| RESEARCH ARTICLE

Supportive Educational Technology and Teacher Attitudes Toward the Inclusion of Children with Special Needs

Nasser Said Gomaa Abdelrasheed[1] and Muhammad Amir Saeed[2] ✉

[1]*Professor, Department of Education, Dhofar University, Salalah, Oman*
[2]*Lecturer, Department of English Language and Literature, Dhofar University, Salalah, Oman*
Corresponding Author: Muhammad Amir Saeed, **E-mail**: muhammad@du.edu.om

| ABSTRACT

Technology is an important and effective tool for helping students with disabilities and others access the education they deserve, just like other students, and provide them with the educational facilities necessary for this process. It works to integrate them into the educational process. So, the current study aimed at identifying the utilization of supportive educational techniques that could be applied to change the attitude of teachers of students with special needs to allow the integration of such children in the general education system in the Egyptian context. A sample of 217 male and female who are special needs teachers in integrated schools for special needs children in Minia Governorate, Egypt was used for the study. Two main questionnaires were used for the study. The first questionnaire covered the utilization of supportive educational aids for special needs children, while the second questionnaire aimed at investigating attitudes of teachers of special needs children towards integrating supportive educational techniques for special needs children into general education schools after the verification of their psychometric characteristics. The key findings show that there is low (2.54 out of 5) of using supportive educational techniques by special education teachers in special needs institutions. Additionally, the research found significant statistical differences at level (0.01) between the mean scores of male teachers and female teachers in utilizing supportive educational technology for special needs children. Furthermore, there is a positive and significantly correlated relationship between the utilization of supportive educational techniques by the teachers of special needs children and teacher's attitudes towards the integration of children with special needs into the general education system. Conclusion: Teachers with positive attitudes toward the inclusion of people with disabilities in mainstream schools effectively use a variety of supportive educational techniques to teach people with disabilities. Teachers with negative attitudes, however, tend to use less assistive technology in teaching people with disabilities.

| KEYWORDS

Supportive educational techniques - Special education teachers - The attitudes towards integration - Children with special needs – supportive educational technology – students with disability

1. Introduction

Recently, the world has witnessed major developments in the field of information technology and its means, which has contributed to its use in various areas of life, whether for the normal individual or for people with disabilities, regardless of their type.

Children and individuals with special needs have been given priority and well cared for in different countries around the world, including the use of appropriate methods and techniques to facilitate them in all walks of their lives including their education. The use of advanced technology and supporting educational techniques in their learning helped to achieve the goals set for them. The efficient and effective use of modern technologies in education totally depends on the child's abilities that evolves around crucial factors such as efficient and well-trained teachers, well developed and equipped technical and technological

infrastructure, relevant educational resources and technical support to tackle all the obstacles and effective use of all these resources in teaching (Billingsley et al., 2011). Students with disabilities face many challenges in learning and assistive technology can be a potential aid for compensating for their educational needs (Alkahtani, 2013).

People with disabilities are always in need of some sort of needs and services which vary from one case to another. Learning environment is one of the crucial factors that plays a pivotal role in selecting necessary Assistive Technology to support students to perform different tasks (Viner et al., 2020). The field of AT is concerned with the practical tools which support the functional needs of people who face challenges related to their disability or old age. In this regard, AT encompasses a variety of low-tech and high-tech devices that play an important role in providing independent living in daily affairs for people with different levels of disabilities (Alkahtani, 2013; Cheng & Lai, 2020)

Laws, regulations, resources, district practices, and theoretical understandings of disability and special education influence accessibility and decision-making for students with disabilities in AT in different aspects (Ahmed, 2018). First, the laws and regulations related to the use of AT support the notion that children with different levels of disabilities are entitled to receive a Free and Appropriate Public Education (FAPE) available to them, designed to meet their unique educational needs with AT (Genc et al., 2021). According to Clark and Ceasar (2009), "Schools are required to provide assistive technology at no cost to the student/parents if it is needed for a student to receive a Free Appropriate Public Education (FAPE)" (p. 2). Many modifications were made to the law so as to provide the maximum positional of AT for students with disabilities. According to the Individuals with Disabilities Education Act (IDEA) legislation in this manner "Each public agency must ensure that assistive technology devices or assistive technology services, or both, as those terms are defined in §§ 300.5 and 300.6, respectively, are made available to a child with a disability if required as a part of the child" (Mittler, 2007, p. 82).

Access to assistive technology (AT), which is commonly discussed in research related to the education and care of individuals with disabilities, often refers to the extent to which an individual possesses and uses assistive technology (AT), and utilizes it to improve performance and achieve their goals. It also refers to the extent to which it is available in the environment of the individual who needs assistive technology to support their independence and success (Stock et al., 2019).

Theoretical understandings of disability with reference to AT also support the laws and regulations in this respect. Researchers, for example, Chester (2012) claimed that there should be a connection between the AT and the theory behind that. According to Chester (2012), the theoretical assumption behind the use of AT is that it enables the students to use them so as to meet the goals of instruction. The use of AT for students is connected to instructional and academic goals.

There is no doubt that the two main factors that constitute the cornerstone of attention to the issue of accessibility, provision, and use of assistive technology are federal laws and the tremendous and rapid technological advances in the field of assistive technology (AT) and its tools (Templeton & Lee, 2008). The Individuals with Disabilities Education Act (IDEA, 2004(, emphasizes the necessity of providing assistive technology in the education of students with disabilities, and that such technology be included in the educational program for students with disabilities, including those with severe disabilities (Gartin & Murdick, 2005).

In this regard, the Association of Unusual Children stresses that special education teachers must have the skills to use special educational techniques and the ability to provide a meaningful learning environment that builds positive attitudes towards the use of educational techniques for children with special needs and helps them to use the various means of communication that contribute to Integrating that category into the external community (Erdem, 2019; www.shif: ce).

For decades, specialists in special education have advocated integrating and defending children with disabilities in the public education system. Controversy over integration policies is often debated on whether students in public education classes are enforceable, rather than focusing on the quality and quality of educational experiences offered in those classes (Peters, 2003). The idea of continuity of services refers to the different types of educational environments in which students with disabilities can be accommodated based on their specific needs. In this regard, the less restrictive and isolated environment indicates that students with disabilities should be fully taught together with their non-disabled peers (Alkahtani, 2013).

According to the Education for Individuals with Disabilities Act, students have the right to education in the least isolated and restrictive environments. The lowest level (most integrated) is their inclusion in public education classes without any additional form of educational support, and the higher level involves their education in their places of residence or their schools (Katsafanas, 2006). Disabled students in public schools (a term used to refer to the inclusion/ inclusion of disabled children in general education classes based on individual assessment) This concept was presented in response to the Disability Education

Act, which provided for the housing of students with special learning needs in the least isolated and restrictive environments. The teacher has to submit A complete package of continuous services for that class of students (Katsafanas, 2006).

The Convention on the Rights of Persons with Disabilities signed in December 2006 emphasized the importance of the policy guidelines contained in the World Program of Action concerning Persons with Disabilities and the Standard Rules on the Equalization of Opportunities in Promoting, Formulating and Evaluating Policies, Plans, Programs, and Actions at various national levels Regional and international levels to increase opportunities for individuals with disabilities, and emphasized the importance of mainstreaming the issues of individuals with disabilities as an integral part of relevant sustainable development strategies (Convention on the Rights of Persons with Disabilities, 2006).

2. Background of the study

Assistive technologies (ATs) are designed to improve the functional capabilities of people with
 disabilities. Some are relatively low-tech and very familiar, such as such as reading glasses, crutches and hearing aids. Others are more advanced, using cutting-edge science and technology, with future ATs under development that could have a huge impact on all our lives (European Parliament, 2018).

Research about AT paid much attention to the classification of disabilities and the AT devices needed for different types of disabilities. The Department of Health (2015) claimed that AT is not a matter of purchasing devices; it is a matter of relating the suitable AT device for specific purposes. In addition, the research in AT area was interested in funding and the development of AT implementation in addition to evaluation of such technologies (The Department of Health, 2015, p. 4). In this regard, teachers, parents and people with disabilities try to find the latest news via online resources about AT devices and how they can help them manage their daily affairs.

The AT devices, especially the high tech ones are normally used by students who do not have any communication ability at all. Such devices play an important part in helping students in schools. In addition, AT devices are also considered remedial technologies, which can help teachers a lot in daily instruction when dealing with students with disabilities. These technologies proved effective in developing skills among students. Schools do introduce these high-tech devices in the classes as they can help teachers overcome significant problems for students with disabilities (Reed & Lahm, 2004; Rice, 2022; Kocdar & Bozkurt, 2023).

The use of AT in schools relates to many factors that might promote or detract from the use of AT. Teachers' awareness of the importance of the AT for students with disabilities is one of the factors that promote the understanding of AT in schools (Algamdi, 2022). When the teachers are familiar with what AT devices, they use these devices with ease which help them achieve their goals during instruction (Alkahtani, 2013). In this regard, Reed and Lahm (2004) claimed that knowledgeable people are needed to work with the Individualized Education Program (IEP) team to choose suitable AT devices for students with disabilities. One of the most critical issues in AT work is that there should be district employee who works with children with disabilities with at least awareness level knowledge about what AT is and what it does (Reed & Lahm, 2004).

School philosophy is also an essential factor in promoting the understanding of AT. In this regard, schools should have a clear policy about the type of AT devices available for use by children with disabilities and teachers of special education. The school environment should be inclusive and suitable for using AT devices in the classrooms (Ahmad, 2015). For example, the availability of the network and some labs in the school promotes the potential for using the AT in classrooms. In this sphere, Chester (2012) explained that considering where the student will be using the technology and examining the school environment should have consideration of the physical arrangements and the technical infrastructure. It is one of the important factors in maximizing the use of AT devices for students with disabilities. One important factor related to the school policy is the fiscal technology policy, which should define the uses of AT devices and determines the new type of AT devices the school should buy during the year. The schools should have their financial policies regarding using available AT devices. There is also a set of procedures for the teacher's use of AT devices. (Settler, 2018). It is the policy of the school that the school principal shall prepare an annual budget prior to the beginning of the school fiscal year. During the fiscal year, if income or expenses vary significantly from the approved budget, the school principal shall prepare an amended budget. In other words, there are items in the school fiscal policy with specific budget so that the school can buy the necessary AT devices at the start of the academic year (Erdem, 2017). One important note is that the available budget for AT is not sufficient. Scherer (2005) claimed that the use of AT devices may be confronted with obstacles such as financial problems which limit the introduction of such AT devices for use.

Promoting the use of AT is also connected with the understanding of the importance of AT for students to achieve academic success. This will help school personnel make informed decisions especially when they evaluate students' needs in terms of AT

devices (Mavrou, 2011). In other words, school personnel need to know what specific AT will be used with reference to the students' needs and the type of content so that teachers can recommend devices and make informed decisions when they are confronted with students who need help (Chester, 2012; Cheng & Lai, 2020; Wynne et al., 2016).

While Alnahdi (2014) emphasizes that assistive technologies can help students with disabilities enhance and improve their independence, performance in academic tasks, classroom participation, and completion of challenging academic tasks, Wojciechowski and Musawi (2017) point to the need to provide assistive technologies to enhance the social skills of students with disabilities.

One of the issues that detracts from the use of AT in schools relates to the school personnel's awareness and ability to use AT devices in the classrooms. Suppose the school is equipped with the appropriate technical infrastructure with a variety of AT devices, but the teachers are not aware of the impact of these AT devices on students' achievement; this situation creates a challenge to the use of AT in the school. As a result, the students' academic performance will be affected negatively as the teachers are not aware of using and providing AT devices in their classes (Nordstrom et al., 2019). According to Chester (2012), introducing AT is essential for many of the students at the school, especially for those with disabilities, hard hearing or short-sighted, and that the school teachers should be creative in devising the appropriate tools to help students access the curriculum and activities during the daily instruction.

3. Problem of the study

In the context of the needs of students with disabilities for special services and the inability of governmental and private institutions to absorb children with disabilities, the idea of integration, which has never been the result of the changing attitudes of society towards people with disabilities, Educational, economic, or social (Hadidi & Khatib, 2011). Assistive educational technology is one of the fundamental pillars of the integrated support system that students with special needs need to support the teaching and learning processes. This is because it contributes to improving their performance and raising the capabilities and skills that help them achieve educational and learning goals. It also helps them communicate socially and prepares them for employment (Size, 2004).

Several studies have emphasized the importance of conducting studies to improve different programs for individuals with disabilities, as well as the importance of training programs for teachers and special education teachers to deal with people with special needs and their education. The teacher must have the necessary information and knowledge to improve their education (Johnson & Dixon, 2006).

The problem of the study is determined by answering the following main question: What is the advantage of utilizing Supportive Educational Techniques by special education teachers and their relation to their attitudes toward integrating special needs students in general education schools?

The following main questions stem from the following sub-questions:

1 - What is the level of special education teachers 'utilization of Supportive Educational Techniques with the handicapped children in general education institutions?

2. Does the use of Supportive Educational Techniques used by special education teachers differ according to the gender and kind of handicapped children?

3. Is there a correlation between the use of Supportive Educational Techniques by special education teachers and their attitudes towards the integration of people with special needs in public education schools?

4. Objectives of the study:

The present study aims to:

1 - Identify the level of Utilization of Supportive Educational Techniques used by special education teachers to assist people with special needs.

2 - Identify the differences between males and females of special education teachers using educational techniques to assist people with special needs.

3 - To identify the relationship between the utilization of Supportive Educational Techniques used by special education teachers and special education teachers' attitudes towards the integration of people with special needs in public education schools.

5. Method

5.1 Participants

In total, 236 special education teachers from different public schools which integrated students with special needs in Minia governorate, aged between 32 – 48 years (M = 42.56, SD = 8.22 for males; M = 39.47, SD = 9.13 for females), were recruited to participate in the current study, of whom 217 completed the study measures. The participants included teachers from both gender (males=125, 57.6%; females=92, 42.4%). The participants were selected randomly from public schools.

Table (1)

The distribution of the sample according to demographic variables

Variable	Variable sets	Number	Percentage
Gender	Male	125	57.6 %
	Female	92	42.4 %
	Total	217	100 %
Kind of Handicap	Intellectual Disability	65	29.95 %
	Visual impairment	42	19.35 %
	Hearing impairment	34	15.67 %
	Learning Disabilities	76	35.03 %
	total	217	100 %

Table1, clarify that the total sample was 217 male and female teachers, 57.6% was male and 42.4% was female. According to the kind of handicaped, 29.9% of the sample were teachers for intellectual students, 19.35% were teachers for visual impaired children, 35.03% were teachers for learning disabilities students.

5.2 Research Methodology
The researchers adopted a descriptive research approach to suit the nature of the current study and achieve its objectives.

5.3 Instruments
5.3.1 Using of Supportive Educational Techniques Questionnaire
The questionnaire was developed in the light of theoretical frameworks and previous relevant studies. In its initial form, the scale may measure the reality of special education teachers' use of educational techniques to educate people with special needs in integration schools. The scale consists of two sub-dimensions: knowledge of teaching aids (10 items) and the use of instructional aids (18 items). Each item has five choices depending on the 5 point Likert scale: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1). The correction is based on this Likert 5 point scale, such as the positive items are corrected: 5, 4, 3, 2, 1 respectively, and negative items are corrected: 1, 2, 3, 4, 5, respectively.

In order to verify the validity of the questionnaire, content validity was used. The questionnaire was presented to the group of reviewers who were specialists in special education and psychology. The questionnaire has been modified according to their views and suggestions. 3 items has been modified, 5 items have been deleted and 4 items added. Thus, the questionnaire is in its final form of (27) items.

In order to verify the structural validity of the scale, the correlation coefficient between each item and the total score of the questionnaire was calculated on a survey sample of 62 teachers from the study population and from outside the basic study sample. Correlation coefficients ranged from (0.72 to 0.91), which are high correlation coefficients and statistically significant.

To verify the reliability of the questionnaire, the Cronbach's Alpha coefficient was used. The reliability coefficients ranged from (0.76 – 0.88) which is acceptable reliability coefficients. Furthermore, test-retest reliability was used. The reliability coefficients were high and ranged from (0.84 – 0.92) for the total scores and the sub-dimensions.

To verify the reliability of the questionnaire, the split-half way was also used. It was applied to a survey sample (62) teachers of special education in schools with children with special needs. The correlation coefficient between the two halves was (0.78) and the Spearman Brown equation to correct this coefficient, the total reliability coefficient of the scale (0.88) is a high reliability coefficient.

From the foregoing, it is clear that the questionnaire of the use of special education teachers for educational techniques supporting special needs is valid and that it is possible to use it with the study sample.

5.3.2 Special education teachers attitudes towards the integration special needs children in public education schools
The questionnaire was developed in the light of theoretical frameworks and previous relevant studies. In its initial form (37), the questionnaire may assess the Special education teachers attitudes towards the integration special needs children in public education schools. It has five choices depending on the Likert 5 points scale: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1). The correction is based on Likert 5 points scale, such as the positive items are corrected: 5, 4, 3, 2, 1 respectively, and negative items are corrected: 1, 2, 3, 4, 5, respectively.

In order to verify the validity of the questionnaire, the questionnaire was presented to a group of reviewers who were specialists in special education and psychology. The questionnaire has been modified according to their views and suggestions. According to their suggestions, 5 items has been modified, 3 items have been deleted and one item has been added. Thus, the questionnaire in its final form consists of (35) items. The scale in its final draft consists of 3 sub-dimensions: social dimension (13 items), academic (11 items), and emotional (11 items).

In order to verify the structural validity of the scale, the correlation coefficient between each item and the total score of the scale was calculated on a sample of 62 teachers from the study population and from outside the basic study sample. Correlation coefficients ranged from (0.72 to 0.91), which are high correlation coefficients and statistically significant.

Cronbach's Alpha coefficient was used to verify the reliability of the questionnaire. The reliability coefficients ranged from (0.81 – 0.85) for the total score and the subdimensions which is acceptable reliability coefficient. Also, The reliability coefficient was calculated through test-retest, and the reliability coefficients were high and ranged from (0.80 – 0.93) for the total score and the subdimensions. Furthermore, The split half was used. The correlation coefficient between the two halves was (0.74) and the Spearman-Brown equation (0.81) To correct this coefficient, the total stability coefficient of the scale (0.88) is a high stability coefficient.

From the foregoing, it is clear that the scale of the use of special education teachers for educational techniques supporting special needs is valid and that it is possible to use it with the study sample.

6. Field application procedures:

After the preparation of the study tools in its final form and after verifying its validity and reliability, it was applied to a sample of special education teachers in general education schools with children with special needs in Minya governorate through field training students in these schools. The tools have been collected and incomplete or one-way tools are excluded.

7. Statistical Methods:

To answer the study questions, many statistical methods were used, such as mean, standard deviations, 2 independent groups T-test, One Way Annova, Cheffe Test and Pearson correlation coefficient.

8. Results of the study:

8.1 Results of the first question

Means and standard deviations were used to identify the level of utilization of supportive educational techniques by special education teachers. The following table illustrates the results of this question.

Table (2)

Means and standard deviation of the Utilization of Supportive Educational Techniques by special education teachers

Variable	Mean	Standard deviation	Degree of approval
Know the Supportive Educational Techniques	3.01	1.35	Medium
Use of the Supportive Educational Techniques	2.43	2.01	low
Total	2.72	1.56	medium

It is obvious from the last table that the level of utilization of supportive educational techniques by special education teachers is medium. These results can be interpreted by the fact that special education teachers in various schools, especially inclusive schools, face significant burdens, such as lesson preparation, supervision, and other pressures, in addition to a significant lack of skills in preparing and using assistive technology for people with disabilities.

A major problem in this area is the lack of adequate funding for this technology, its tools, and techniques. Appropriate solutions must be found. Therefore, teachers of these and other groups must be properly trained to use technology that contributes to the education of students with disabilities. This helps them complete their educational journey and overcome the feelings of shame or helplessness that may plague some of them. Students with disabilities can also be trained in a simplified manner to use this technology. For example, starting by choosing easy-to-learn technologies and software, then moving to higher levels based on the group's response (Algalbobiah, 2023).

These results is in line with the results of one study in Saudi Arabia (Alajaji, 2023) which indictae that the use of assistive technology by special teachers in Saudi Arabia was "Somewhat available".

9.2 Results of the 2nd question

To investigate the differences between males and females special education teachers in using Supportive Educational Techniques T-test has been used. The following table shows the results.

Table (3)

The significant differences between males and females in using Supportive Educational Techniques

Variable	Males (n=125)		Females (n=92)		t-value	Sig.
	M	St. dev.	M	St. dev.		
Know the Supportive Educational Techniques	31.2	1.02	29.5	1.24	1.023	0.35
Use of the Supportive Educational Techniques	55.4	1.75	53.6	1.81	0.65	0.74
Total	86.6	1.33	83.1	2.3	1.32	0.25

It is obvious from table (3) that there are not Statistically significant differences between males and females in using Supportive Educational Techniques. These results can be explained by the fact that male and female special education teachers in Egypt have similar academic qualifications, and that most of them do not have a bachelor's degree in special education but rather have completed a one-year qualification through a professional diploma in special education. Consequently, their use of assistive technology for people with disabilities was average for both teachers. Furthermore, these teachers lack in-service training in the use of assistive technology for people with disabilities.

These results is in line with the results of Alajaji (2023) which found that no differences in utilizing assistive technology for persons with special needs according to different demographic variables.

8.3 Results of the 3rd question

To investigate the correlation relationship between the use of supportive educational techniques by the special education teachers and their attitudes towards the integration of special education students, the Pearson correlation was used. The correlation was (0.72) and it was significant. That means there is a positive correlation relationship between the use of supportive educational techniques by special education teachers and their attitudes towards the integration of special education students in public schools.

These results can be interpreted as the use of assistive technology with children with disabilities achieving positive outcomes for them, making teachers feel empowered in the teaching process and achieving their goals. They also feel happy and included in the teaching process for people with disabilities, which creates positive attitudes among them toward teaching people with disabilities in general and the use of assistive technology with people with disabilities in particular.

Recommendations

The following are some recommendations based on the above-mentioned challenges:

1. By law, schools are required to provide the students with the necessary AT support regardless of the high expenses. To overcome financial issues, the school administration may resort to borrow some AT devices from larger schools which have plenty of such devices. In addition, the school administration may ask members from the local community to provide the school with the needed devices at the start of the school year.

2. The school administration is responsible for organizing training workshops for teachers, students, and parents for the use of specific advanced technology. This can be done at the school level by other experienced teachers who are also teacher trainers and are qualified to train others.

3 - Providing specialized centers for preparing assistive educational technologies for students with disabilities.

4 - Providing training courses and workshops for teachers and administrators on assistive technology, its importance, and the latest technologies in use.

Conflicts of Interest: The authors declare no conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers.

References

[1]   Ahmad, F. K. (2015). Use of assistive technology in inclusive education: making room for diverse learning needs. *Transcience*, *6*(2), 62-77.

[2]   Ahmed, A. (2018). Perceptions of using assistive technology for students with disabilities in the classroom. *International journal of special education*, *33*(1), 129-139.

[3]   AlajajiS. N. (2023). The availability of assistive technologies for students with intellectual disabilities in intellectual education institutes in Buraidah. *College of Education Journal*, Bani Suif University, April, Part 3, 315 – 350.

[4]   Algalbobiah, A. K. (2023). The impact of supportive technology in raising the level of education for students with disabilities. Retrieved from: https://anwaar.squ.edu.om/ar/%D9%86%D8%B4%D8%B1/ArticleID/2581/%D8%A3%D8%AB%D8%B1%D8%A7%D9%84%D8%AA%D9%83%D9%86%D9%88%D9%84%D9%88%D8%AC%D9%8A%D8%A7%D8%A7%D9%84%D8%AF%D8%A7%D8%B9%D9%85%D8%A9-%D9%81%D9%8A-%D8%B1%D9%81%D8%B9-%D9%85%D8%B3%D8%AA%D9%88%D9%89%D8%A7%D9%84%D8%AA%D8%B9%D9%84%D9%8A%D9%85%D9%8D8%B7%D9%84%D8%A8%D8%A9%D8%B0%D9%88%D9%8A%D8%A7%D9%84%D8%A5%D8%B9%D8%A7%D9%82%D8%A9 Retrieved on 10 December 2024

[5]   Alghamdi, R. (2022). Teachers' perceptions of assistive technology use for students with disabilities. *Journal of Digital learning in teacher eDucation*, *38*(2), 56-70.

[6]   Alkahtani, K. D. (2013). Teachers' knowledge and use of assistive technology for students with special educational needs. *Journal of Studies in Education*, *3*(2), 65-86.

[7]   Billingsley, B., Israel, M., & Smith, S. (2011). Supporting new special education teachers: How online resources and Web 2.0 technologies can help. *Teaching Exceptional Children*, *43*(5), 20-29.

[8]   Browder, D. M., Wood, L., Thompson, J., & Ribuffo, C. (2014). Evidence-based practices for students with severe disabilities (Document No. IC-3). Retrieved from http://ceedar.education.ufl.edu/wp-content/uploads/2014/09/IC-3_FINAL_03-03-15.pdf

[9]   Bruinsma, A. (2011). Implementation of assistive technology in the classroom. Fisher Digital Publications. Retrieved from http://fisherpub.sjfc.edu/cgi/viewcontent.cgi?article=1064&context=education_ETD_masters

[10]   Cheng, S. C., & Lai, C. L. (2020). Facilitating learning for students with special needs: a review of technology-supported special education studies. *Journal of computers in education*, *7*(2), 131-153.

[11]   Chester, M. (2012). Access to Learning: Assistive technology and accessible instructional materials. Massachusetts Department of Elementary and Secondary Education. Retrieved from: http://www.doe.mass.edu/sped/assistive/

[12]   Clark, R., & Ceasar, K. (2009). Using the SETT framework to create opportunities to communicate. MITS Summer Institute Traverse City, Michigan. Retrieved from http://www.hestories.info/using-the-sett-framework-to-create-opportunities-to-communicat.html

[13]   Dunst, C. J., & Trivette, C. M. (2011). Evidence-based strategies for training adults to use assistive technology and adaptations. Research Brief, Volume 5, No. 1. Tots-n-Tech Institute: http://www.floridahealth.gov/alternatesites/cmskids/providers/early_steps/memos/attachments_12_01_11.pdf

[14]   Eichleay, K., & DuBuske, S. (2005). Assistive technology continuum of low to high tech tools www.boston.k12.ma.us.

[15]   European Parliament (2018). Assistive technologies for people with disabilities. The publisher.

[16]   Garcia, K. (2005). General education teachers' attitude regarding the use in their classes of assistive technology by students with learning disabilities. Electronic Journal for   Inclusive Education Vol. 1, No. 9. Retrieved from: http://corescholar.libraries.wright.edu/cgi/viewcontent.cgi?article=1062&context=ej.

[17]   Gartin, B. C., & Murdick, N. L. (2005). Idea 2004: The IEP. *Remedial and special education*, *26*(6), 327-331..

[18]   Genc, Z., Babieva, N. S., Zarembo, G. V., Lobanova, E. V., & Malakhova, V. Y. (2021). The views of special education department students on the use of assistive technologies in special education. *International Journal of Emerging Technologies in Learning*, *16*(19).

[19]   Kocdar, S., & Bozkurt, A. (2023). Supporting learners with special needs in open, distance, and digital education. In *Handbook of open, distance and digital education* (pp. 881-895). Singapore: Springer Nature Singapore.

[20]   Lee, H., & Templeton, R. (2008). Ensuring equal access to technology: Providing assistive technology for students with disabilities. Theory into Practice, (47), 212–219. https://www.researchgate.net/publication/228342595

[21]   Mavrou, K. (2011). Assistive technology as an emerging policy and practice: Processes, challenges and future directions. *Technology and Disability*, *23*(1), 41-52.

[22]   Mgordon. (2016). Quality indicators for assistive technology: A Comprehensive Guide to Assistive Technology Services. Retrieved from http://castpublishing.org/qiat/

[23]   Mittler, J. (2007). Assistive Technology and IDEA. In C. Warger (Ed.), Technology integration: Providing access to the curiculum for students with disabilities. Arlington, VA: Technology and Media Division (TAM). Retrieved from http://www.tamcec.org/wp-content/uploads/2016/08/AssistiveTech-and-IDEA-Regs.pdf

[24]   Nordström, T., Nilsson, S., Gustafson, S., & Svensson, I. (2019). Assistive technology applications for students with reading difficulties: special education teachers' experiences and perceptions. *Disability and Rehabilitation: Assistive Technology*.

[25]   Reed, P. (2003). Designing environments for successful kids. Wisconsin Assistive Technology Initiative.

[26]   Reed, P. (2004). The W.A.T.I. Assessment Package. Wisconsin Assistive Technology Initiative. Retrieved from http://www.wati.org/content/supports/free/pdf/ASNAT4thEditionDec08.pdf

[27]   Reed, P. (2007). A Resource guide for teachers and administrators about assistive technology. Wisconsin Assistive Technology Initiative (general edition).

[28]   Reed, P. (2007). Wisconsin assistive technology initiative: A Resource guide for teachers and administrators about assistive technology. Wisconsin Assistive Technology   Initiative, general edition.

[29]   Reed, P., & Lahm, E. (2004). Assessing students' needs for assistive technology. Wisconsin Assistive Technology Initiative. www.wati.org.

[30]   Rice, M. F. (2022). Special education teachers' use of technologies during the COVID-19 era (Spring 2020—Fall 2021). *Tech Trends*, *66*(2), 310-326.

[31]   Scherer, M. (2005). Assessing the benefits of assistive technologies for activities and participation. Educational Publishing Foundation Rehabilitation Psychology. Vol. 50,   No. 2, 132–141.

[32]   Stetter, M. E. (2018). The use of technology to assist school-aged students with high incidence special needs in reading. *Education Sciences*, *8*(2), 61.

[33]   Stock, S. & Davies, D. Herold, R., & Wehmeyer, A. (2019). Technology to Support Transportation Needs Assessment, Training, and Pre-trip Planning by People with Intellectual Disability. Advances in Neurodevelopmental Disorders, 3:319–324. https://doi.org/10.1007/s41252-019-00117-x

[34]   Sze, S. (2024). A Literature Review: An Investigation of Various Types of Assistive Technology (AT). Retrieved from: Retrieved from: http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=ED490347&ERICExtSearch_SearchType_0=no&accno=ED490347

[35]   The Center on Technology and Disability. (2014). Technology Implementation Practice Guide. American Institutes for Researches. Retrieved from *https://www.ctdinstitute.org/sites/default/files/file_attachments/PowerUp%20Technolo%20Implementation%20Practice%20Guide%20FINAL.pdf*

[36]   The Department of Health. (2015). Research And Development Work Relating To Assistive Technology. Retrieved from *http://dera.ioe.ac.uk/23634/1/ass_tech_report_acc.pdf*.

[37]   Viner, M., Singh, A., & Shaughnessy, M. F. (2020). Assistive technology to help students with disabilities. *Special education design and development tools for school rehabilitation professionals*, 240-267.

[38] Wojciechowski, A. & Almusawi, R. (2017). Assistive technology application for enhancing social and language skills of young children with autism. Multimed Tools Appl, (76), 5419–5439.

[39] Wynne, R., McAnaney, D., Mac Keogh, T., Stapleton, P., Delaney, S., Dowling, N., & Jeffares, I. (2016). Assistive technology/equipment in supporting the education of children with special educational needs–what works best. *National Council for Special Education (www. ncse. ie)*.

[40] Zabala, J. (2005). Using the SETT Framework to Level the Learning Field for Students with Disabilities. Retrieved from http://www.joyzabala.com/uploads/Zabala_SETT_Leveling_the_Learning_Field.pdf.