics, our organizational structure, and the culture in

and around schools combine to erect a formidable bulwark against change”(1994, p.2). Why are there barriers against these changes? There are several reasons, however one of the biggest barriers lies within the way we teach. In order for technology and the use of multimedia to be effective, we have to go to a more constructivist model of education along with investing in the appropriate equipment, training, and teacher skills. “However, the changes I envision, in which teachers move from being the ‘sage on the stage’ to a facilitator of student exploration, will increase the need for investment in equipment, staff development, and teachers” (Driscoll, 1994, p.2). Driscoll goes more in-depth concerning the change of teaching strategies when he states, “The ‘classroom model’ inherited from the Agrarian Age- direct instruction in separate subjects- has little place in the Information Age, where learning becomes more team- and project-oriented and is less divisible along disciplinary lines.”(1994, p.2). Yet, our typical schedule and educational organization have survived the Informational Age without significant alteration (1994, p.2). Fisher, Dwyer, and Yocan (1997) conducted a study that supports the idea that the constructivist model of education is beneficial to students. The study investigated the use of technology in the promotion of constructivist learning. The authors write, “...computers, online systems, and multimedia can provide students the opportunities to construct meaning from their knowledge”(Fisher, Dwyer, Yocan, p.1).

A basic reason contributing to the teacher-centered model of education is the need to monitor students, both academically and behaviorally. Driscoll (1994) addresses this issue when he states, "One reason for the resilience of these two organizational features is that they help us accomplish one of our primary missions, which is to account for students during the day and assure their safety" (p.2). Unfortunately, lack of time is a huge barrier. The author maintains that most of our resources are dedicated to this mission. We must change our approach if the use of a learner-centered environment where the use of technology is instrumental for education is to be adopted. "If we're to ever effectively use Information Age technology, however, teachers need more time to learn and experiment unencumbered by the demands of having to supervise students"(Driscoll, 1994, p.2). The third barrier that is often encountered is the problem of teacher training. In order to effectively train teachers in the use of technology schools need to allow sufficient time to enable teachers both to learn new technologies and also to incorporate them. Driscoll makes a personal observation when he states, "One attitude I hear expressed repeatedly is that teachers are disinterested in technology and reluctant to change"(1994, p.2). This attitude reflects the fact that few people who haven't taught for a sustained period have any appreciation for the amount of time and energy that must be devoted to accounting for students and delivering instruction, and consequently how little time is available to do anything else.

O'Neil's (1995) research study also examines difficulties with technology integration. The study points out some of the barriers present in the push to incorporate technology. The good news outlined in his article is that schools' access to various technologies is increasing exponentially. "Thirty-five percent of schools now have access to some kind of computer network, and nearly every school has TV's and VCR's, with almost 30 percent of schools having CD-ROMs, a fourfold increase since 1991"(O'Neil, 1995, p.1). Teachers who did use technology only used them in traditional ways such as the use of word processing. Other uses of technology- such as "...desktop publishing, developing mathematical and scientific reasoning with computer simulations, information-gathering from databases on CD-ROM or networks, or communicating by electronic e-mail- are much rarer in the classroom.... Also, many technologies are not used widely in traditional academic subjects in secondary schools (O'Neill, 1995, p.2). Many teachers still insist on retaining the classic teacher-centered model of direct instruction. There are several barriers that schools face when attempting to incorporate technology. One of those barriers outlined is insufficient access to current technology. "Despite increases in access to new technologies, schools are not sufficiently stocked, powered, or wired"(O'Neill, 1995, p.2). "Further, computers and peripherals often are located in a computer lab, where teachers don't have the access to them that would support their use as an everyday

tool”(O’Neill, 1995, p.2). A second barrier that O’Neill’s study revealed was the lack of appropriate training for teachers. O’Neill reports:

Moreover, most teachers have not had adequate training in how to use various technologies in their classrooms. And the training they receive usually focuses on the mechanics of operating new machines, with less attention given to how technology can be helpful in studying specific subjects. Overall, teacher education programs in the United States do not prepare graduates to use technology as a teaching tool. (1995, p.2)

A major barrier many school districts encounter when trying to incorporate the use of technology is a lack of time. This includes time for training, time for teachers to try out technologies in their classrooms, and time to talk to other teachers about technology. “If teachers aren’t given more time to explore the uses of various technologies, and if the help they need in terms of training and support isn’t available, progress toward the vision held by proponents will be slow indeed” (O’Neill, 1995, p.2).

Baker (2000) describes the implications that technology has for our lives when she writes, “One implication from this study is that elementary teachers may need to cease isolating literacy into separate content areas (e.g., spelling, handwriting, reading, English, art, music, drama, speech, math, social studies, science) because this is not how our society thinks and reasons in our increasingly technological environment” (p.107). Baker conducted a study on a class of fourth graders, observing how they were learning and compared this to how their literacy

level changed when the students had computers at their desks and five multimedia stations in their classrooms with internet access. At the end of the study Baker reported that the children's literacy activities had many similarities with the visual and auditory literacies prevalent in our society. Such things as ATM machines, palm pilots, the internet, DVD players, and video games are examples of devices that are creating an impact on the visual and auditory literacy of children. Baker announced an interesting finding that supports the need for technology and a constructivist model class. "A second implication is that technology may provide a bridge between literacy which occurs in our society and literacy education which needs to occur in our schools"(p.107).

Aznar and Holsing (1999) outline the importance of integrating technology into the classroom. Aznar and Holsing explain the reasons why technological literacy is important when they reveal:

1. Critical thinking about something that affects all of us, like technology, requires understanding why we use it, how it works, where it comes from, and how to apply it.
2. Knowing how to use a web browser or word processor, while important, is tied to specific technology. The pace of technological advancements, however, makes learning how to operate specific technologies a secondary focus. Understanding context should be the primary focus because such an understanding spans specific technologies, the concepts are of enduring value.
3. Technology is cross-disciplinary. Its invention and application are driven by history, science, math, communications, and many other fields. Therefore, technology provides a uniting

theme for study in these fields, as well as a tangible, familiar application.

4. Technology does not care about the students' skin color, gender ethnicity, popularity, looks, or background. Technology can be invented, developed, and applied by anyone.
Underprivileged students may assume that they have no role to play in the development of technology, but context shows the variety of ways that people invent, develop, apply, and influence technology.
5. The labor market is short of technology workers. When schools emphasize technological literacy, students gain a better understanding of what technology careers might be available and of what role they would assume in that career field. (1999, p.5)

How the Use of Technology Can Help Students With Reading Disabilities

It is evident that the integration of technology in the classroom is an important topic in the world of education. However, another issue related to the use of technology in education is its ability to help improve the academic performance of students with learning disabilities. A study conducted by Chambless and Chambless (1994) titled "The Impact of Instructional Technology on Reading/Writing Skills of 2nd Grade Students" reveals, "Teachers using computer-based writing curriculum were better able to meet the writing/reading needs of children despite such factors as socioeconomic status, race, or sex than teachers using traditional instructional methods and materials" (p.154).

A major factor that allows technology to be a positive factor in the education of developing readers is its ability to empower students. Richards (1999) explains that for students with reading difficulties, both technology and the attention to standards can provide positive experiences when incorporated into instruction in a meaningful manner”(p.197). For example, a student with difficulties in reading and writing can use the visual capacities of a program such as PowerPoint or Paint Shop Pro to add graphics and sound to supplement their written material. Students may also use computer software programs to such as PowerPoint, or Inspiration to create a map, outlining a project, story, or concept. The ability to supplement text or to use technology to help with reading comprehension serves as an excellent tool to give students satisfaction and an increased level of enjoyment surrounding reading and writing. Richards provides additional support for using technology to enhance the education of students with reading difficulties when she outlines some of the ways that one student in particular was able to emerge as a reader. “Using resources he had discovered, Tom constructed, with the aid of his tutor, an interactive, hypermedia lesson that would allow him to demonstrate his independence as a learner”(Richards, 1999, p.198).

Larson (1995) also addresses the need to change the way children are taught and move to a teaching modality that stresses more experiential learning. Larson explains, “What is not commonly realized, however, is that the crucial

factor in using technology rests within the pedagogical considerations behind the use, not the technology itself”(1995, p.118). Most teachers often resort to the transfer mode of learning where knowledge is transferred from teacher to student. “If we want to reach the very core of the educational process, we must understand that to learn is to be changed, so the student is not just “a very significant contributor, but the very origin and initiator of those inner changes that form the basis of all learning”(Larson, 1995, p.119). Students must eventually become controllers of their own learning by being presented a learning environment where they are allowed to make decisions regarding their own learning. The integration of technology can help make this a reality.

Torgesen and Barker (1995) present some reasons why technology may help students who have reading disabilities. Unfortunately, children who need reading help the most are the students who do the least amount of reading.

Torgesen and Barker state:

Not only do they read many fewer words in their school lessons, but they engage in less reading outside of school than children who easily acquire good word identification skills. Second, children with poor word identification skills often find themselves reading material that is too difficult for them, which interferes with comprehension and consequently, is not pleasurable. Third, the reading lessons for children with reading disabilities focus on correction of word reading problems to a much greater extent than those for normal readers. While the latter group is moving on to interesting interactions with text that allow them to develop comprehension and thinking skills, poor readers continue to struggle to read words correctly, and

thus receive little instruction focused on enhancing comprehension. (1995, p.78)

The use of technology may help break the vicious cycle that engulfs students with reading disabilities. The authors' longitudinal study concluded, "...two training studies both found that effects on subsequent reading development were greater for training programs which included both analytic and synthetic skills, rather than one or the other"(Torgesen & Baker, 1995, p.80). Thus, the authors conclude that students with reading disabilities do benefit from computer software that stresses drill and practice, but they do much better when the drill and practice is implemented with software and material that are age appropriate, interesting, and promotes higher level thinking skills.

Green's 1996 lecture at Brigham Young University agrees with Torgesen and Barker since he also believes that the educational model needs to change in order to spur more effective learning. Green claims:

In fact, having to memorize large chunks of information in order to "pass the exam" represents a dinosaur relic from the pre-writing mentality. We haven't come very far in six centuries or even six millenia. Learning is still laboriously slow, often deadly boring, and governed primarily by the linear logic of a lecturing authority. (1996, p.3).

Certainly there is a need for a change in the way information is presented to students. The kind of passive learning can be deadly boring for them and even if the student takes good notes and successfully learns the material to pass the exams, the knowledge gained is transitory and, therefore, useless (Green, 1996).

Students are living in an age of multimedia where the world is at the tip of their remote or computer mouse. So is technology the solution to a boring and often ineffective education system? "It's time we took a closer look at what technology can do to bring our teaching and learning about the arts into creative contact with the twentieth-century technological advances"(Green, 1996, p.4). We need to support and realize the potential of technology by introducing computers into schools so we can empower students with a control of the learning process that would have been unimaginable a decade ago. To accomplish this Green maintains that we as teachers must simply jump into the multimedia that is available and introduce it to the students. Although Green maintains that "jumping into the multimedia available" is recommended, teachers should not discount the value of effective teacher training workshops that gear multimedia training toward educators.

Specifically addressing the use of computers for reading education, Ediger (1998) discusses the issues surrounding technology use for improving reading.

Ediger reveals:

Technology might well provide new avenues for pupils to engage in an exciting reading curriculum. The goal in overall reading instruction is to guide pupils to read for personal enjoyment and utilitarian purposes. To achieve these two goals, pupils with teacher guidance need to do much reading. Being able to identify words and read fluently is important so that comprehension and interpretation of what has been read is clearly in evidence. A multimedia approach

used in the teaching of reading assists in relating to other curriculum areas such as science, social studies, literature, and mathematics. (1998, p.143)

The use of technology will enable teachers to move into a role of a facilitator where they provide guidance and support when needed. Alfaro's 1999 study investigated the use of a software package called the Waterford Early Reading Program in a kindergarten setting to determine whether well-designed educational technology can bridge the gap between successful and disadvantaged schools. The program was especially successful at helping students who seriously lagged in pre-literacy skills at the start of the school year catch up with their peers.

Lundberg's 1995 study investigated the use of computers in remediating students with dyslexia. Dyslexic students who underwent computer training with speech feedback gained significantly more in reading and spelling performance than did students in conventional special education settings (p.94). An interesting comment made by this author was a personal reflection on the importance of the dynamic between the teacher and the student. Although technology is useful and has many benefits, Lundberg makes an interesting observation when he notes, "To make children aware of how much fun literacy can be, to create the challenging quality of the reading task that arouses intense involvement, does not require expensive technology but rather sensitive and committed teachers"(1995, p. 98).

Sullivan conducted a study where university students corresponded via e-mail with 17 fifth and sixth grade students. The university and elementary students communicated about reading and literature. Sullivan hoped to foster an increased reading among the elementary students as well as “integrating the arts by weaving together activities that would involve reading, oral discussion writing, and the use of technology”(1998, p.2). The results of the study revealed that “The elementary students’ incentives to read appeared to increase”(Sullivan, 1998, p.4). Parents of the students told the author that their children were reading independently without being coaxed.

The Use of Multimedia and Concept Maps With Students With Disabilities

Increasingly, teachers throughout the country are experimenting with instructional practices that incorporate a variety of media to stimulate and to support reading and writing. The media may be as simple as photographs, objects, - or as sophisticated as computer software which can link text, visual imagery, sound effects, and music in a hyper-media presentation. These practices which capitalize on students’ unique abilities and interests, can be particularly powerful for students with disabilities, many of whom experience repeated failure with

“mono-media”- pencil and paper. (Anderson-Inman, 1996). This profile of the benefits of using multi-media among students with learning disabilities highlights some of the benefits that a multi-media environment offers. The use of multi-media can benefit students with disabilities in several ways. Anderson-Inman explains the ways that multi-media helps these students when he states:

First, by writing stories for their peers to read, students have a highly motivating purpose for reading. Secondly, students draw from their own interests and background knowledge to develop the themes and plots. Third, by using multimedia, they engage in non-print activities that capitalize on their strengths (1996, p.2)

One of the most important reasons to use technology and multi-media among students with disabilities is its ability to “...ease the transition from concepts and images to words” (Anderson-Inman, 1996, p.2). It is this reason that may help the use of concept mapping via the software program Inspiration to be a successful tool among students with reading disabilities.

Anderson-Inman defines the concept map on his website titled “Graphic Organizers”. A concept map is a special form of a web diagram for exploring knowledge and gathering and sharing information (1996, p.1). Concept maps are frequently used as graphic organizers that allow students to organize their ideas before writing essays or completing projects. Anderson-Inman continues his explanation when he replies, “A concept map consists of nodes or cells that contain a concept, item, or question, and links”(1996, p.1). The web, or concept

map, helps students develop an understanding of a body of knowledge, explore new information and relationships, access prior knowledge, gather new knowledge and information generated, design structures or processes such as written documents, construction, web sites, web search, or multimedia presentations, and to solve problems.

Concept mapping can be done using a software program called Inspiration. "Inspiration Software is a software package that is specifically designed to facilitate the construction and use of concept maps" (Scappaticci, 2000, p.109). Scappaticci also reveals the benefits of the concept map when he explains:

Concept maps illustrate the shape of the structure, the relative importance of the information and ideas, and the way that the information relates to other ideas. Concept maps can be used to summarize information from different research sources, to think through complex problems by viewing the overall structure of the subject, as a quick way to review, and to associate ideas and make connections that would be otherwise too unrelated to be linked. (2000, p.109)

Scappaticci explains that the use of Inspiration promotes individualized thinking and allows for students to make connections and associations using a visual medium. Another benefit of the concept mapping is that it "...provides a locus for student-teacher interaction that would empower students to take responsibility for their own knowledge" (Scappaticci, 2000, p.109). Thus, there could be the shift

from the teacher-centered classroom to the student-centered classroom that many contemporary education experts are calling for.

The Inspiration website itself explains some of the benefits of using concept maps. The website explains that visual learning techniques help students: clarify thinking, reinforce understanding, integrate new knowledge, and identify misconceptions (<http://www.inspiration.com/vlearning/index.cfm>, 2001). The website also states that the software will help with such things as brainstorming, planning, organizing, outlining, prewriting, diagramming, and webbing. ([http://www.inspiration.com/product info/Inspiration/index.cfm](http://www.inspiration.com/product%20info/Inspiration/index.cfm), 2001). In a study conducted in a 9th grade social studies classroom students used Inspiration to arrange and organize their notes following lectures and reading assignments. The results of their use of the software included significantly higher test scores and higher rates of information retention.

CHAPTER III

Design of the Study

Purpose

The purpose of this study was to examine the effectiveness of the software program, Inspiration, in dealing with reading comprehension among students with disabilities.

Research Question

How will the software program, Inspiration, affect the reading comprehension assessments of students with disabilities in a high school English class?

Null Hypothesis

There will be no statistically significant mean score difference between the scores produced after using Inspiration and the pencil paper scores on the comprehension quizzes of 10th grade students.

Methodology

Subjects

The teacher conducting the study used subjects from two classes of 10th grade English 15:1 special education students. The 15:1 class is a ratio enforced by New York State that ensures that no more than 15 students can be in the classroom. The 15:1 program is designed for students who have learning disabilities or emotional disabilities that prohibit them from being successful in an inclusion or mainstream setting. The students take all their core classes (English, math, social studies, and science) in this 15:1 setting. Each of their classes is with a different special education teacher who is responsible for that particular subject. Most of the 15:1 special education classes also have one aide who helps with management and non-teaching duties.

The study was conducted with two separate sections of 10th grade English 15:1 classes. One section contained 14 students and the other contained 6 students. The students were labeled Learning Disabled, Other Health Impaired, and four students were labeled Emotionally Disturbed. The reading levels varied

from an 8th grade reading level to a 2nd grade reading level. Students who qualified for AIS services also received additional help with math or English.

Materials

Computers and Inspiration programs were supplied by the school district. The high school had a computer lab with 60 computers in it. The classroom had 2 computers and Averkey equipment that allowed computers to be hooked up to a TV in the room. Reading material came from stories and in the textbooks and novels provided by the school. Additional stories were used outside of the sources provided by the district.

Procedures

The foundation of the study began by teaching the students how to use the Inspiration software. Throughout the beginning of the school year the students had been reading short stories that were assessed through the use of short comprehension quizzes. Once the students were adept at using Inspiration, they created a story map before taking the comprehension quiz. The first uses of the technology involved the students selecting from a list of words pertaining to the plot of a piece of literature. This negated the struggle that many students experienced with spelling. Once the students were comfortable with the technology, they were encouraged to add their own details to their web maps.

After reading the next story, the students would not use Inspiration before taking the comprehension quiz. This process of creating a story map with Inspiration before taking a comprehension quiz then not using Inspiration before taking the comprehension quiz for the following story took place over the course of three months. The study was conducted for a total of 14 sessions. 7 sessions involved using the Inspiration software. These sessions were alternated with 7 sessions of not using the Inspiration software before a quiz.

Analysis of the Data

The data were analyzed quantitatively. The data came from the comprehension quizzes. Quiz scores received when students were able to use the Inspiration program were compared with the scores of the quizzes that did not involve the use of Inspiration. This comparison determined if the use of Inspiration helps with reading comprehension.

CHAPTER IV

Analysis of Data

Purpose

The purpose of this study was to examine the effectiveness of the software program Inspiration in dealing with reading comprehension among students with disabilities.

Null Hypothesis

There will be no statistically significant mean score difference between the quizzes completed after using an Inspiration concept map and the quizzes taken without first creating an Inspiration concept map.

Analysis of Data

A correlated t test for the difference between the two means was used to compare the mean score of quizzes taken after using an Inspiration concept map and the mean score of the quizzes taken without creating an Inspiration concept map. A calculated t score of 9.59 was obtained. Since the critical value t is plus or minus 1.431 and since t obtained was 9.59 the null hypothesis will be rejected.

Table 1

t Test of Differences Between the Two Mean Scores

<u>t</u>	df	Mean	Standard Deviation
Quizzes with Inspiration	214	8.28	1.15
Quizzes without Inspiration	214	6.84	1.06

Critical $t = 1.431$

Having determined that there is a statistically significant difference between the mean scores of the computer treatment and the mean scores of the quizzes with Inspiration and the quizzes without Inspiration, the null hypothesis is rejected. There is a statistically significant mean score difference between the quizzes completed after using an Inspiration concept map and the quizzes taken without first creating an Inspiration concept map.

CHAPTER V

Conclusions and Implications

Purpose

The purpose of this study was to examine the effectiveness of the software program Inspiration in dealing with reading comprehension among students with disabilities.

Conclusions

The results of this study indicate a significant relationship between the use of Inspiration and an increase in reading comprehension. The results show higher scores on quizzes after diagramming the plot of a short story versus quizzes that were taken without diagramming the plot using Inspiration software.

An interesting finding of this study was the students' enthusiasm regarding the use of the software. Many students indicated that they liked the visual aspect of Inspiration. Inspiration allows words and phrases within bubbles to be transformed into visual pictures or images. Many students were drawn toward the visual aspect of the software, perhaps appealing to students with a visual learning style.

This study does support the research that concept maps help with the integration and comprehension of information. The fact that Inspiration is a computer software program also serves as an example of how technology can be used as a means to facilitate improvements in learning. Many of the students expressed interest in the program based on their own general aptitude and interest in computer technology.

One of the benefits of the use of Inspiration that the statistical results of this research cannot show is the motivational capacity the computer has for students. It was observed that the subjects were very motivated to use the technology which may also account for the increase in comprehension. Students indicated that they paid attention better to the stories knowing that they would later have the opportunity to structure elements of the story plot in a concept map. It was observed that many students seemed to be more focused while working on the Inspiration concept maps. This contrasted with the classroom environment where many students frequently seemed distracted by things not related to the current task.

Implications for the Classroom

As the research indicates, we are living in an increasingly technological society. As a result, students are being raised in an environment where the use of

the computer is a daily occurrence. Instead of ignoring technology and retaining outdated styles of teaching, we should embrace technology and investigate the possibilities it may have in education. As school districts acquire computers and related technology, we as educators need to look into ways that we can manipulate technology to help students learn. Inspiration computerizes the use of the concept map, making it an appealing and useful tool to help children integrate and manipulate information. Students who have visual learning modalities are especially benefited by such a tool.

Using Inspiration helps students with reading comprehension. However, another wonderful application of the software is its use as a pre-writing graphic organizer. Students may use the program to organize information before writing. This helps students have a clear idea of how they want to organize their information before they actually write.

Implications for Further Research

Further investigation into the use of Inspiration Software is needed in its use in other areas of education. An additional study could be completed to determine if a difference exists between the correlation of the use of Inspiration and improved writing scores. For example, a group of students would be instructed in the use of Inspiration and use the program to create graphic

organizers before writing. The results of their writing could be compared to completed writing assignments where graphic organizers created using Inspiration were not used.

Another study could also be done investigating the use of Inspiration as a study aid. Information or notes from classroom lectures could be diagrammed via Inspiration and used as study aids. The study could consist of test scores where Inspiration concept maps were created from classroom notes and studied prior to exams. The results could be compared to exam scores where Inspiration concept maps were not used.

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