

A Master's Research Project Presented to
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Perceptions of Using Assistive Technology for Students with Disabilities
in the Classroom

By

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Abstract

In special education, professionals interact with families and individuals with special needs who seek support. One part of the support that professionals and educational agencies can provide is assistive technology. This study was conducted to determine education professionals' opinions regarding the use of assistive technology in the classroom. There is a significant connection between what people think and what they practice regarding assistive technology. Educators should acknowledge this relationship and how it may shape the entire educational experience of students with disabilities. In this particular study, the researcher intended to reveal the factors behind the lack of availability of assistive technology in the classroom, as well as to determine peoples' attitudes towards supporting individuals with disabilities and their right to access the general education curriculum in the classroom. Twenty-eight students and staff members from a Midwestern University in the United States participated in the study; generally, participants were asked if they support the use of assistive technology or not, and to pinpoint obstacles that might prevent people from using assistive technology.

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Recently, assistive technology and its importance has been a controversial aspect associated with special education because of people's attitude towards the use of assistive technology. People may look at assistive technology as a tool that leads students' with disabilities to succeed, while others believe assistive technology makes them dependent and students with disabilities will not be able to do the tasks on their own (Edyburn, 2006).

A great deal of research has been conducted to measure the significance of using assistive technology in the classroom and how it can be integrated into the general curriculum and used for assessment. Individuals with disabilities sometimes have difficulty with tasks, leading to others making decisions for them (Carlson, Ehrlich, Berland, & Bailey, 2001). The complexity of tasks may interfere in their daily lives and education as well. People with disabilities have the right to practice their life in the way they choose; however, if they are incapable of this and are prevented from accessing assistive technology, it can lead to a dependency on others.

In the case of students with disabilities in the classroom, assistive technology has the potential to enhance and increase their learning and academic performance (Edyburn, 2006). Currently, many students with disabilities are included in the classroom. Students may have difficulties in different areas like reading, listening, organizing information, or writing. An inclusive classroom may help them to overcome some of their challenges, yet it may also create other problems if they are unable to access the general education curriculum.

Some professionals support using assistive technology in the classroom while others have different perspectives of using assistive technology (Edyburn, 2006). Assistive technology is a broad concept that includes a range of services and devices. Assistive technology devices are identified in the Individuals with Disabilities Education Act (IDEA) 2004 as: "Any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or

customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities”. As defined in IDEA, an assistive technology service is any service that directly assists a child with a disability in the selection, acquisition, and use of an assistive technology device (IDEA, 2004).

Assistive technology devices can be divided into two categories; high tech and low tech. High-tech devices are more complicated and cost more. They also require training or guidance from the user, such as adaptive equipment, voice recognition software, or word prediction software (Johnston & Watson, 2007). In contrast, low-tech is low-priced equipment, as it costs less than high-tech, it is simply designed, and requires limited training. Examples of low-tech devices include but are not limited to talking watches, pencil grips, highlighting marker tape, eyeglasses, and ear plugs to reduce distraction (Johnston et al., 2007).

Assistive technology is intended to help and assist people who have challenges or disabilities. As a special educator, the researcher is concerned with the well-being of students, especially those who have disabilities. Students with disabilities need to have an accessible educational environment allowing them to participate in the classroom. The Least Restrictive Environment (LRE) is one of the significant elements that should be provided for individuals with special needs (Turnbull et al., 2001) as required by the IDEA. In order to promote the classroom acceptance of students with disabilities, there are many techniques that have to be considered, one of which is assistive technology. The classroom is one place that children with disabilities, regardless of the nature of the disabilities, spend most of their time; thus, it should prepare them academically by providing them with content knowledge and social interaction with their peers. Assistive technology can help create the accessible environment that children with disabilities, parents, and special educators are looking for.

Students with disabilities can be as successful as their peers when the educational system provides the necessary accommodations (Edyburn, 2004). For example, if schools adapt the general curriculum using assistive technology, whether it is hardware or software, students with disabilities are given the opportunity to participate in the general education curriculum. Educators frequently seek new strategies to help their students understand the context of the subject being taught. Assistive technology can aid students with disabilities in overcoming or bypassing their learning challenges. When educators acknowledge not just the disability, but also the ability that students with special needs have to benefit from assistive technology, they would support providing it in the classroom.

Even though education professionals understand the importance of assistive technology, it is unknown what the general public understands about assistive technology. In order to learn more about the general public's understanding of assistive technology, the researcher conducted a pilot study to determine the general public's opinions regarding the importance of using assistive technology in the classroom. The study investigated the most common types of technology people used, opinions regarding the rights of students with disabilities to use assistive technology in their daily and academic life, and also what kind of difficulties might prevent students with disabilities from having access to assistive technology.

The participants in the study were 25 graduate students who attended a Midwestern university in the United States. Participants' ages ranged from 23 to 33 years old. The results of the pilot study indicated that participants believed using assistive technology plays a significant role in the life of students with disabilities, and most participants agreed that cost is a primary barrier that prevents access to assistive technology needed by people with disabilities. Following

the completion of the pilot study, the questionnaire was modified to better determine people's perceptions of the use of assistive technology for students with disabilities in the classroom.

Statement of Purpose

The purpose of this qualitative research was to determine university students' and staff' awareness of the use of assistive technology for students with disabilities in the classroom by investigating participants' perceptions regarding the use of assistive technology.

The researcher believes that assistive technology positively impacts the academic performance of students with disabilities in the classroom, and educators should be aware of the benefits of using assistive technology in the classroom for students with special needs. Students with disabilities must participate and have access to the general curriculum and assistive technology is one accommodation that educators can use to help students with disabilities access the general education curriculum allowing them to be included in the general education classroom. The current research was designed to determine university staff and students' understanding of assistive technology and whether or not they support the use of assistive technology for students with disabilities in the classroom.

Literature Review

The following literature was reviewed to gather the professional perspectives from educational research regarding the use of assistive technology in the classroom, and to gauge how students with disabilities can benefit from using assistive technology in the classroom.

Law and Assistive Technology

The special education laws have passed through multiple stages, beginning with a focus on preventing the segregation of people with special needs, to a focus on laws that require people with disabilities to be included in public education. Since special educators are an essential aspect in the Individual Educational Program (IEP) planning, it is necessary for them be aware of the laws associated with the use of assistive technology. The following sections will review the most important laws that have been created regarding the rights and use of assistive technology.

Ordover (1994) outlined forty assistive technology rights under the Individuals with Disabilities Education Act (IDEA). In IDEA Part B, children and youth ages 3 through 21 attending the state school system and other public agencies that educate students with disabilities must be provided with assistive technology devices and services. Education agencies must ensure that students with disabilities are offered the free, appropriate public education to which IDEA entitles them (Judge, 2000).

Russell, Hendershot, Leclere, and Howie (1997) stated that people with disabilities have a lawful right to be accommodated in public places and the workforce because of the passage of the Americans with Disabilities Act (ADA). The authors point out that accommodation consists of providing assistive technology that includes devices or adjusting the existing surroundings to best serve people with special needs.

Russell et al., (1997) reported that in The Technology-Related Assistance for Individuals with Disabilities Act of 1988, the federal-state agencies intended to establish programs to notify and educate people with disabilities and those who serve them regarding the availability of assistive technology devices and their use.

Judge (2000) found that the law requires local schools to provide assistive technology for students with disabilities; which allows students with special needs to receive an education in the least restrictive environment. He demonstrated that the need for assistive technology, whether services or devices, has to be addressed in the IEP. When the IEP team decides that a student needs assistive technology, the school system has to find funding to acquire the device for the child.

Merbler, Hadadian, and Ulman (1999) also reported that The Technology-Related Assistance for Individuals with Disabilities Act of 1988 makes AT equipment accessible to students with disabilities in the grant program. Equal access to AT for students allows students with disabilities access to competitive employment and training that general education peers complete; accordingly, AT must be provided at the school's expense.

Benefits of the Use of Assistive Technology

Aiken and Whitney (2009) studied the use of technology in the curriculum. In their study, students in the School of Business rated their comfort with using technology in the classroom and also using a specific software program in their studies during their academic life and beyond. The study examined participants' level of comfort in using technology in the classroom through the use of software in the classroom. The programs used were the Comfort Scale (CCS) and an Excel-based assessment to determine computer proficiency. The results indicated that

students used the software successfully, and it helped them to participate in the School of Business and understand the statistical programs without difficulty.

Assistive technology in the classroom is one of the most important accommodations that educational agencies have to provide; moreover, teachers should be aware of their students' needs (Watson & Johnston, 2007). Additionally, Watson and Johnston report that high-tech computers and software can be helpful tools for students with mild disabilities such as dyscalculia, dyslexia, or dysgraphia.

One of teachers' major responsibilities is to provide children, regardless of their disabilities, with successful learning experiences and assistive technology can help teachers to reach this goal giving their students an opportunity for a brilliant future (Netherton & Deal, 2007). However, accessibility to assistive technology devices is still difficult for financial reasons and prevents some students with disabilities from having access to them in the classroom (Watson & Johnston, 2007).

In schools, millions of students with learning disabilities are not able to access the technology and information available, while in the same school the rest of the students can access the information they need with the click of a mouse (Bausch & Hasselbring, 2006). Through the use of assistive technology and digital technologies, students with learning disabilities are able to gain the same benefits as their peers in the classroom (Bausch & Hasselbring, 2006). Additionally, using software and assistive technology in the home, students with learning disabilities can learn alongside their typically developing peers in the classroom (Bausch & Hasselbring).

Typically, students with physical disabilities face difficulties that prevent them from accessing and participating in regular education programs. However, assistive technology allows

them to be included in the regular classroom (Behrmann, 1994). Assistive technologies also provide students with disabilities opportunities for learning independence. There is a great deal of software and assistive technology that can open a bright future for students with disabilities (Hopkins, 2006).

Assistive technology can help students with physical disabilities tremendously; similarly, Bateni and Maki (2005) found that assistive technology also has many clinical benefits, such as improving people's mobility and their ability to complete daily tasks through the use of canes and walkers. Mobility aids can increase people's self-confidence and feelings of safety, which helps them to achieve the highest level of independence in their lives.

Bryant (1998) demonstrated that teachers used cooperative learning in the classroom to promote academic achievement and social acceptance of students with and without learning disabilities. Cooperative learning is of interest to classroom teachers because it can provide an opportunity for more instruction and feedback by classmates than that which is provided by teachers to individual students who require additional assistance. Bryant stated that students with learning disabilities may need assistive technology allowing them to engage and interact with their typically developing peers during cooperative learning activities in the classroom.

Barriers to the Use of Assistive Technology

Some assistive technology services and devices may require a great deal of effort in order for students to access and properly use them. The barriers of accessing assistive technology may include but are not limited to funding, training, and insufficient assessment. The literature below describes some of the obstacles that might prevent individuals from accessing assistive technology.

Judge (2000), stated that financing for assistive technology has been a major barrier to acquire assistive technology (AT) devices and services. He claimed that different public and private sources offer funding to individuals with disabilities in order to obtain assistive technology they need; however, obtaining assistive technology can still be difficult for families due to the cost.

Copley and Ziviani (2004) reviewed the literature to identify and recognize the major obstacles in assistive technology assessment and implementation for children with multiple disabilities. The authors listed several barriers including a lack of appropriate teacher preparation and support, negative staff attitudes, insufficient assessment and planning processes, insufficient financial support, difficulty obtaining and managing equipment, and time constraints. The authors stated that with the use of AT, some deficit areas can be improved such as handwriting, motor skills, reading, and math skills.

Edyburn (2004) indicates there is little proof that preservice teachers receive sufficient training in the use of assistive technology to prepare them for their responsibilities to evaluate the need for, and even consider assistive technology in Individualized Educational Program (IEP) meetings. Likewise, inservice teachers have obtained inadequate preparation. Edyburn found that the majority of the members of the IEP team had little preparation in assistive technology or no training whatsoever. Similarly, Judge (2000) stated that in some special education teacher preparation programs, most of the time the course in assistive technology is not obligatory; consequently, preservice teachers do not get the preparation they need regarding assistive technology.

Regarding the impact of using assistive technology on students' academic performance, Edyburn (2006) said when students with mild disabilities cannot accomplish their academic

tasks, teachers must find a strategy to help them. Professionals should understand that at some point, technological tools can be helpful, and assistive technology can help students with disabilities to complete their tasks successfully and independently.

Owens, Leung, Lamb, Smith, Shaw, and Hauff (1999) demonstrated issues related to assistive technology. They investigated the effectiveness of assistive technology for students with disabilities and university staff who work with them in an Australian university. The aim of the study was to explore the barriers of using assistive technology in the Australian university. Participants, 88 university students, were asked to complete a questionnaire developed by the project team. The questionnaire was designed to gather specific information regarding the use of assistive technology. The participants were asked about the costs and funding for AT. Participants reported that the cost of most AT ranged from \$10 to more than \$2000, which in many cases, prevented them from accessing AT devices and services. Several students received funding for AT, while the remaining had no funding and/or had difficulty knowing about funding sources and how to access them.

The literature reviewed in this study supports the use of assistive technology in the classroom for students with disabilities. Moreover, it demonstrates that using assistive technology has many advantages in the classroom such as a positive impact on performance for students with disabilities, leading to greater independence and improved quality of life for individuals with disabilities. In this study, the researcher intended to determine if the general public understood and supported previous studies regarding the use of assistive technology. The following section describes the methods used to obtain people's understanding of and perceptions toward the use of assistive technology.

Method

The following section includes a detailed description of the research procedures, the setting and participants, and the instrument used for data collection. A presentation of the results, as well as the analysis of the data, and findings will be described in subsequent sections.

Research Question

The purpose of this research was to explore people's attitudes towards the use of assistive technology in the classroom for students with disabilities.

Setting and Participants

The participants in this study responded to an online survey that was designed using the Google website. The link was published in an electronic newsletter distributed weekly to all members (faculty, staff and students) of the College of Education at Midwestern University in United States. The participants were asked to complete the survey by clicking on the link, filling out the survey, and anonymously submitting it. After the surveys were submitted, the researcher received a spreadsheet that included all the responses through the Google website. There were no limitations on participation; anyone receiving the newsletter could participate in the study.

Instrument

The data collection instrument used for this study was a survey that included ten open-ended questions that were required to be answered in order to submit the survey. The questionnaire was designed to investigate people's perceptions and attitudes regarding the use of assistive technology for students with disabilities in the classroom. The survey included ten questions addressing the use of assistive technology, the fairness to other students, the relationship between socio-economic status and access to AT, and the availability of AT in the classroom.

Procedures

Three months prior to conducting the research, a pilot study was designed, which was described earlier. It took two months to create the pilot study. The instrument was an online survey that was designed through the Google website and a link was posted on Facebook for participants to respond to.

The survey in this research was a modification of the questionnaire that was used in the pilot study. The pilot study was conducted after official approval was granted by the University's Office of Research Compliance. The questionnaire in the pilot study was modified and sent to the Ohio University Office of Research Compliance to approve the changes. After approval was received, a link to the new survey was published in the electronic newsletter distributed by the University's College of Education, along with an invitation to participate.

There was no obligation for participation in the survey and the data was collected anonymously. A statement of agreement/consent was posted with the link that informed participants that they had to be over 18-years-old in order to complete the survey. The statement of agreement also clarified that the participant had the option to exit the survey without any repercussions or penalties. By clicking on the link, the participant simultaneously consented to participation. The link was open for three weeks during April of 2010 and the participants could access the link at any time.

Data Analysis

The participants were asked to answer ten questions. Nine questions were forced choice questions and the tenth question was an open-ended question. The data was analyzed using SPSS (statistical analysis program) to find the frequency and percentages of the responses. The

responses were re-coded as Yes = 1; No = 0. The participants' answers to the open-ended questions were considered and listed to provide clarification and explanation of their opinions.

Results

The following section describes the results of 28 responses to an online survey that was designed to gather people's perceptions regarding the use of assistive technology in the classroom for students with disabilities. Assistive technology in this study was defined according to the Assistive Technology Act of 1998 as "products, devices or equipment, whether acquired commercially, modified or customized, that are used to maintain, increase or improve the functional capabilities of individuals with disabilities"

The data shows that 92% of the participants did not report having any kind of disabilities, with the remaining 7% of the participants having a disability. In regards to individuals' experiences with using assistive technology during their education, 78.6% state that they have not utilized assistive technology whether devices or services, but in contrast, 21.4% have used such technology.

Use of AT. Seventy-five percent of the participants reported having been allowed to use assistive technology in the classroom, while 25% of them have not. Regarding the positive impact of using assistive technology on the academic performance of students with disabilities, 96% believe (AT) makes a significant difference in students' performance, yet 3% of the participants disagree. The participants who agree on the positive impact of (AT) explained that AT can help students perform tasks that they struggle with. Moreover, the (AT) is one of the strategies that educators must consider to help children better overcome their challenges.

AT and fairness. The data demonstrates that 85% of the participants disagreed with the following statement: "When students with disabilities are allowed to use assistive technology, it

is unfair to others.” Participants reported that the term “fair” means students should obtain what they need in the classroom to help them improve academically, and AT gives them the opportunity to acquire the assistance they need. On the other hand, 14% of the participants agreed that AT for students with disabilities is unfair to others and they state that using AT depends on the situation, as well as on the kind and degree of the disability.

Funding for AT. The majority of the participants disagreed with the statement that “All students with disabilities regardless of their social economic status have an opportunity to get the assistive technology they need” and they clarified that funding and cost are the major barriers that may prevent students with disabilities from gaining access to AT.

Teachers’ knowledge of AT. Regarding teachers’ awareness of the benefits of using assistive technology, 89% of respondents believe teachers are not completely aware of the benefits, yet 10% believed that teachers acknowledge the importance of assistive technology. The greater percentage of the participants agreed that schools should provide assistive technology to students with disabilities because educational agencies are responsible for educating students and funding them. However, as seen in figure 3, 10% believe that schools are not obligated to provide assistive technology and no explanation was reported regarding that belief.

Availability. In response to the following statement: “The availability of assistive technology in the classroom gives students with disabilities opportunity to access to the general curriculum,” 92% agreed with emphasizing the necessity of training students with disabilities on how to use AT, whereas 7% disagreed with the previous statement due to the difficulties that students with such issues might face in the general curriculum.

Advantages and disadvantages. The participants listed many advantages regarding the use of assistive technology in the classroom. For example, a number of the individuals said that assistive technology can help in terms of having inclusive classroom for all students, regardless of their disabilities. Participants reported that AT might help students in some ways to achieve their academic tasks and AT allows students with disabilities to be independent and participate in the curriculum. However, respondents also state that AT might have some disadvantages, such as labeling students with disabilities negatively, which can also cause emotional harm. The following figures provide a visual representation of additional survey results.

Figure 1

Impact of AT on Academic Performance of Students with Disabilities

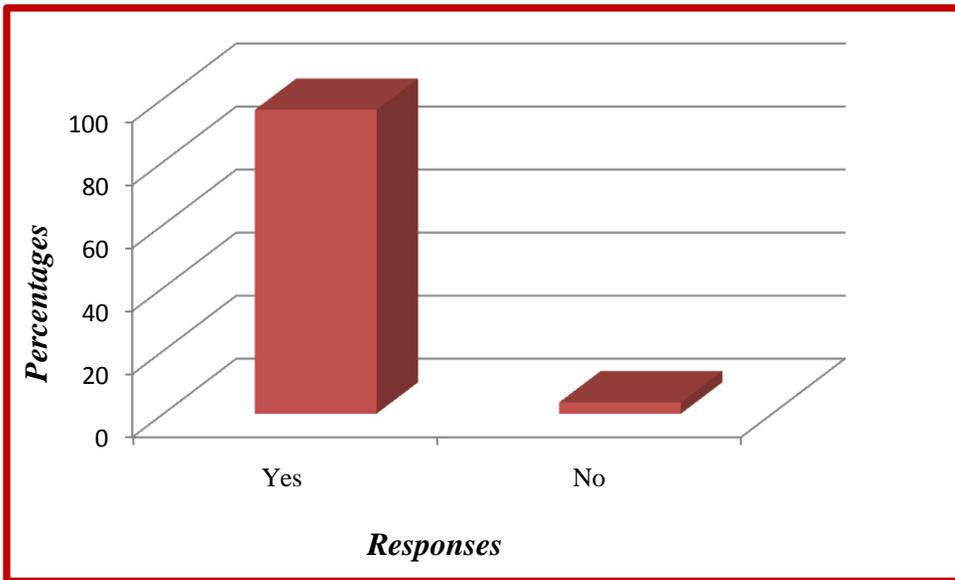


Figure 2

Perceived Relationship Between Socio-Economic Status and Access to AT

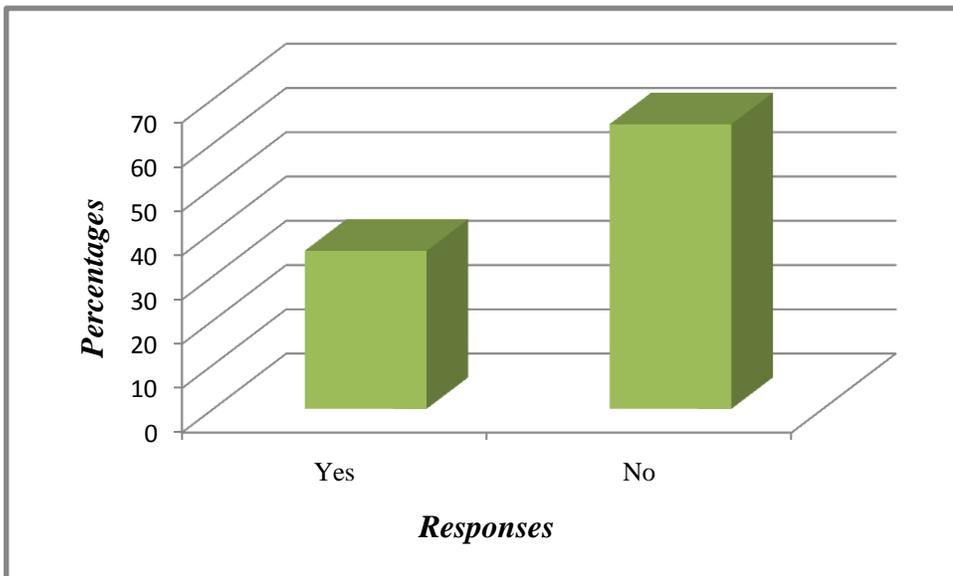
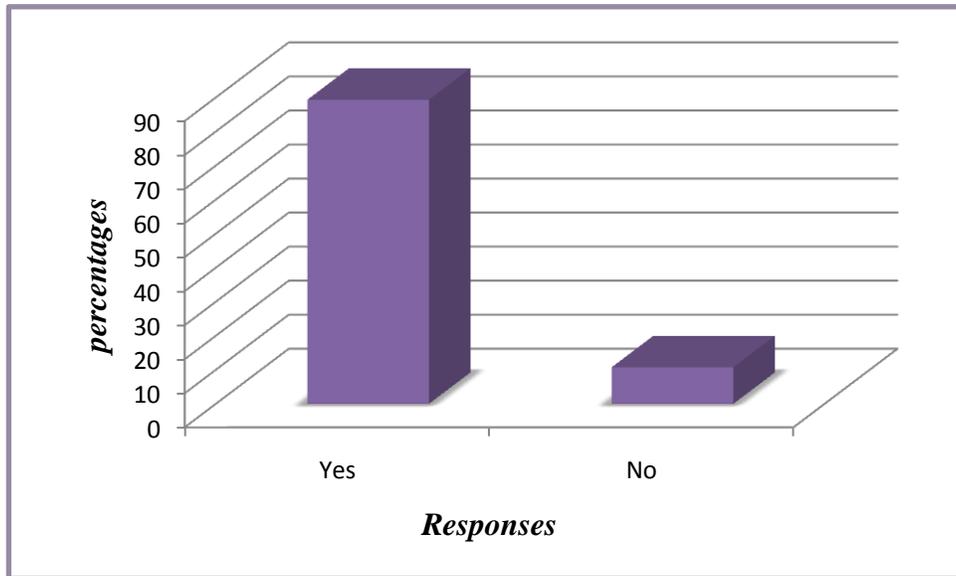


Figure 3

Provision of AT in the Classroom: Should it Be Provided?



Discussion

In general, the results of this study support the use of assistive technology in the classroom for students with disabilities. The majority of the participants believed in using technology to assist people with disabilities; however they conveyed some concerns towards the use of assistive technology in the classroom. For example, participants stated that providing assistive technology is important, but teachers must realize that assistive technologies cannot help students with disabilities without support from other teachers and families. People must be aware of the fact that assistive technology is an approach to assist individuals with disabilities, yet it cannot replace the support students need to access the general curriculum.

Almost all participants agreed on the barriers that may prevent students with disabilities from accessing assistive technology. Funding, training, available time, and technological complications were obstacles that respondents listed. From the participants' perspective, educational agencies are obligated to provide assistive technology to students and believe that assistive technology must also be supplied at the schools' expense.

Regarding the advantages of using assistive technology, participants' responses support the previous studies' findings. Unexpectedly, some of the respondents indicated emotional harm as a possible disadvantage of assistive technology use. Unfortunately, the researcher did not consider the negative impact and the label that students with disabilities and their families may wish to avoid, especially students with disabilities that are not readily visible. Interestingly, the literature reviewed for this study did not indicate any possible negative stigma associated with using assistive technology.

Overall, the responses regarding assistive technology use in the classroom for students with disabilities supported previous studies and are believed to enhance the students' with disabilities right to be provided with the least restrictive and most accessible environment.

Limitations

As with any research project, this study has its limitations. Limitations include

- Difficulty of obtaining responses, meaning people were not willing to participate in the online survey. This limitation can be avoided in further studies by interviewing people and motivating them to participate by offering an incentive.
- Lack of access to a classroom where students use assistive technology and an inability to observe their attitude towards assistive technology issues.
- Lack of access to experts who have been working with students who have disabilities that benefit from assistive technology, as well as experts who work with the students' families.
- The number of participants was 28 out of 200, which was too small to be representative of the entire population

Conclusion

Assistive technology can be a useful and supportive tool for students with disabilities. It helps both teachers and students create an unforgettable learning experience. The researcher strongly believes that every individual can learn and improve themselves academically, yet individuals must have access to the learning environment in order to achieve these goals. Teachers, parents, families, and the community can work collaboratively to provide a successful learning environment.

In modern societies, technology has become a crucial part of life and social advancement. It is part of the educators' role to provide assistive technology to people with disabilities and to allow them to benefit from and improve their quality of life through the use of the best technological assistance available.

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Appendix A

1-Do you have any kind of disability that requires the use of assistive technology in the classroom? *

- Yes
- No

2-Have you used assistive technology services or devices during your education in school? *

- Yes
- No

If yes, please explain about the services or the devices you used?

3-Have you been allowed to use any kind of assistive technology in the classroom such as a calculator? *

- Yes
- No

4-Do you think utilizing assistive technology would have a positive impact on the academic performance of students with disabilities? *

- Yes
- No

Please explain

5-Do you agree with the statement “When students with disabilities are allowed to use assistive technology, it is unfair to others”? *

- Yes
- No

Why or why not?

6-Do you agree with the statement” All students with disabilities regardless of their social economic status have an opportunity to get the assistive technology they need”? *

- Yes
- No

If No, what is the barrier that might prevent them? *

7-Do you think most teachers are aware of the benefits of assistive technology for students with disabilities? *

- Yes

- No

8-Based on the federal law, assistive technology must be included into a student's IEP in order for the student to benefit from education; do you think schools must provide assistive technology in the classroom? * "IEP" refers to Individualized Education Program, and is most often used in conjunction with special services or for providing instructional services for a child with special needs.

- Yes
- No

9-Do you agree with the statement" the availability of assistive technology in the classroom gives students with disabilities opportunity to access to the general curriculum? *

- Yes
- No

Why or why not?

10-Please list two advantages of providing assistive technology in the classroom and two disadvantages? *

Online survey

<https://spreadsheets.google.com/viewform?formkey=dGN5MjR4X28zbHRLYnhOSUUzQVB6>

[VWc6MQ](#)