5-2014

Best practices and assistive technology tools for students with learning disabilities used in the business education classroom

Sadie L. Aronson
University of Arkansas, Fayetteville

Best Practices and Assistive Technology Tools for Students with Learning

Disabilities Used in the Business Education Classroom

Sadie L. Aronson

University of Arkansas

Table of Contents

Abstract

This paper identifies the assistive technology tools for students with learning disabilities in the business education classroom and the best practices for teaching students with learning disabilities. The two research questions are: (1) What assistive technology tools for students with learning disabilities are utilized in the business education classroom? And (2) What are the best practices for teaching students with learning disabilities? The participants were business education teachers in the northwest Arkansas area who were mentor teachers for business education student teachers. The results indicated that adjusting time allowance and peer instruction/tutoring was the most common best practice and the assistive technology tools utilized were audio recordings, voice recognition software and screen reader text-to-speech/speech-to-text software.

Introduction

Incorporating special education students into the general education classrooms has become increasingly common in today's classrooms. According to the U.S. Department of Education (2012), nearly 95% of students with learning disabilities are placed in a general education classroom. A learning disability can be defined as "a disorder in one or more basic psychological processes that may manifest itself as an imperfect ability in certain areas of learning, such as reading, written expression, or mathematics." (NCLD Editorial Team, 2012). In the past, it was more common for schools to keep students with learning disabilities in strictly special education classrooms.

Special education is specifically designed instruction, at no cost to the parents, to meet the unique needs of a child with a disability (Individuals With Disabilities Education Act, 2004). The Education for All Handicapped Children Act of 1975 mandated that all students should be educated in the least restrictive environment (Salend, 2011). Mainstreaming was considered a least restrictive environment, which meant students were placed in selective general education classes for only part of a school day. A movement referred to as the Regular Education Initiative (REI) occurred with the passing of this act. This was a model that stated students with learning disabilities will be educated in a regular class without any other placement options. REI addressed several main issues: a) the exclusion of students in need of special education, b) the absence of special programs until a student failed rather than making the service accessible so that failure could be prevented, c) no promotion of the relationships between parents and educators and d) the use of pullout programs to service special education students instead of adapting the general education setting (Warner, 2009). The Education for All Handicapped

Children Act was later renamed the Individuals with Disabilities Education Act of 1997 (IDEA) and focused on the need for students with disabilities to be taught with the same high standards as students without learning disabilities. Prior to the passing of this law, schools educated only one in five students with disabilities (Warner, 2009).

The general education classroom is now considered the least restrictive environment for students with learning disabilities. Therefore, it is becoming more common for schools to practice complete inclusion. Inclusion is the full-time placement of students with disabilities into a general education classroom.   Under inclusion, except in extreme situations, students with learning disabilities will no longer be removed from the general education environment. Inclusion factors include classroom composition, staff, professional development, instruction, and school characteristics (Warner, 2009).

By practicing inclusion in the classroom, general education teachers are becoming the main source of instruction for the students with learning disabilities, as opposed to a special education teacher. While some general education classrooms still have a special education teacher assisting the general teacher, the general education teacher is responsible for presenting the content of the class to all students. General education teachers must find a way to incorporate special education students into the curriculum that is used to teach general education students. Teachers must start modifying curriculum to adapt to special education students into their classroom, or the inclusion model will not be effective. Teachers must also be aware of other needs that come along with inclusion, including the use of Individualized Education Plans (IEP). IEPs are written documents that create the education program necessary for the student with

learning disabilities to benefit from education (MacCarthy, 2010). Attendance to IEP meetings is required for general and special education teachers, as mandated by law (Ellington, 2009).

There are several best practices that have been established in order to aid general education teachers in adapting to this new classroom dynamic. Teachers should be aware of these practices because it is becoming inevitable that teachers will be practicing inclusion in the classroom due to the increase of students with learning disabilities. Teachers must also find a balance between teaching students with learning disabilities, as well as those without. Inclusion should not hurt either group of students; each group of students should receive equal attention and equal opportunities at succeeding in the classroom. Inclusion is not always easily done. The issue becomes not where to educate, but how to educate. Teachers must adapt to use practices that best meet the diversity that is now present within the classroom.

Not only has inclusion become more popular, but assistive technology use is also on the rise. Assistive technology is defined as "any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, improve functional capabilities of individuals with disabilities." (Assistive Technology Act, 2004, p. 1). Assistive technology has also been defined as "devices and software designed specifically for those with learning or physical disabilities" and "powerful tools that support physically challenged students with equal opportunities to more fully participate in the teaching-learning process " (Cobb, 2012, p. 47). Assistive technology comes in different forms, whether it is through a learning software program or through hardware, such as a Braille keyboard. An example of assistive technology software would be a voice recognition software program that can assist students who are physically unable to type using a keyboard. The technology enables

students with learning disabilities to work more efficiently. Using assistive technology in the business education classroom would be an excellent resource that could be incorporated into the curriculum with ease, due the access of computers in the classroom. In previous studies, assistive technology has been shown to enhance life skills and displayed positive effects for psychological health for students with learning or physical disabilities. Assistive technology can be beneficial because it can be used in the classroom without drawing attention to the student using the technology. This way, the student is not singled out due to their learning or physical disability and they are not receiving any unwanted attention. It also allows them to be more active and less isolated during classroom activities.

Review of Literature

Inclusion into a business education classroom can be difficult due to the complexity at the secondary level, in regard to daily structure (Gadke, 2001). Students have several different teachers and are with different students in nearly every classroom. The business education classroom is also unique in that it is a specialized subject and technology is used throughout the entire curriculum.

The range of learning disabilities amongst students greatly ranges. Students with learning disabilities often have at least one processing disorder (Steele, 2008). This may result in difficulties understanding presentations, graphics, lectures, or discussions. Memory disorders are also common in students with learning disabilities (Steele, 2008). This presents an issue when it comes to assessments, problem solving, and application of knowledge. Students with learning disabilities also possess at least one low basic academic skill and may have difficulty with

organization and attention (Steele, 2008). Students may have issues completing short-term and long-term homework assignments and maintaining focus during class lectures.

The literature being analyzed in this section describes the benefits and techniques that come from using assistive technology within an inclusion classroom. Literature that discusses the various best practices will also be discussed. Each best practice will be defined and discussed as it is used and applied within the classroom.

Incorporating Assistive Technology Tools in the Classroom

By offering computer-mediated learning models in the inclusion classroom, the performance gap can be closed for students with learning disabilities (Seok, DaCosta, Kinsell, Poggio, & Meyen, 2010). Assistive technology can serve as a mind tool for students so that they may be more engaged in critical thinking, and has been proving to enhance academic achievement in the classroom (Seok et al., 2010).

Assistive technology can address the variety of learning disabilities that are present in the classroom. Computer learning models has been proven to improve writing skills, stimulate senses, and enhance verbal skills (Seok et al., 2010). This technology mediates student's activity and engagement in the learning task and offers immediate positive and negative feedback (Seok et al., 2010). Assisted technology creates a learning environment that promotes self-growth, motor skills, oral communication, and participation as well as decreasing the effects of speech and language delays (Cobb, 2012). Students with learning disabilities not only benefit academically from using assistive technology, but personally as well. Students who use this technology show an increased enthusiasm and confidence in the classroom. It empowers

students due to the increased control they have, develops their social environment, and enhances

overall intellectual growth (Kanellis, 2008). Assistive technology has also started to be

incorporated into IEPs, with specific technology tools being listed in the written plan. This

allows for teachers to use a variety of the tools listed until they find one they feel best supports

the student. The IEP also lists how frequently students will use the tools and describe the

effectiveness of the tools.

Assistive technology can also be easily transitioned into the general classroom. Teachers

can use digital devices into traditional learning centers that are used in the classroom. By using

assistive technology, the power can be transferred to the student on the delivery rate of the

material (Cobb, 2012). Students can also perform individualized searches on topics being

researched, receive a printed report of their progress, or print out notes taken in class on a Braille

document.

Incorporating Best Practices in the Inclusion Classroom

Learning disabilities can range from issues regarding information processing, memory,

perception, attention, and motivation. It is suggested that these deficits stem from both brain

hemispheres. Therefore, the ideal best practices will apply to both the left and right hemispheres

(Seok et al., 2010). All of the best practices discussed can be easily translated and used within

the business education classroom.

Best practices to be used in an inclusion classroom can range from small, minor changes

to more major changes within the organization and curriculum of the classroom. Individualized

instruction is key in the inclusion classroom so that students at varying levels can all meet the

educational standards set within the classroom. Best practices in a classroom are implemented in order to not only ensure the success of students with learning disabilities, but also those students without. It can often be difficult to incorporate practices used in special education classrooms, due to the larger size and structure of an inclusion classroom. However, by knowing about practices used in special education classrooms, general education teachers can take those and incorporate them into their curriculum.

Researchers have identified a variety of characteristics that best practices will ideally possess. An effective practice should allow students to enhance problem solving skills, by helping students learn how they can apply their knowledge. (Seok et al., 2010). Best practices should also aid students in the process of storing and retrieving information (Seok et al., 2010). Another characteristic identified is that students are able to represent and express themselves, self-evaluate, and obtain feedback from instructors (Seok et al., 2010).

There are many basic modifications and adjustments that can be made to general education classrooms that can lead to a more effective classroom for students with and without learning disabilities. Changing aspects of lecture time, reading and homework assignments, and assessments can all ensure students with learning disabilities can be active within the classroom and succeed.

To emphasize key concepts in daily lectures and class time, general educators can list these on the board so that students may refer to them and draw connections during the lecture. This modification can benefit those students who struggle with memory, attention, and organization (Steele, 2008). General educators should also provide graphic organizers, handouts,

and other visual displays to narrow the focus of the lesson for students who may struggle with

information processing (Steele, 2008). By using prompts during a lecture, teachers can provide

clues as to what is most vital to learn from the lecture so students who struggle with organization

can better focus their attention on key terms and concepts (Steele, 2008). Review of notes and

key terms during class time can assist students with learning disabilities involving memory,

writing, or processing deficits. Group work and projects can also assist students with memory

and attention issues.

Homework and reading assignments can also be a struggle for students with learning

disabilities. For intense and long reading assignments, general educators should point out and

provide summaries and the key ideas and purposes of selected readings. Developing mnemonic

devices can also be a beneficial tool for students who struggle with memorization. When

assigning general homework, it is important to provide clear and specific explanations, both

verbally and written (Steele, 2008). Breaking down assignments into smaller segments or

allowing students to work in small groups can also be beneficial for students with attention and

organizational deficits (Steele, 2008).

Assessments are another aspect of the classroom that students with learning disabilities

tend to struggle with. Providing ample study time and test preparation can help enforce important

study strategies and assist students who have memory, attention, and organizational deficits

(Steele, 2008). When it is test time, encourage students should be encouraged to review the entire

test before beginning. This strategy can help those with attention and organizational deficits.

Students with learning disabilities with memorization issues should record down all lists and

mnemonic devices they know when they first receive their test. It is also beneficial for students

with learning disabilities to practice with different types of questions, such as multiple choice or true/false (Steele, 2008). This can help students feel more comfortable and confident with test taking.

Methods that have been proved to benefit students with learning disabilities include offering individual feedback, interacting with peers and teachers, student responses, and providing direct skill instruction (Gadke, 2001). Other practices used include cooperative learning, collaborative team teaching, curriculum-based assessment, direct instruction, and peer instruction/tutoring (Gadke, 2001). All of these practices can ensure that students with learning disabilities become active and successful participants in the general education classroom.

Cooperative learning involves heterogeneous groups of students working together towards a common goal (Gadke, 2001). It is important to ensure the groups are heterogeneous so that there are a variety of skills being used in the task and so that students with learning disabilities do not feel singled out, but included in the activity. Cooperative learning allows students to work at their own individual pace in a positive manner (Gadke, 2001). Specific benefits to students with learning disabilities who learn through cooperative learning include increased self-esteem, improved social skills and communication, and leadership (Gadke, 2001). In order to ensure the success of cooperative learning, teachers should clearly communicate goals, state the guidelines for the groups, model the techniques being used in the lesson to provide the group with some intellect on how to accomplish the task and increase the responsibility of implementing the tasks to the groups of students (Gadke, 2001).

Collaborative team teaching involves two teachers in the general education classroom. This type of practice is used due to the increase in the number of students that are in an inclusion classroom. General education teachers work with special education teachers in the same general education classroom and simultaneously teach the students. Teachers may either teach at the same time or switch days of teaching. This can be referred to as co-teaching (Gadke, 2001). The general education teacher may present the bulk of the subject matter, while the special education teacher offers more specialized instruction needed to accomplish the larger tasks, such as how to properly take notes (Gadke, 2001). Co-teachers should plan appropriate teaching strategies based on students' individual situations. Students may benefit from having both teachers present and teaching an equal amount, while others may adapt better when the general educator does the majority of the teaching with the special education teacher assists after the lesson has been presented (Steele, 2008). Successful co-teaching can be achieved when teachers are compatible, there is equity in responsibility, and when the educators provide active individualized instruction to their students (Warner, 2009). Collaborative team teaching can be very beneficial because not all general education teachers possess the proper knowledge, experience, or certification to properly assist students with learning disabilities. Having a special education teacher in the general education classroom can ease this stress being placed on the general educator, with equal ownership of planning and instruction (MacCarthy, 2010). In order for collaboration to be successful, both teachers must know what kind of teaching is needed when, make scheduling a priority, understand that lesson planning is vital, and monitor success and provide feedback (MacCarthy, 2010). There are several different forms of collaborate teaching. The two major forms of collaborative teaching are the direct and indirect method.

The direct method involves a general and special education teacher both delivering instructions in the inclusion classroom (Kanellis, 2008). The two teachers share all responsibility and plan for the class as a team. Successful direct collaboration should include frequent face to face interactions, distribution of leadership responsibilities, and increased social interaction (Kanellis, 2008). Cooperative teaching is one form of direct collaboration. Cooperative teaching could take the form of a general educator working with an ESL instructor, a gifted teacher or a paraprofessional, as well as the traditional special education teacher (Kanellis, 2008). Collaborative teaching can be achieved through different models. The general educator could do the majority of the teaching, with the special education teacher assisting and supporting as needed. Students could move between two stations in the classroom, with each station being taught by one of the teachers. The two teachers could deliver the lesson separately yet in the same classroom. Small group instruction could be used, with the groups being heterogeneous. Lastly, team teaching is another form of cooperative teaching in which the two teachers present the information together as one joint lesson (Kanellis, 2008).

Indirect collaboration is considered to be the most common collaborative approach (Kanellis, 2008). This type of approach involves two teachers working together outside of the classroom to plan the lessons and instructional material, but only the general educator directly provides the instruction to the inclusion classroom (Kanellis, 2008). Indirect collaboration can be achieved through several different methods. Collaborative consultation is an indirect method in which the special education teacher is available to assist students who seem to still be struggling after the general educator has presented the material alone (Warner, 2009). This consultative method does not require the special education teacher to hold content area certification to

provide support within the classroom, unlike other methods such as co-teaching. Peer

collaboration is another example of indirect collaboration. This method involves a team of

instructors who identify problems, discuss intervention strategies, and evaluate and assesse the

student with learning disabilities who struggles within the general education classroom.

Curriculum-based assessment (CBA) is a practice that is used to assess student's needs

based on individual school requirements (Gadke, 2001). This type of practice allows teachers to

measure the performance of the whole class and can match "student ability to instruction"

(Gadke, 2001, p. 50). CBA is a method in which teachers can observe the performance of the

class and can identify which skills have and have not yet been mastered by each student. CBA

focuses on the achievement of each individual student, rather than comparing these achievements

to other students (Gadke, 2001).

Peer instruction/tutoring are another example of an effective teaching method that can be

used within the inclusion classroom. This method can be defined as "a more able child helping a

less able child" (Gadke, 2001, p. 53). Peer tutoring has been shown to not only improve

academic achievement in the child with learning disabilities, but also the child without the

disability (Gadke, 2001). In order for peer teaching to be successful, teachers should plan

structured lessons for the tutors, train tutors to use behaviors that will enable learning, and

monitor the performance of both the tutors and the students being tutored (Gadke, 2001).

Learning Disabilities

Students with learning disabilities now make up 5% of the total school population, and

more than half of the students enrolled in special education services also have a learning

disability. This makes students with learning disabilities the largest and fastest-growing group of students. Learning disabilities in the classroom can include academic, language, communication, perceptual and motor difficulties.

Students with academic and learning difficulties often have trouble with memory, attention, and organizational skills. Reading, writing, and math deficiencies are also often associated with academic difficulties. This can lead to students avoiding assignments and increasing trouble with comprehending directions or information.

Language and communication difficulties are other common characteristics of students with learning disabilities. Students may have a hard time comprehending, learning new vocabulary, expressing themselves, and pronouncing new words. Non-verbal difficulties are also common. Understanding body language and processing and understanding interactions are a constant struggle for some students. These students rely on their verbal skills only, resulting in failure to assess the reactions of the people they are communicating with and their speech is often very flat.

Students with perceptual and motor difficulties have difficulty recognizing and interpreting visual and auditory stimuli. Students may not be able to copy text from the board, decipher between different numbers or shapes, or working on a task with multiple steps. Gross and fine motor difficulties are also common. Poor balance, clumsiness, difficulty drawing or holding a pencil are all examples of these difficulties. Hyperactivity is one of the main motor problems found in students with learning disabilities. Attention deficit disorder (ADD) affects a

student's ability to pay attention and to stay organized and motivated. All of these difficulties can negatively affect student progress and learning.

Learning disabilities can also entail social-emotional and behavioral difficulties. Students with these difficulties show signs of poor socialization, low self-confidence, and social withdrawal. They often fail to act appropriately in the classroom and to interpret social cues, which can lead to alienation by their peers.

Intellectual disabilities are defined as "significant limitations both in intellectual functioning and in adaptive behaviors as expressed in conceptual, social, and practical adaptive skills" (Schalock et al., 2007, p. 118). Mental retardation is the former name for this type of difficulty and students with intellectual disabilities represent about 1% of the school population. The severity of intellectual disabilities ranges from mild to moderate to severe or profound. Students with mild intellectual disabilities are able to function in a general education classroom and only require limited supports to enhance their learning. Moderate intellectual disabilities require long-term support that is consistent throughout the student's schooling. Down syndrome is often associated with moderate learning disabilities. For those that are affected by severe or profound intellectual disabilities, they often take part in specialized schools or programs that work to incorporate them into mainstream classrooms. Students experience profound difficulties with nearly every facet of learning including cognitive, behavioral, perceptual, and language aspects.

Summary

Inclusion is a practice to achieve the least restrictive environment, as mandated in the Individuals with Disabilities Education Act. Inclusion involves students with learning disabilities learning in the same classroom with the same curriculum as students without learning disabilities (MacCarthy, 2010). Inclusion has been proven to show that students with learning disabilities are provided with encouraging role models and a caring school community, as well as an improvement in areas of self-discipline, self-esteem, language development (Ellington, 2009). Students who learn in inclusion classrooms are also able to avoid the stigma that pullout programs have, as well as richer friendship networks, and peer acceptance (Warner, 2009).

While inclusion offers many benefits to students with learning disabilities, it can also pose challenges for the educators (Berry, 2006). Teachers must know how to adapt their classroom structure and teaching methods. General educators should be sure to construct lesson plans with more material than is expected to be finished, be prepared to improvise, maintain flexibility, and enjoy teaching the students (MacCarthy, 2010).

In order for inclusion programs to be the most beneficial for students is to ensure new teacher training so that educators can be prepared to properly instruct in an inclusion classroom. Education programs should also be redesigned so that educators may be more aggressively trained in learning of differentiated instruction to teach students with learning disabilities (MacCarthy, 2010). Teachers also must view inclusion in a positive and accepting manner.

Statement of the Problem

With the passing of IDEA, the challenge in education becomes how to best incorporate

students with learning disabilities into the classroom. Teachers may not be aware of the best

practices that could be incorporated into their classroom in order to ease the transition for

students with learning disabilities. It is vital for teachers to receive resources and information

regarding effective practices for the inclusion classroom so that all students can succeed,

regardless if they have a learning disability.

Assistive technology should be and could be one of the most valuable resources for

teachers to use in their inclusion classrooms. Using this technology can also ease the transition

into an inclusion classroom. However, it is vital that proper training in the use of the assistive

technology take place to benefit students with learning disabilities in the most effective and

efficient way.

By schools increasing the number of inclusion classrooms, the variety within the

classroom will greatly differ. It is the teacher's responsibility to adopt the proper practices so that

each child in the classroom can succeed, regardless of whether or not they have a learning

disability. It is also important to ensure students without learning disabilities are not being

forgotten or neglected and are receiving the same amount of attention and instruction as students

with learning disabilities.

Purpose

The purpose of this study is to research what forms of assistive technology are used

within business education classrooms. This study will also show how this technology is used in

conjunction with general education teaching methods. Best practices being used in these classrooms will also be identified.

Research Questions

This research study will attempt to answer the following questions:

1. How do business education teachers incorporate assistive technology tools in the classroom with students with learning disabilities?

2. How do the business education teachers incorporate best practices in the inclusion classroom?

3. How do the business education teachers within inclusion classrooms ensure other students do not feel neglected?

Limitations

One limitation will be the lack of previous research performed in business education classrooms. Business education classrooms are not as abundant as elementary education classrooms or secondary education core classrooms and past research studies including this subject are very uncommon. This study is also being performed only at the secondary level and results may not be generalized to other grade levels or other content areas.

Methodology

The survey was designed to examine the best practices and assistive technology tools used in a business education classroom. The study focuses on how teachers use these tools and practices to accommodate students with learning disabilities. The participating subjects were

business education instructors in the northwest Arkansas area. These instructors taught grades 7 through 12. This section contains descriptions of the research questions, data collection procedures and an analysis of the responses.

Data Collection Procedures

After obtaining permission to conduct the study (see Appendix A) the researcher used email to contact each teacher participating in the study (see Appendix B). The survey was created using SurveyMonkey.com (see Appendix C) and was emailed to the participants. A pilot survey was conducted in March 2013. Several questions were revised and one question was eliminated from the survey. The final survey was first sent out on April 21, 2013 with a deadline set for May 3, 2013. Seven of the ten teachers responded. The follow-up survey was sent out again to the three teachers who had not completed it on May 14, 2013 and they submitted the survey shortly after. The survey included a variety of questions focusing on the best practices the teachers used in their classroom, as well as how they incorporate assistive technology into their classroom. The participants were also asked to identify certain demographics of their classroom. Six of the questions were selected-response while the other four were constructed-response.

The 10 survey questions were:

1. What subjects are you teaching for the 2012-2013 school year?

2. How many years teaching experience do you have?

3. What types of learning disabilities are identified in your classroom?

4. Is there a special education teacher present in the classroom?

5. How often do you have conversations with the special education teacher about your
    students with learning disabilities?

6. Which of the best practices listed below have you used in your classroom this year?

7. Please elaborate on how you incorporate these practices in classes with students with
    learning disabilities.

8. What assistive technology tools do you use in your classroom to assist students with
    learning disabilities?

9. How are you able to ensure students without disabilities do not feel neglected in your
    classroom when it comes to using the assistive technology tools?

10. For each best practice marked, what assistive technology tool did you use, if any?

Results of the Study

Research Question #1

What subjects are you teaching for the 2012-2013 school year?

The first research question asked participants to list the courses they would be teaching
during the 2012-2013 school year. Of the ten teachers surveyed, 30% of teachers taught one
course, 30% taught three courses and 40% taught four or more courses (Table 1). Ninety percent
of the instructors taught a Computer Applications/Keyboarding class during the school year.
30% taught Digital Communications, 20% taught an Accounting/Finance class, and 20% taught

Business Law and Retailing. Ten percent taught either an Advanced Spreadsheet, Advanced

Database or Management class. These results are illustrated in Table 2.

Table 1

Number of Classes Taught During 2012 – 2013 School Year

Number of courses taught	Percentage
1	30
2	0
3	30
4	40

Table 2

Types of Business Education Classes Taught

Class	Percentage
Computer Applications/Keyboarding	90
Digital Communications	30
Accounting/Finance	20
Business Law and Retailing	20
Advanced Spreadsheet	10
Advanced Database	10
Management	10

Research Question #2

How many years teaching experience do you have?

The second question examined how many years of teaching experience each teacher had through a selected-response survey item. Thirty percent of the teachers had taught between 4-9 years and 21-30 years, 20% had taught for 31 or more years, and 10% had taught for 10-15 years and 16-20 years (see Figure 1). In relation to research question #1 regarding subjects taught, 100% of the teachers who had taught for 4-9 years each only taught one course during the school year. The other seven teachers with experience of 10 years or more each instructed at least two classes.
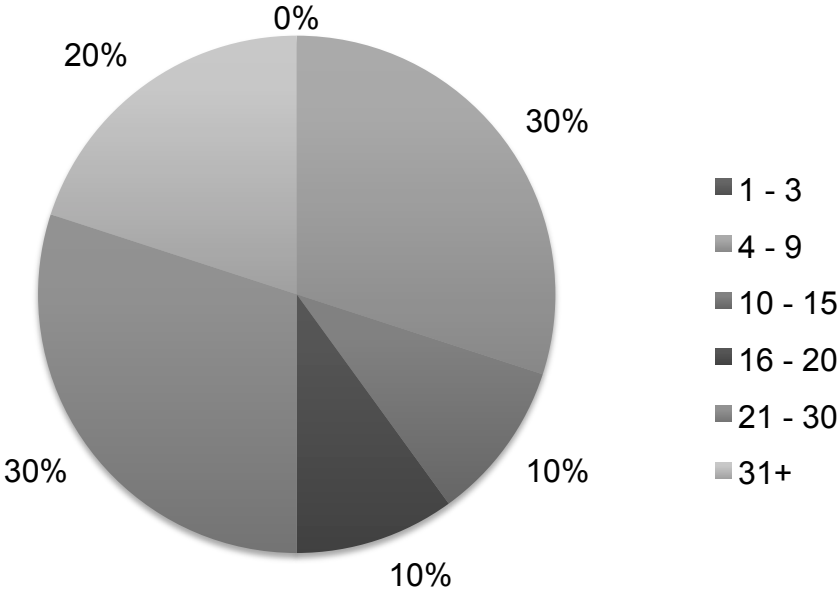

Figure 1. Years of Teaching Experience.

Research Question #3

What types of learning disabilities are identified in your classroom?

The third survey question investigated the types of learning disabilities that were present in the classroom. Teachers could select four types of learning disabilities including learning and academic difficulties, language and communication difficulties, perceptual and motor difficulties, and social-emotional and behavioral difficulties. As shown in Figure 2, 9(90%) of the teachers reported learning and academic difficulties in their classroom. Learning and academic difficulties included reading and writing difficulties and social-emotional and behavior difficulties included poor socialization, loneliness, poor confidence and motivation, and anxiety. 9(90%) reported social-emotional and behavioral difficulties, 8(80%) reported language and communication difficulties and 7(70%) reported perceptual and motor difficulties. Immature speech patterns, language comprehension difficulties and trouble expressing their selves were all included as language and communication difficulties. Difficulties with shape and letter discrimination, copying from the blackboard, following multi-step directions, clumsiness, poor balance, and hyperactivity were listed as perceptual and motor difficulties. The percentages are more than 100% due to several teachers reported more than one learning disability.
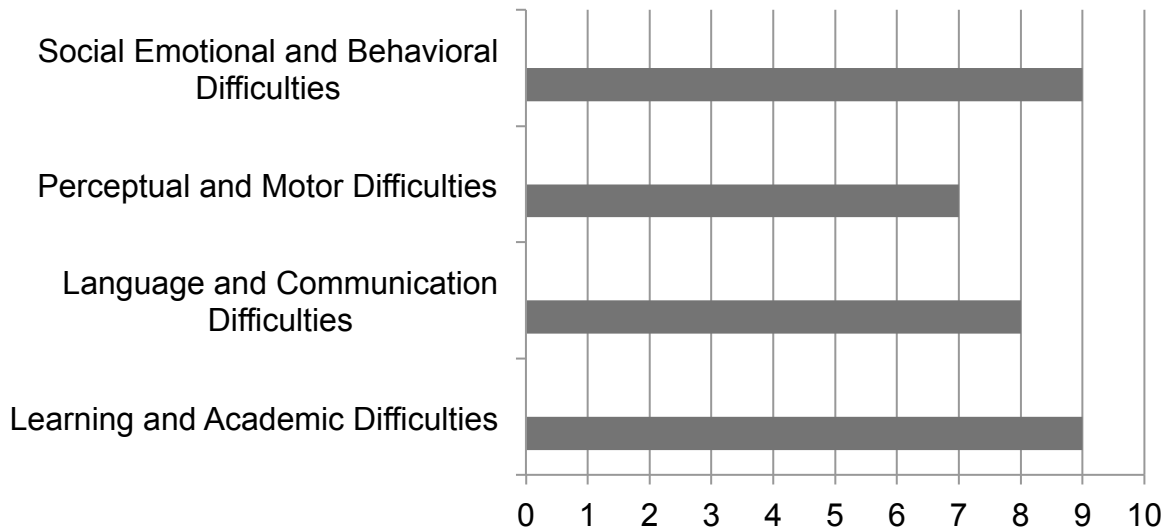
Figure 2. Types of Learning Disabilities Identified in Classroom.

Research Question #4

Is there a special education teacher present in the classroom?

The fourth question was a selected-response item used to report how often special

education teachers were present in the business education classroom. As shown in Figure 3,

although every teacher reported having at least two learning disabilities present in the classroom,

6(60%) reported to never having a special education teacher in the classroom. 3(30%) stated a

special education teacher was present rarely and 1(10%) stated they had a special education

teacher in their classroom often. No participants reported having a special education teacher
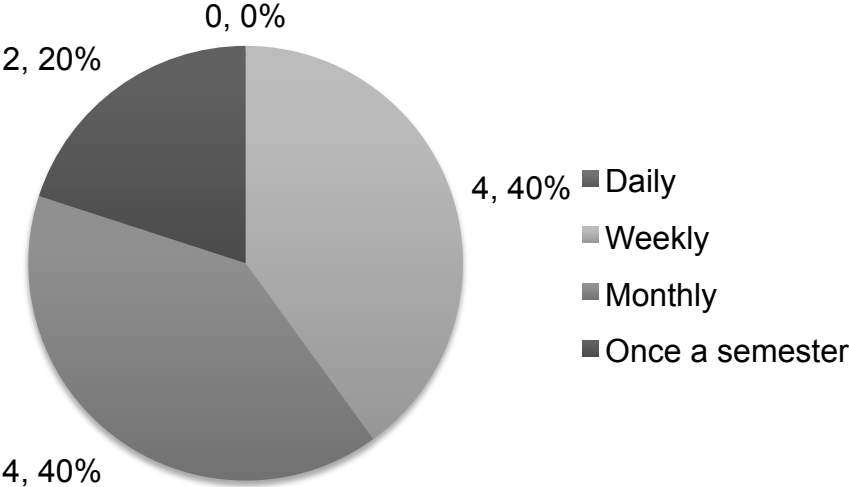
present at all times.

Figure 3. Frequency of Special Education Teacher in Business Education Classroom.

Research question #5

How often do you have conversations with the special education teacher about your students with learning disabilities?

All of the teachers reported speaking with special education teachers at some point during the school year. As shown in Figure 4, 4(40%) of teachers stated they spoke with the special education teacher weekly and 4(40%) listed they spoke monthly. The other 2(20%) indicated they spoke once a semester. None of the teachers reported speaking daily or not at all with special education teachers.
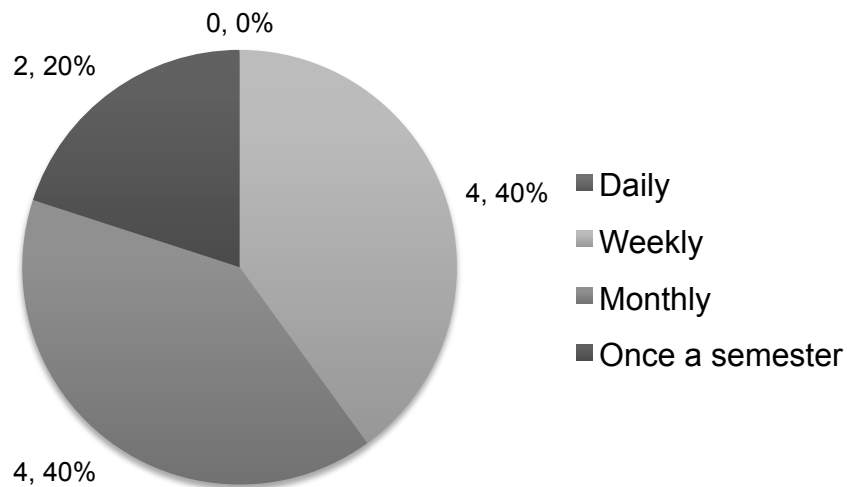
0, 0%

2, 20%

4, 40%

■Daily
■Weekly
■Monthly
■Once a semester

4, 40%

Figure 4. Frequency of Business Education Teacher Conversations with Special Education

Teacher About Students with Learning Disabilities.

Research Question #6

Which of these best practices listed below have you used in your classroom this year?

The sixth researching question included a variety of responses teachers could select

regarding the best practices used in their classrooms. Participants were asked to mark all that

apply. The answer choices included: (a) adjusting time allowances, (b) collaborated team

teaching with special education teacher, (c) graphic organizers, (d) group work, (e)

individualized instruction, (f) learning projects, (g) listing key concepts on the board, (h)

mnemonic devices, (i) other students in class share class notes, (j) peer instruction/tutoring and

(k) providing summaries of key ideas in handout form.

As shown in Table 3, 100% of the teachers reported using at least two of the best

practices: adjusting time allowances and peer instruction/tutoring while 9(90%) reported using

individualized instruction and group work. Seven of the 10 teachers (70%) reported using

graphic organizers. Five (50%) of the teachers reported using listing key concepts on the board

and having others students in class share class notes while 4(40%) of the teachers reported using

learning projects. Collaborated team teaching with special education teacher was reported by

3(30%) of the teachers and only 1(10%) reported using mnemonic devices.

Table 3

Best Practices Used in Classroom

Best practice	Responses
Adjusting time allowances	10/100%
Peer instruction/tutoring	10/100%
Group work	9/90%
Individualized instruction	9/90%
Graphic organizers	7/70%
Listing key concepts on the board	5/50%
Other students in class share class notes	5/50%
Learning projects	4/40%
Collaborated team teaching with special education teacher	3/30%
Mnemonic devices	1/10%
Providing summaries of key ideas in handout form	0/0%

Research Question #7

Please elaborate on how you incorporate these practices in classes with students with learning disabilities.

This survey question allowed for teachers to construct their own responses when asked to elaborate on how they incorporated the best practices listed in question #6 with the students with learning disabilities that are present in their classroom. "Grouping special education students with regular education students for projects. Seating chart for mixing special education and regular education students" was reported by Teacher #1. Teacher #2 reported using all of the best practices while Teacher #3 used peer helpers. "Grouping students and having the special education student report to their SPED teacher during seminar time and the students comes to me for assistance after school for one-on-one assistance" was reported by Teacher #4. "Individualized instruction" was reported by Teacher #5. Teacher #6 reported "extended time and/or reduced assignments. "Pairing students" was reported by Teacher #7 and Teacher #8. "Group work" was also reported by Teacher #9 and Teacher #10. Overall, group work and pairing students seemed to be the most common responses. Teachers place higher-achieving students with the students who may have learning disabilities so that students can be placed in groups "that would be beneficial to their needs", as one teacher stated.

Research Question #8

What assistive technology tools do you use in your classroom?

This question included selected-response items regarding the types of assistive technology teachers used in their classrooms to assist students with learning disabilities. The

possible responses were (a) audio recordings, (b) customized dictionary or other home language

supports, (c) digital tools, (d) screen reader text-to-speech/speech-to-text software, (e) voice

recognition software and (f) I do not use any assistive technology tool.

The following definition of assistive technology was included to clarify the meaning:

Assistive technology is "any item, piece of equipment, or product system, whether acquired

commercially, modified, or customized, that is used to increase, maintain, improve functional

capabilities of individuals with disabilities" (Assistive Technology Act, 2004, p. 1).

As Table 4 illustrates, the majority 6(60%) of the teachers reported using no assistive

technology tools, despite 100% of these teachers having learning disabilities present in their

classroom. Audio recordings were reported to be used by 2(20%) of the teachers while 1(10%) of

the teachers each reported using customized dictionary or other home language support/tools,

digital tools, screen reader text-to-speech/speech-to-text software and voice recognition software.

Using a Braille printing or Braille device was an option but this device was not reported as an

assistive technology tool being used. Responses will reflect more than 100% due to teachers

reporting more than one assistive technology tool used.

Table 4

Assistive Technology Tool Used

Assistive technology tool	Responses
No assistive technology used	6/60%
Audio recordings	2/20%
Customized dictionary or other home language support/tool	1/10%
Digital tools	1/10%
Screen reader text-to-speech/speech-to-text software	1/10%
Voice recognition software	1/10%

Research Question #9

How are you able to ensure students without disabilities do not feel neglected in your classroom when it comes to using the assistive technology tools?

This constructed-response question was intended to analyze how teachers who used assistive technology tools ensured students without learning disabilities did not feel neglected during class instruction.

Two teachers wrote how all students are included in the classroom because all students are allowed to use some type of technology while learning, so no child is singled out regardless if they have a disability or not. One teacher stated that dividing her time equally among students reduced any neglect a student may feel. Another teacher credited the self-paced atmosphere of her classroom to give her the ability to work one-on-one with and monitor the students who may need the assistive technology tools. The rest of the teachers indicated this was not a problem; however, they did not state what they did to ensure students without disabilities did not feel neglected in the classroom.

Research Question #10

For each best practice marked, what assistive technology tool did you use, if any?

The final question of the survey connected both the best practices and the assistive technology tools. Teachers were asked to explain which tools they used with each practice they indicated they used. Of the three teachers who answered the question, each detailed how they merged best practices with assistive technology tools. One of the teachers reported using visuals

and audio recordings through Microtype Software when using graphic organizers and

individualized instruction in their classroom. Another teacher stated she used voice recognition

software when utilizing a variety of best practices, including individualized instruction and

learning projects. According to one teacher, digital tools accompanied group work and speech-

to-text software was used when teaching mnemonic devices.

Summary

With the increasing number of students with learning disabilities receiving their

education in a general education classroom, teachers are using both a variety of assistive

technology and best practices to better aid these students. The purpose of this study was to

examine the correlation between assistive technology and best practices that are used in a

business education classroom. Teachers throughout the northwest Arkansas area were asked to

identify the tools and practices used in their classroom and how they used these methods to

support students with learning disabilities.

The business education teachers in this study identified multiple learning disabilities in

each of their classrooms. However, when asked to report how often a special education teacher

was present in the classroom, a majority of the teachers stated they did not frequently have this

support in the classroom. Although co-teaching with a special education teacher is one of the

best practices listed in the survey, this method was hardly present in the participants' classrooms.

Another discovery through the survey was the amount of assistive technology used in the

classroom. While many assistive technology tools have been proven to benefit students in the

classroom, few teachers in this study reported using these types of resources.

The participants were also asked to identify how they combine the best practices and assistive technology tools. Results were limited on these survey questions because a majority of the teachers did not use any type of technology tool. In addition, the survey lacked results regarding how teachers ensure students without disabilities do not feel neglected in the classroom because in regards to not using assistive technology tools. This is also due to the fact that many of the teachers did not report use of assistive technology tools to begin with.

Recommendations for Future Research

Two growing trends in education today are the increased amount of students with disabilities being integrated into a general education classroom, along with the abundance of assistive technology tools available to teachers (Gadke, 2001; Seok et al., 2010). Properly using these tools, along with best practices can be a challenge. The results of this study allow for further investigation regarding this subject.

If this study were replicated, the following adjustments could be made:

1. A larger sample size could be used

2. A variety of urban, suburban, and rural schools along with equally-sized number of schools

3. A larger geographical area to analyze, outside of Northwest Arkansas

A larger, diverse sample size could yield different results and using an equal number of different types of schools could lessen any variability. For example, are rural schools not able to use assistive technology because of unavailable funds that urban or suburban schools may have

access to? Are certain states more advanced in terms of inclusion and the use of assistive

technology? These types of questions could be explored through further research.

In addition, further research may provide insight into the frequency of special education

teachers being present in the classroom and the use and availability of assistive technology.

Several teachers in this study reported having a lack of communication with special education

teachers and a lack of assistive technology tools readily available in their classroom. Future

research could address these issues and provide more detail through in-depth survey questions or

in-class observations or interviews.

Lastly, future research could provide value insight into the actual effectiveness of using

assistive technology and best practices. While teachers may be reporting the use of these

methods, it is important to discover if students with or without disabilities are benefitting from

such teaching strategies. Inclusion is quickly becoming a common aspect of education and an

ongoing process of research is necessary to ensure student achievement.

References

Assistive Technology Act, 29 U.S.C. § 2202 (2004).

Berry, R. A. W. (2006). Teacher talk during whole-class lessons: Engagement strategies to

     support the verbal participation of students with learning disabilities. 211-220.

Cobb, A. (2012). Assistive technology: Enhancing the life skills of students with learning

     disabilities. 8, 47-51.

Ellington, W. (2009). Teachers' and specialists' views of the impact of the inclusion model of

     instruction on students with learning disabilities in secondary education. 1-54.

Gadke, C. A. (2001). Secondary general education teachers' beliefs and use of "best practices" in

     inclusive classrooms. 1-109.

Grogan, B. (2009). Teaching to the differences in a classroom. 1-9.

Individuals With Disabilities Education Act, 20 U.S.C. § 1401 (2004).

Kanellis, A. M. (2008). Collaborative teaching strategies and methods used between special

     education and general education teachers in collaborative classrooms. 1-42.

MacCarthy, N.P. (2010). Attitudes towards inclusion of general education teachers who have and

     have not taught in an inclusive classroom. 1-32.

NCLD Editorial Team. What are learning disabilities? Retrieved September 26, 2012 from

     National Center for Learning Disabilities website: http://www.ncld.org/types-learning-

     disabilities/what-is-ld/what-are-learning-disabilities?start=1

Parker, S. (2009). A comparison of the attitudes of secondary regular and special education

      teachers toward inclusion of students with mild disabilities in their classrooms. 1-33

Salend, S. (2011). Creating inclusive classrooms: effective and reflective practices. Upper Saddle

      River, N.J: Pearson.

Seok, S., DaCosta, B., Kinsell, C., Poggio, J. C., Meyen, E. L. (2010). Computer-mediated

      Intersensory learning model for students with learning disabilities. *Tech Trends*, 54, 63-

      71.

Schalock, R., Luckasson, R., Shogren, K., Bradley, V., Borthwick-Duffy, S., Buntix,

      W.,…Yeager, M. (2007). The renaming of mental retardation: Understanding the change

      to the term intellectual disability. *Intellectual and Developmental Disabilities, 45*, 116-

      124.

Steele, M. M. (2008). Helping students with learning disabilities succeed. *The Science Teacher*,

      38-42.

U.S. Department of Education, National Center for Education Statistics (2012). *Digest of

      Education Statistics, 2011* (NCES 2012-001), Chapter 2.

Warner, R. (2009). A comparison of teaching models that promote academic achievement in an

      inclusive secondary classroom. 1-29.

List of Tables

List of Figures

Appendix A

Institutional Review Board Approval

April 17, 2013

MEMORANDUM

TO:	Sadie Aronson
	Betsy Orr
FROM:	Ro Windwalker
	IRB Coordinator
RE:	New Protocol Approval

IRB Protocol #:   13-04-636

Protocol Title: *An Analysis of Best Practices and Assistive Technology Tools Applied in the Business Technology Education Classroom*

Review Type: ☒ EXEMPT   ☐ EXPEDITED   ☐ FULL IRB

Approved Project Period: Start Date: 04/17/2013 Expiration Date: 04/16/2014

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval.   Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 11 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes.   All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.

Appendix B

Email to Mentor Teachers Inviting Them to Participate in Study

Dear Business Education Mentor Teachers,

Sadie Aronson is a student in the Honor's Program. She is completed her thesis "An Analysis of Best Practices and Assistive Technology Tools Applied in the Business Technology Education Classroom." Sadie will be a Spring 2014 student teacher. She needs your assistance!

All data concerning the mentor teachers will remain confidential. All data is collected using Survey Monkey. No participants are identified in the program. Data will be compiled as group data and reported as such. No school names or teacher names are reported or even provided through the software program.

If you are willing to participate please complete the survey at http://www.surveymonkey.com/s/78TL5T9 by Friday, May 3rd. Thank you so much for your help. If you have any questions, please feel free to email me.

Sincerely,

Dr. Betsy Orr

Honor's Program advisor

Appendix C

Survey

SurveyMonkey - Question Builder   https://www.surveymonkey.com/MySurvey_EditorFull.aspx?sm=gL...

Upgrade   borr0000@gmail.com

Home   My Surveys   Survey Services   Plans & Pricing   + Create Survey

You have a **BASIC account** | To remove the limits of a BASIC account and get unlimited questions, upgrade now!

An Analysis of Teaching Methods and Assistive Technology Tools Used in the Business Technology Educa

Design Survey   Collect Responses   Analyze Results

Edit Survey   Preview Survey   Send Survey »

To change the **look** of your survey, select a theme below.

Aqua   Create Custom Theme

TITLE & LOGO   Edit Title   Upgrade to Add Logo »

An Analysis of Teaching Methods and Assistive Technology Tools Used in the Business Technology Education Classroom for Students with Learning Disabilities

+ Add Page

PAGE 1   Edit Page Options ▼

Upgrade to Add More Questions

Q1   Edit Question ▼   Move   Copy   Delete

✱ 1. What subjects are you teaching for the 2012 - 2013 school year?

Upgrade to Add More Questions   Split Page Here

Q2   Edit Question ▼   Add Question Logic   Move   Copy   Delete

✱ 2. How many years teaching experience do you have? (Please include the present year.)

Upgrade to Add More Questions   Split Page Here

Q3 Edit Question ▼ | Add Question Logic | Move | Copy | Delete

∗3. What types of learning disabilities are identified in your classroom?

Learning and Academic Difficulties (for example, reading difficulties, writing difficulties, etc.)

Language and Communication Difficulties (for example, immature speech patterns, experience language comprehension difficulties, trouble expressing themselves, etc.)

Perceptual and Motor Difficulties (for example, discriminating shapes and letters, copying from the blackboard and following multi step directions, clumsiness, poor balance, hyperactivity, etc.)

Social-Emotional and Behavioral Difficulties (for example, poor socialization, lonliness, poor confidence and motivation, anxiety, etc.)

Upgrade to Add More Questions | Split Page Here

Q4 Edit Question ▼ | Add Question Logic | Move | Copy | Delete

∗4. Is there a special education teacher present in the classroom?

Yes, at all times

Yes, often

Yes, but rarely

No, never

Upgrade to Add More Questions | Split Page Here

Q5 Edit Question ▼ | Add Question Logic | Move | Copy | Delete

∗5. How often do you have conversations with the special education teacher about your students with learning disabilities?

Daily

Weekly

Monthly

Once a semester

Not at all

Upgrade to Add More Questions | Split Page Here

Q6 Edit Question ▼ | Add Question Logic | Move | Copy | Delete

∗6. Which of the best practices listed below have you used in your classroom this year? Mark all that apply.

Adjusting time allowances

Collaborated team teaching with special education teacher

Graphic organizers

Group work

Individualized instruction

Learning projects

Listing key concepts on the board

Mnemonic devices

Other students in class share class notes

Peer instruction/tutoring

Providing summaries of key ideas in handout form

Other (please specify)

Upgrade to Add More Questions   Split Page Here

Q7   Edit Question ▼   Move   Copy   Delete

＊7. Please elaborate on how you incorporate these practices in classes with students with learning disabilities. For example, using a special education teacher for assistance, how teachers divide students up when using peer instruction, etc.)

Upgrade to Add More Questions   Split Page Here

Q8   Edit Question ▼   Add Question Logic   Move   Copy   Delete

＊8. What assistive technology tools do you use in your classroom to assist students with learning disabilities. Assistive technology is "any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, improve functional capabilities of individuals with disabilities." (Assistive Technology Act, 2004, p.1) Mark all that apply.

Audio recordings

Customized dictionary or other home language support/tools

Digital companion materials

Digital tools (for example, highlighter, answer eliminator, increased white space)

Screen reader text-to-speech/speech-to-text software

Voice recognition software

I do not use any assistive technology tool

Other (please specify)

Upgrade to Add More Questions   Split Page Here

Q9 Edit Question ▼ Move Copy Delete

✱9. How are you able to ensure students without disabilities do not feel neglected in your classroom when it comes to using the assistive technology tools?

Upgrade to Add More Questions   Split Page Here

Q10 Edit Question ▼ Move Copy Delete

10. For each best practice marked, what assistive technology tool did you use, if any? Please describe.

Upgrade to Add More Questions

+ Add Page

Back to My Surveys   Preview Survey   Send Survey »

Community: Developers • Facebook • Twitter • LinkedIn • Our Blog • Google+ • YouTube

About Us: Management Team • Board of Directors • Partners • Newsroom • Contact Us • Jobs • Sitemap • Help

Policies: Terms of Use • Privacy Policy • Anti-Spam Policy • Security Statement

Language: English • Español • Português • Deutsch • Nederlands • Français • Русский • Italiano • Dansk • Svenska • 日本語 • 한국어 • 中文(繁體) • Türkçe • Norsk • Suomi

Copyright © 1999-2014 SurveyMonkey