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An Analysis Of Research On The Way Assistive Technology Affects Students With Visual Impairments In Their Academic Performance When It Comes To Reading And Writing

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ABSTRACT

Studies conducted by UNICEF indicate that up to 10% of children throughout the world have a specific learning disability (SLD), and the vast majority of these children are included in regular educational settings. If students with disabilities are given the opportunity to utilize assistive technology in the classroom, their chances of achieving academic success are significantly increased. It is the responsibility of teachers to ensure that students have the knowledge and abilities necessary to make effective use of the assistive technology available in the classroom. This in-depth study investigation aimed to gather the viewpoints of educators about the use of AAC for their students who suffered from SLD. For the purpose of compiling this review, researchers utilized six academic papers. According to the findings of these publications, educators are open to the concept of using assistive technology into their pedagogical practices. They regarded it as a resource that would increase their capacity to take in and recall information that was delivered in written and read formats, and they saw it as a resource that would improve their ability to do both. However, in their perspective, more training and direction was required for teachers before they could feel confident using assistive technology into their courses. Therefore, in order to help children who have SLD attain their full potential, instructors need to get specialized training and incorporate relevant technological tools into their classrooms. In the future, research should concentrate on finding the most effective ways to get teachers ready to include augmented reality (AT) into their classroom practices.

KEYWORD: Assistive Technology, Reading Disabilities, Writing Disabilities, Visual Impairments.

INTRODUCTION:

A specific learning disability (SLD) is an impairment in one or more of the fundamental cognitive processes required for language acquisition and use. The person may have difficulties catching up in reading, writing, or mathematics as a consequence of this handicap. Children with Specific Learning Disabilities can have more difficulties in a conventional school environment than their typically developing classmates. To tackle these problems, teachers should try using new teaching methods that have been proved to boost the academic performance of kids with learning difficulties and aid in their personal development.

Recently, there has been a rise in the number of studies looking at whether or not technological interventions may improve academic outcomes for students with learning disabilities in regular classroom settings. Integrating technology into the technique of teaching and learning is crucial for boosting the accomplishment of learners who are struggling with learning, as revealed by this study. instructors learnt relatively little about the potential benefits of these technological assistance for students with learning disabilities. Teachers must feel at ease with and positive about the potential of technology tools before they can be effectively used in the classroom. It is, therefore, crucial to understand how educators feel about the success of students with learning disabilities who use technological supports **(Mckenna MC, 2017).**

BACKGROUND OF THE STUDY:

• Specific learning disability:

Learning may help with things like comprehension and skill. Children of a specific age and mental capacity are taught to the foundations of reading, writing, and arithmetic during the early years of their schooling. Some children, while being of ordinary intellect and having normal eyesight, hearing, and physical abilities, struggle to learn the fundam entals of

language and mathematics no matter how many opportunities they are given. Children with learning impairments may be slower to mature intellectually, but they may not have intellectual disability. The phrase "learning disabilities" is often used to refer to a broad range of disorders. While the cognitive impairments that characterize learning disabilities can make it difficult for students to succeed in a variety of academic disciplines and in their social and emotional development, the greatest difficulties are often seen in the most fundamental aspects of education, including reading, writing, and arithmetic **(Grun er S, 2018).**

The term "inclusive education" refers to a learning environment that is accepting of students of varying socioeconomic backgrounds and intellectual abilities. Instructors can ensure that every student acquire an amazing education by developing learning settings that can accommodate students who have a diverse range of learning techniques and talents. Because mainstream schools are designed to meet the needs of every child, they include children with special needs in the normal classroom setting. All children, regardless of their health or mental state, are guaranteed access to a quality public education under the United Nations Convention on the Rights of the Child. In order for children with special needs to develop into responsible and productive adults, it is crucial that they get a first -rate education in either special or mainstream settings. Students with varied cognitive, affective, and somatic abilities may all thrive in an inclusive classroom, as outlined in the Salamanca Manifesto. Organizations that boost employee should examine the numerous ways in which their pupils are distinct. Therefore, each learner need individualized approaches to learning and teaching. In the United States, the Individuals with Disabilities Education Act (IDEA) mandates that each child who needs special education services have an IEP developed for them. Individualized education programs (IEPs) are developed for each student in collaboration with the student's regular classroom teacher, the student's parents, and a special education specialist. Regular school children with exceptional needs may benefit from individualized education programs (IEPs).

• The View from the Classroom:

The best way to help kids with SLD learn is for their teachers to use tactics and resources created specifically for them. The fundamental responsibility of a teacher is to assist pupils in reaching their academic potential so that they may go on to have successful and fulfilling lives. Therefore, educators should determine when, where, and with whom these technology tools will be most effective before bringing them into the classroom. The fundamental aspects of a child's educational brilliance are effective teaching practices and a curriculum adapted to each individual student's requirements, both of which they may grasp. Due to a lack of knowledge and pedagogical methodologies, teachers continue to worry about how to integrate assistive technology into the normal curriculum. Evidence for this may be seen in the study' s confirmation of teachers' concerns that they are not adequately prepared theoretically or practically to cope with pupils who have special education needs.

Teachers' reliance on technology in the classroom is influenced not just by their own knowledge and expertise but also by their students' choices, interests, and readiness. An Individualized Education Program (IEP) may be useful in learning about a child's preferences, preferred methods of interaction, and areas of strength and improvement. Teachers may increase students' motivation and interest in learning via personalized teaching if they are given greater agency over their educational experiences **(Koufteros, 2017).**

PROBLEM STATEMENT:

"Disabled students need individualized instruction. Specialized groups should devote more resources to helping children with disabilities participate in programs that have been shown to increase academic success."

However, these people often do not have access to proper monitoring of their development and there is a dearth of specialized support networks and educational possibilities. In order to maximize their effectiveness, educators in both the public and private sectors focus on resolving systemic difficulties in education and passing on widely applicable information and techniques. There needs to be more possibilities for kids who are disabled and have both mental and physical disabilities in development. These days, learning may take numerous forms, with a wide range of applications for the latest models and IT tools. For persons with visual or auditory impairments, "visual and auditory supports" are essential. The many specialty groups that have arisen to make life's obstacles more bearable have the potential to help people of all ages and backgrounds, not only those with learning disabilities. It's a step in the right direction towards solving the issue. It is critical that people with disabilities have access to the same resources as everyone else when it comes to learning and development. There is little doubt that specific programs and institutions for people with disabilities lead to positive results and proof of better performance. Integration into the social network, rather than transgression of a predetermined position, is the primary factor in shaping an individual's character. This is comparable to the prevalence of

and likely reasons for physical impairment. Those interested in pursuing specialist education have access to a plethora of institutions, each of which has its own unique criteria for admitting students.

LITERATURE REVIEW:

In the current research, a complete literature review was carried out with the intention of identifying studies on the views of the usefulness of assistive technology among instructors who deal with children who have unique learning challenges. This was done in order to answer the research question that was posed at the beginning of the study. The objective of a method of doing research that is both thorough and registerable, known as a systematic review, is to ascertain the degree to which previously carried out research has progressed towards elucidating a certain matter. In order to provide a response to the research question, a systematic literature review would combine the information that was gathered from a wide range of different sources. In the current research, a complete literature review was carried out with the inte ntion of identifying studies on the views of the usefulness of assistive technology among instructors who deal with children who have unique learning challenges. This was done in order to answer the research question that was posed at the beginning of the study. The objective of a method of doing research that is both thorough and registerable, known as a systematic review, is to ascertain the degree to which previously carried out research has progressed towards elucidating a certain matter. According to White (2014), the purpose of doing a systematic literature review is to answer the research question by synthesizing the data that has been gathered from a range of sources **(LaGanga, 2014).**

The laws that apply to special education have gone through many versions, starting with measures to prevent the segregation of kids who are handicapped and moving to those that mandate their full and equal participation in ordinary classes. In the most recent iteration of these laws, students with special needs are required to be educated alongside their typically developing peers. Because of the significance of their roles, special educators are required to have a solid understanding of the policies that govern the use of assistive technology in order to successfully engage with both parents and students in the development of individual education programs (IEPs). The following discussion will focus on the most significant laws that have been passed to regulate the rights and use of assistive technol ogy, as well as the reasons why these laws were put into action in the first place.

The author went into depth about forty different rights that are protected by the IDEA with relation to assistive technology (IDEA). In order to comply with Section B of the Disability Education Act and be held accountable for the education of students with disabilities, all public universities and any other government organizations that are responsible for the education of these students must provide sufficient assistive equipment and services to children and teenagers between the ages of three and twenty-one. According to the Individuals with Disabilities Education Act (IDEA), it is the duty of public schools to provide individuals with disabilities with the opportunity to receive the high-quality, cost-free public education to which they are legally entitled. Research has revealed that disabled individuals now have a constitutionally protected right to be supplied with decent facilities in both public and private settings owing to the passing of the Americans with Disabilities Act (ADA). This right was made possible by the law that was passed in 1990 called the Americans with Disabilities Act. The authors believe that the most effective way to accommodate stud ents who have specific needs is to make use of technology in the classroom. This might include the installation of new apparatus or the modification of the existing setting **(Lahiri, 2012).**

RESEARCH OBJECTIVE:

- To determine how the use of assistive technology influences the academic success of blind pupils.
- To find out how the right assistive technology may help with the learning process.
- To learn why it's so important for kids with visual impairments to have access to assistive technology.
- To suggest mitigating strategies to overcome the encountered difficulties.

RESEARCH METHODOLOGY:

Define the term "research methodology" as the comprehensive set of steps that are carried out by a researcher while carrying out an investigation. Consequently, in order to derive conclusions from data, a quantitative research technique entails counting and analyzing the data. The use of numerical data and the use of certain statistical processes are two ways in which questions such as "who," "how much," "what," "where," "when," "how many," and "how" may be addressed. To provide more clarification on this idea, researchers may state that quantitative research methods will be used to characterize a problem or phenomenon by using mathematical or statistical tools. The second defining characteristic of quantitative research is that it involves the compilation and examination of numerical information via the use of statistical

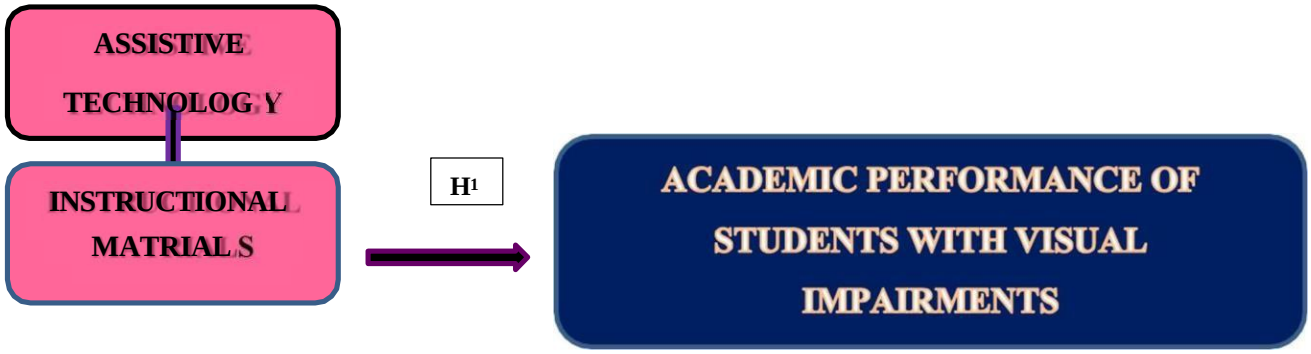
techniques. On the other hand, the opposite side. Quantitative research is necessary because it requires the collection of data that can then be quantified and statistically processed in order to either support or reject alternative knowledge assertions. In addition, researchers observe that quantitative research starts with the declaration of a problem, the formulation of a hypothesis or research question, an examination of relevant literature, and a quantitative analysis of data.

SPSS Version 25.0 is the Statistical Software Used Here

Sampling: First, a sample of 20 consumers from China participated in a pilot study using the questionnaire; second, a sample of 700 customers participated in the final research using the questionnaire. A total of questionnaires were handed out to clients who had been chosen by a process known as systematic random sampling. The researcher did not take into account any surveys that were not completely filled out, and she did not take into account any questionnaires that were not completely filled out.

In surveys and questionnaires, a rating system that is often used to measure the views and perspectives of respondents is one that is based on the Likert scale. When responding to a particular topic or statement, participants are often given the opportunity to pick one of five possible responses from a list of five possibilities, which may include "strongly agree," "agree," "did not respond," "disagree," and "strongly disagree." If the study will be using numeric coding, such as 5 for "strongly agree," 4 for "agree," and so on, then the values for each category of response will need to be determined. It is possible for researchers to learn about customers' preferences for both online and conventional retail by using a Likert scale that ranges from 1 to 20, as illustrated above. The poll started out with a set of "control" questions that inquired about the respondent's demographics as well as their degree of experience with purchasing items either online or in-store.

CONCEPTUAL FRAMEWORK:



RESULTS:

Rao-soft software was used to estimate the sample size of 813. A total of 950 questionnaires were distributed to the respondents. Out of this number 775 sets of the questionnaire were returned, and 700 questionnaires were analyzed using the Statistical Package for social science (SPSS version 25.0) software.

- **Factor Analysis:**

Factor Analysis is often used to validate the latent component structure of observable data (FA). As visible or diagnostic markers cannot be directly measured, regression coefficients are commonly used to provide scores. FA success need models. Modeling targets observable connections, intrusion detection, and error. Multiple regression data sets may be assessed using the Kaiser-Meyer-Olkin (KMO) Test. The sample and model variables are assessed for representativeness. The statistic indicates data overlap. Lower proportions indicate data that is easier to interpret. KMO returns 0–1. The sample size is enough if the KMO values are between 0.8 and 1. Kaiser's cutoffs for acceptability are as follows:
Kaiser's cutoffs for acceptability are as follows:
A dismal 0.050 to 0.059.
0.60 - 0.69 below-average
Typical range for a middle grade: 0.70–0.79.
Having a quality point value between 0.80 and 0.89.
The range from 0.90 to 1.00 is stunning.

Table 1: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.959
Bartlett's Test of Sphericity	Approx. Chi-Square	6524.517
	df	190
	Sig.	.000

This demonstrates the validity of assertions for sampling purposes. To further verify the relevance of a correlation matrices, Bartlett's Test of Sphericity was performed. Kaiser-Meyer-Olkin Sampling Adequacy Value is 0.959. The p-value for Bartlett's sphericity test was determined to be 0.00. Bartlett's test of sphericity showed that the correlation matrix isn't an identity matrix, with a significant test result.

In the next part, you will see the results of an online survey designed to gather opinions on the use of assistive technology by special education students in the classroom. In order to collect as much data as possible, we conducted this survey. In this study, researchers defined what they meant by "assistive technology." The Assistive Technology Act of 1998 defines "assistive technology" 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." According to the data in the table, just 7% of the participants identified as having a disability, while 92% did not identify any kind of impairment. When questioned about their experiences with the use of assistive technology during the course of their schooling, 78.6% of people state that they have not made use of any form of assistive technology, including devices or services; however, 21.4% of individuals have utilised such technology. Make good use of the assistive technology. Seventy-five percent of participants reported being granted access to assistive technology in the classroom, while 25% reported being denied access. Only 3% of the people who took the survey disagree with the notion that the usage of AT significantly improves pupils' performance. This is a reference to the fact that AT helps children with impairments do better in the classroom. The persons who agree on the favorable impacts of (AT) explained how (AT) may aid learners in completing things that they have difficulties with. Another strategy that teachers might think about using to help their pupils succeed in spite of the challenges they experience is the (AT). The ACT, and Justice as well. Eighty-five percent of respondents disagreed with the assertion that "allowing students with disabilities to make use of assistive technology in the classroom is inequitable to those who do not have a disability." Participants argued that the term "fair" implies that students should be provided with classroom accommodations that allow them to make academic progress, and that AT provides this opportunity. However, 14% of respondents felt that accommodating students with disabilities via the provision of auxiliary aids and services (AT) is unfair to non-disabled students. Participants also noted that the kind of impairment and the level of disability all had a role in whether or not AT was used. The majority of respondents disagreed with the statement "All students with disabilities, regardless of their social economic status, have the opportunity to get the assistive technology they need," and provided additional information about how funding and cost might be the main barriers that prevent students with disabilities from gaining access to AT. The level of AT expertise held by educators. While 10% of respondents think lecturers recognize the usefulness of assistive technology, 89% of respondents feel instructors are not fully aware of the advantages of utilizing assistive technology. There is a gap between what respondents believe instructors know and what teachers really know about the advantages of using assistive technology. Because educational organizations are responsible for educating children and providing finance for them, majority of the participants agreed that schools should give assistive technology to students with disabilities. Figure 3 shows, however, that 10% of respondents believe schools are not obligated to provide such technology; these respondents provided no justification for their position. Availability. Ninety-two percent of respondents agreed with the statement that "the availability of assistive technologies in education settings gives learners who are disabled opportunities to acc ess the general curriculum," highlighting the importance of training students with disabilities on how to use AT. However, 7% of those polled disagreed with the above statement because they believe children with these kinds of impairments would have a hard time keeping up with the rest of the class. Advantages and disadvantages. The benefits of using assistive technology in the classroom were highlighted by the participants. Some respondents, for instance, said that using assistive technology may help make the classroom more welcoming to children of all abilities. Students with disabilities may be more independent and take part in the classroom more fully with the help of AT, as stated by the participants. One of the

possible negatives of utilizing AT, according to the responders, is that students with disabilities are given a negative label, which may cause emotional harm. The following figures illustrate more survey results in graphical form.

CONCLUSION:

This study set out to answer three questions about the effects of easily available technology on students' motivation for reading and learning: (1) how it may impair conventional reading abilities; (2) how it might help students better comprehend and deliver material; and (3) how it might increase students' capacity for doing both. Using TTS or another kind of technology in the classroom has been shown in a number of studies to help students enhance their phonemic awareness without requiring them to do any decoding practice. The findings in this study were consistent with the previous one. A comparison of student development to a control group receiving "treatment as usual" and to a norm group of children of the same age revealed growth equivalent to both. His students and his parents all agreed that his results showed improvement in understanding. The second objective was to evaluate whether or not they had better text comprehension and communication skills; this result was less conclusive. The effectiveness of the used assessments was inadequate in that regard. However, as seen by their test scores and self- and parent-assessments, students demonstrated growth in their technological fluency and text comprehension. However, when comparing assistive technology with more traditional methods of educating children with reading and writing challenges, it is not obvious whether or not the former really improves written language competency. Numerous studies have shown the importance of intrinsic motivation in the classroom, particularly for students who are having difficulties in the areas of reading and writing. Thirdly, assistive technology proved vital in enhancing students' enthusiasm in reading and their involvement with academics more broadly. Parents said that their children had increased academic self-esteem. Several students said that they learned more by listening to a text than they did from reading it on their own, and that this kind of "reading a text" was well-received by both their classmates and teachers. This study contributes to the body of knowledge since it takes into account the two most important reasons for reading and writing. To incorporate the information and participate reasonably in the dialogue.

LIMITATION:

Even though there was a common website and all the teachers had been briefed about the examinations and therapies, it was still difficult to collect all the data, not least during the follow-up. For example, many teachers haven't been saving the data generated by particular programs. It was difficult to collect more accurate data on the control group since the trial group was receiving interventions while the control group was receiving business as usual. Nevertheless, most of the teachers in the control group failed to record the length of the sessions while outlining the activities that their students engaged in. The absence of a consistent teacher during the intervention period may have hurt the performance of the control group. Data collecting difficulties have been reported in previous studies, especially during follow-up. However, TAU may have been effective since even the kids in the control group showed the same level of reading improvement as the kids in the standard group. As a result, it became challenging to assess text comprehension and, more narrowly, text communication. One reason is that more research is needed before assistive technology instruments can be constructed; measuring these talents is a new field of study. The relevance of this has been emphasized in prior articles as well.

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