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Effective Technologies for the Middle School Special Education Student

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MEDT 8484

Introduction

The topic of this paper is “Technologies to Enhance Learning for the Middle School Special Education Student”. Why the interest? Further exploration is needed, as teachers of special education students in the middle school face many challenges and need the latest tools to assist with instruction. The results of delving into this topic will have a direct and positive influence on decisions and lessons created in the future.

Teachers are no longer simply providers of information; they must now facilitate learning in today’s digital age. A new generation of learners demands the expanded use of technology in education. Teachers who use technology have found that most students possess increased motivation, enthusiasm and self-esteem. Students are more receptive to exploring information, more prone to risk-taking and can also extend learning to a greater breadth and depth of information.

This topic is interesting for middle school special education teachers; it fits prior training; it is compatible to current and future employment, and it provides an outlet for presentation in order to communicate with a larger community. This is not a “trendy” subject. Research of this type will help to sharpen critical thinking skills. This will help in learning to ask the right questions, and make informed judgments about a course of action. In doing the research into this topic, one will find supporting evidence for use of technology uses in the special needs classroom. The specific challenges of the special needs students in regards to the uses of technology have not been extensively researched. According to Kim, Vaughn, Klingner, Woodruff, Reutebuch, and Kouzekanani (2006), “Many students with learning disabilities (LD) have not developed this metacognitive awareness or the ability to skillfully apply comprehension strategies” (p. 235).

Research Problem

The general research topic is technology enhancements for the special education middle school classroom. The specific problem being addressed is: What are the most effective and proven technologies with verifiable results that can close the performance gaps middle school students with learning disabilities often demonstrate in an educational setting? The use of the word “technologies” refers to computer assisted digital tools implemented in the classroom. Students with learning disabilities are those individuals that have been identified through psychological testing and participate in special classes to meet their deficiencies. Results will be considered “verifiable” by a consensus of positive learning results from participants of this study.

The reason this topic has been chosen is because of the needs and challenges facing students in seventh grade language arts that struggle with reading and writing. The goal is to find innovative ways to reach students using technology and help them to maintain their focus and improve their comprehension. Students will, hopefully, buy into instruction using technology more easily than traditional paper and pencil tasks. Technology, if implemented correctly, can more effectively engage their attention. Direction of this paper will focus on mostly qualitative research, because it will be discovery oriented instead of quantitative and solely focused on numerical data. But, as Johnson, and Christensen (2008) state a mixed approach is often the best. Therefore, plans are to include some research data with numbers and statistics to support conclusions. Quantitative data will be essential to demonstrate specific technology effectiveness.

Literature Review

Several articles are very similar to each other as well as to the research topic in that they explore new technologies that can be effective in the education of middle school special education students. Chmiliar and Cheung (2007) focused on uses of assistive technology to assist individuals with disabilities to deal with their unique learning challenges. Roberts (2005) discusses the roles of emerging and conventional technologies in serving children and adolescents with special needs. Marino (2009) addresses the understanding of how adolescents with reading difficulties utilize technology based tools. Finally Kim, Vaughn, Klingner, Woodruff, Reutebuch and Kouzekanani (2006) have researched improving reading comprehension of middle school students with disabilities through computer assisted collaborative strategic reading. These articles helped to create a better understanding of current trends in the use of technology for the specific audience of the special education student. This information was beneficial in the creation of the teacher survey to be used in the research.

Some additional articles are different from the others and offer only tangential support for this research project. Schumaker et al. (2006) addresses reading strategy interventions and how to enhance literacy for at risk adolescents. This offers insights into the reading challenges of the targeted population however it does nothing to address the uses of technology. Harris, Mishra and Koehler (2009) focused on the teachers and how they integrate technologies but fail to address the student learning. The different view points of this article enhanced the understanding of the teacher as the key to the future implementation of technology in the classroom and how they often have personal barriers to technology implementations. Oncu, Delialioglu and Brown (2008) explored how teachers decide what technology to use in their classroom and what they expect to gain from adopting the technology. This is similar to Harris et al. (2009), yet it further

probes the anticipated outcomes educators often have when incorporating new technology.

Although insightful, this does not directly help this research plan. Bebell, O'Dwyer, Russell and Hoffmann (2010) devoted its efforts to different data collection approaches and was not focused on the students' uses of technology in the classroom.

The articles that are different from the research topic had value to the plans if only to create awareness of some broader concerns related to the implementation of effective technologies in the classroom. Data collection and teacher attitudes are both helpful when trying to discover what works and what doesn't. One particular article by Harper (2009) uses digitized oral feedback and the Turning Point Active Response System and finds them to be effective uses of technology to enhance learning. In this article, it is suggested that this technology demonstrates improvements in students' ability to maintain focus on learning with higher levels of class enjoyment. Relevant information such as this points us toward an answer to this research problem.

Perhaps the best way to analyze the strength of this literature collection would be to choose articles that could provide direct information that could be referenced to prove and support existing arguments. Insightful discussions that hit at the heart of the project were Harper (2009) that stated, "Increasingly, instructors are looking for alternative means to promote interactivity and student engagement" (p. 1). Student engagement lies at the heart of this research project. Articles that explore this need provide not only useful data but also inspiration and motivation. Gillispie, Martin and Parker (2008) suggests that "Traditional classroom teachers are faced with the challenge of delivering instruction that completes with media rich and interactive experiences that the typical student is exposed to daily" (p. 68). Technology is all around us and if the teachers and the institutions are delinquent in its effective implementation

then the modern student's attention is lost before instruction can even begin. Articles such as this open up discussions that motivate further research into this topic. This literature is most compelling and supportive.

Three articles reviewed provided little assistance after careful review. Articles by Schumaker et al. (2006), Harris, Mishra and Koehler (2009), and Oncu, Delialioglu and Brown (2008) did not supply any relevant research insights. Even though this literature created a broader view of the project, little information could be pulled that would support these research efforts. They were chosen, because the abstract seemed to relate, yet upon further reading, it was discovered that little information actually related to the topic.

In the future, literature research will need to be conducted fully prior to the establishment of a research topic. Perhaps only a framework of a topic could be used to guide the research with the final problem statement being formulated after absorbing much related literature. So much was learned from reading these articles about directions that would work well for this research. The final conclusion is that research seeking qualitative answers is more of a process that evolves over time than a mission with a clear accomplishment. Often in the past, articles often seemed to make conclusions without any proven statements, which was disturbing. After working on this research, there is a clearer understanding of this lack of results and how to have a better grasp of the efforts that must be taken to come to solid and meaningful conclusions.

Rationale

In this research study, the plan is to explore and analyze beneficial uses of technology as it relates to enhancing the learning and education of the middle school special education student with a focus on those students identified LD (Learning Disabled). The examples that will be

considered must have results that have been successfully utilized by fellow educators and suggest significant improved student success over more traditional learning approaches. This focus on technology for enhancing education represents a current and powerful trend in education today. Wheeler (2009) observes that with more use of mobile information and communication technologies within learning environments a dramatic change is occurring in the way society views and engages in educational practices.

Johnson and Christensen (2008) emphasize the importance of clearly identifying the participants of any study. This is extremely important for the research topic since many technologies may prove effective for students with mild learning disabilities, yet students that are more profoundly challenged may not respond as well. The participants that will be the focus of the study are the middle school special education instructors who teach learning disabled (LD) students.

Much research has been done in the past concerning the disabled student and how assistive technology can help to overcome learning obstacles. This will not be the sole focus. It will also not consider the more severely mentally challenged students as they often are unfamiliar with current technologies and do not have the basic skills for its implementation in a learning setting. The LD child is often bored with education from many prior experiences of failure in the classroom setting, and subsequently the possibilities for revitalizing their attitudes toward learning with new and exciting technological strategies are a real possibility. According to Marino (2009), "Instructional technology is gaining increased popularity as a method to scaffold students' learning processes and reduce the achievement gap in inclusive (special education) classrooms" (p. 89).

Research Methods and Data

In this research plan, interviews and multiple questionnaires will be used to collect data regarding what types of emerging technologies are currently being used to support the middle school special education student. A survey with specific and open-ended questions will be conducted to all current special education teachers in Cobb County using a Google Docs survey (see Appendix I). This survey will be used to specifically uncover technologies that are currently in use. An additional follow-up survey will be created based on the findings of the initial survey. The contents of the subsequent surveys will not be known until the first survey results are analyzed. Once the most popular and hopefully effective technologies are uncovered then the focus of later instruments can collect quantitative data such as how often, how effective, and specific methods of utilization. All results will be available on a Wiki page with a discussion forum following analysis and tabulation.

To supplement and better understand the results from the initial survey, interviews with special education supervisors in Cobb, and Cherokee Counties will be conducted as well as assistive technology supervisors. The questions will focus not only on what is being used, but what may be on the table for use in the future. Findings from the two initial teacher surveys will provide useful information and guidance for later questions and discussions with these two additional groups.

The initial survey results will be analyzed using interpretive validity by incorporating the following strategies outlined by Johnson and Christensen (2008):

1. Extended fieldwork (Initial surveys will guide the direction and content of later data instruments. Multiple viewpoints will be collected.)
2. Triangulation (Cross-checking information by collecting data from three groups including the

teachers, along with the special education administrators, as well as the assistive technology supervisors.)

3. Participant feedback (Results will be available with additional comment input from all participants from Wiki page devoted to the results.)

Data Collection Strategy or Instrument

In this research study, the plan is to explore and analyze beneficial uses of digital technology for enhancing the learning and education of the middle school special education student. The examples to be considered will be collected using a survey of all middle school special education instructors in Cobb County.

The results from this first instrument will provide the content for additional research into several specific technologies in order to verify and make suggestions for implementation to improve student success over more traditional pedagogical approaches.

Plan includes the use of a Google Docs survey (see Appendix I) to collect mostly open-ended data regarding what types of emerging technologies are currently being used to support the middle school special education student. The open-ended portion of the survey will be used to specifically uncover new or little known technologies that are currently in use. This will address the specific research problem of this project by seeking the most effective and proven technologies that can close the performance gaps middle school students with learning disabilities often demonstrate in an educational setting?

A more quantitative closed-ended section to measure how often more common and popular tools are currently being utilized will be in the first part of the survey. This portion will set the foundation for the survey by discussing the more popular tools currently being used and

hopefully encourage the participants to think about technologies they may have used but forgotten about.

An additional follow-up survey and interview of key administrators will be able to narrow the focus of the research on the most popular or the most effective technologies and collect quantitative data such as how often, how effective, and by what methods it has been incorporated. All results will be available on a Wiki page following analysis and tabulation.

Data Analysis

The survey incorporates "multi-data" such as questions that allow the respondent to provide any information or ideas available along with questions that can be tabulated numerically. Because of this mixed approach the need for "multi-analysis" as described by Johnson and Christensen (2008) will be necessary to produce conclusions. An example of one of the many ways this data can be treated would be to statistically compare teachers' attitudes towards technology with their actual utilization of specific tools.

Once data from the initial survey has been collected from the Google Docs spreadsheet, contingency tables as described by Johnson and Christensen (2008) will be used to examine the quantitative questions in the survey. This type of data could be checked for validity using the "chi-square" test. It would be interesting to see, for instance, which middle school grade level utilizes more technology, or to determine if teachers of different subject areas are greater consumers of technology.

The data that will be the heart of this research is, however, the qualitative questions that seek to uncover new and effective technologies that hold the most promise for enhancing education of the middle school special education student. This data will initially be analyzed and

shared using bar graphs highlighting the most popular responses. For this method to be effective, responses will have to be created and sorted into inductive categories. Otherwise, there will be far too many bars to view on the graph. See Johnson and Christensen (2008) (p. 538) for example of this type of coding.

The IBM computer program "SPSS Statistics" will be used to link to the spreadsheet and analyze and validate the data. Testing of this program has begun with sample questions from the survey and there are two screen shots from the program (see Appendix II). This is a robust program and it should be able to offer the necessary conclusions needed for the research.

Timeline

Research Timeline, MEDT 8484, Carlene Bailey <i>Technology Enhancements for the Middle School Special Education Student</i>			
Number	Research Process	Start Date	End Date
1.	Preparation: final process peer review, obtain email distribution list and permissions, prepare results web site.	January 1, 2011	February 2, 2011
2.	Initiate and distribute Google Docs survey to all Cobb County middle school special education teachers. Review quantity of results.	February 3, 2011	March 15, 2011
3.	Re-submit survey to all non-responders with e-mail of encouragement.	March 16, 2011	April 1, 2011
4.	Collect and sort data using contingency tables, inputting data into the program SPSS Statistics	April 2, 2011	April 20, 2011
5.	Post initial results on Wiki page and have data analysis and conclusions peer reviewed. Collect input from survey participants.	April 21, 2011	June 1, 2011
6.	Using data conclusions, conduct interviews of key special education and technology personnel.	June 2, 2011	August 1, 2011
7.	Review interview data and publish final conclusions and results.	August 2, 2011	September 15, 2011

Extension

The natural extension to this research plan would be to test the most popular or most promising teaching technologies with actual LD students. This will surely be a worthwhile mission after reviewing the latest and greatest in digital teaching tools for LD students. Others have taken up this challenge as stated by Roberts et.al (2005), “Empowering children with special needs and those with disabilities...through the use of learning technologies has been addressed by diverse groups. Previously disparate communities can and should work together if the potential of online technologies is to be maximized for both groups” (p. 85). Bringing technology advocates together with special education advocates is a mission that could produce significant results.

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Appendix I

Google Docs Survey Instrument

Technology Use in the Middle School Special Education Classroom

Thank you for taking the time to fill out this survey. I am conducting this research as part of a project for a research class that I am taking at University of West Georgia. I am also a special education instructor in Cobb County and look forward to your responses. The information I collect will provide a clearer picture of extent and types of technology tools that are being effectively used in the middle school special education classroom. I will be posting my final results when tabulated on a wiki page at the following address: <http://cbailey-medt8484.wikispaces.com>

Please feel free to drop by later and review this very important data.

Thanks again,
 Carlene Bailey
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* Required

What grade level do you teach? *

- 6th grade
- 7th grade
- 8th grade
- Other:

What subject area do you teach? *

- Language Arts
- Mathematics
- Social Studies
- Science
- Other:

Do you use a LCD projector for instruction? *

- Yes, most every day
- Yes, most every week
- Yes, once a month
- Rarely or never

Do you utilize a "smart board" for instruction? *

- Yes, most every day
- Yes, most every week
- Yes, once a month
- Rarely or never

Describe your preferred methods of communicating with the parents of your students. (i.e. email, webpage, paper letters home, phone, etc.). Feel free to elaborate. *

Do you have students complete assignments using Power Point? *

- Yes, often in most every unit of instruction
- Yes, several times a year
- Occasionally
- Rarely or never

Do you have students complete assignments using Microsoft Word or Publisher? *

- Yes, often in most every unit of instruction
- Yes, several times a year
- Occasionally
- Rarely or never

Choose from the list below any internet tools that you have used in the last 2 years as part of your students' instructions. *

- Webpages from the internet
- Webpages you have created
- Webpages created by your students
- Wiki pages you have created
- Wiki pages created by your students
- Facebook or other social websites
- Blogs created by you
- Other:

Please provide the name of any "out of the box" software packages (software that is installed on school computers that provides instruction without accessing the internet) that you have utilized with your students in the last two years. Type "none" otherwise. *

Please provide the names of any websites that you have directly utilized for instruction in the last two years. You can either paste the URL address of the site here, or you can briefly provide its name. Type "none" otherwise. *

Do you feel that your students would benefit from more exposure to technology and internet based learning in your classroom? *

- Yes
- No
- Maybe
- Other:

Check all the boxes below that apply to computer use in your classroom. *

- My students use computers daily
- My students only use computers when we have access to the computer labs
- My students often don't have access to computers at home
- My students are very computer savvy and are active on computers away from school
- I would like more computers in my classroom
- My technology needs are adequate at this time

Please consider this question carefully. Are there any other teaching tools such as software, hardware, or internet applications that you have found helpful for your students in the last 2 years? Feel free to mention anything that comes to mind even if you have only used it once. Type "none" otherwise. *

What do you consider to be the biggest obstacles to incorporating more technology based tools in your classroom? Check as many responses below that apply. *

- Lack of funding
- Student inability to comprehend
- Administration's hesitancy
- My lack of training on new technologies
- Technology will not benefit what I teach
- No time to incorporate in current curriculum
- Other:

Are there new technology based tools (hardware or software) coming to your school or classroom that you have heard about but aren't using yet. Please describe below. Type "none" otherwise. *

Chose the response below that best describe you and technology. *

- Technology and me don't get along very well, I find it too confusing
- I have found some success with incorporating technology but it is a slow and time consuming process
- I like to use technology and am pretty good at it but other factors prevent me from utilizing it more
- My use of technology in the classroom seems to be just right at this time
- Other:

Feel free to remain anonymous. If you like however, please leave me your email address below. I may wish to talk with you further about this topic. I would like to express my sincere thanks for your time spent filling out this survey. Carlene Bailey

Submit

Appendix II

SPSS Statistics Screen Shot

IBM SPSS Statistics Data Editor window showing a data table with 10 rows of data. The first row is highlighted in yellow.

	Grade_Level	Subject_Taught	Use_of_MSWord	Benefit_from_Technology	Personal_Technology_View	N(1)	N(2)	N(3)
1	2.00	3.00	1.00	1.00	3.00			
2	1.00	2.00	2.00	1.00	1.00			
3	1.00	1.00	2.00	1.00	2.00			
4	2.00	3.00	2.00	1.00	3.00			
5	1.00	2.00	2.00	1.00	3.00			
6	1.00	1.00	2.00	1.00	3.00			
7	2.00	3.00	2.00	1.00	3.00			
8	3.00	1.00	3.00	1.00	2.00			
9	3.00	1.00	3.00	3.00	3.00			
10	1.00	2.00	4.00	3.00	1.00			
11								
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24								

IBM SPSS Statistics Viewer window showing the Case Processing Summary and Case Summaries.

Case Processing Summary^a

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Grade_Level * Use_of_MSWord	10	100.0%	0	.0%	10	100.0%

a. Limited to first 100 cases.

Case Summaries^a

Use_of_MSWord	Often	1	Grade_Level
		Total	7th Grade
		N	1
		Mean	2.0000
		Median	2.0000
		Sum	2.00
		Variance	.
	Somewhat	1	6th Grade
		2	8th Grade
		3	7th Grade
		4	9th Grade
		5	8th Grade
		6	7th Grade
		Total	N
			6
			Mean
			1.2222
			Median
			1.0000
			Sum
			8.00
			Variance
			.267