

**RESEARCH PAPER****Impact of Assistive Technology on Reading Comprehension Skills in Students with Learning Disabilities****¹Dr. Muhammad Javed Aftab, ²Narmeen Irfan and ³Faisal Amjad***

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Corresponding Author amjadfaisal40@gmail.com**ABSTRACT**

This study examines the difficulties encountered during the adoption of assistive technology (AT) and proposes successful approaches. It also investigates the influence of AT on reading comprehension abilities of children with learning disabilities. Integration of AT in classroom has revolutionized the delivery of education for students with learning challenges. AT encompasses a diverse array of digital technologies designed to enhance academic performance and functional capabilities. Graphic organizers and text-to-speech softwares are tools that support the creation of personalized learning environments in accordance with the principles of Universal Design for Learning (UDL). Two hundred special education teachers took part in a quantitative methodology. Findings indicate that educators had predominantly favorable perceptions, with significant in claimed advantages depending on gender, designation and region. In order to optimize the integration of AT in inclusive educational practices, it is recommended to prioritize research activities, push for governmental funding, enhance professional development and foster cooperative collaborations.

Keywords: Assistive Technology, Learning Disabilities, Reading Comprehension, Skills**Introduction**

The use of assistive technology (AT) in the classroom has greatly improved the educational experiences of students facing learning difficulties. Academic technology (AT) refers to a range of digital tools and software programs specifically created to improve academic achievement. As per the IDEA (2004), assistive technology encompasses any product, equipment, or system used to improve, maintain, or augment the functional abilities of individuals with disabilities (Viner et al., 2020).

Advancements in assistive technology, like graphic organizers and text-to-speech software, mitigate learning barriers and facilitate personalized learning environments (Green, 2021). These resources enhance the Universal Design for Learning (UDL) framework (Craig et al., 2022), which advocates for the utilization of many mediums for representation, action, and engagement to optimize learning opportunities. Assistive technology (AT) promotes social inclusion by facilitating independence and enhancing the ability of students to engage in mainstream educational environments (Ayantoye, 2023).

The efficacy of assistive technology (AT) in enhancing reading comprehension is substantiated by theoretical frameworks such as the technology acceptance model (TAM) and cognitive load theory (CLT) (Hamizi et al., 2023). Research has shown that assistive technology (AT) tools, such as text-to-speech software, significantly improve reading skills through auditory reinforcement and cognitive facilitation (Calotă, 2022). However, there

are still challenges related to the technology infrastructure, educator preparation, and accessibility (Akram et al., 2021).

Although the current body of literature emphasizes the beneficial effects of assistive technology (AT) on reading comprehension abilities, additional study is required to address the difficulties in using AT and customize AT tools for each student. The objective of this study is to investigate the influence of assistive technology on the reading comprehension skills of children who have learning difficulties. The aim is to make suggestions for future study and provide important insights into viable tactics for implementation.

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Literature Review

Introduction to the Use of Assistive Technology in Special Education

Assistive technology (AT) is essential in special education settings to cater to the varied requirements of individuals with learning difficulties. Assistive technology refers to a diverse array of tools and equipment designed to improve educational performance and foster inclusivity. As per the provisions of IDEA (2004), assistive technology includes commercially available, off-the-shelf, adapted, or customized items, equipment, or product systems that are utilized to enhance, maintain, or develop the functioning skills of individuals with disabilities (Viner et al., 2020).

The growth of assistive technology has been defined by recent advancements in digital tools and software programs specifically designed to enhance academic achievement among children with learning challenges (Green, 2021). These technologies aim to empower

individuals and alleviate the challenges associated with disabilities by harnessing their capabilities and enhancing their educational possibilities (Craig et al., 2022).

The integration of assistive technology into special education curricula reflects a shift towards personalized learning environments that cater to the unique requirements of each student (Hamizi et al., 2023). Assistive technology promotes self-reliance and active engagement in educational tasks by providing alternative methods for accessing academic material (Ayantoye, 2023). Moreover, it reduces obstacles to acquiring knowledge and fosters social integration by facilitating students' engagement in conventional educational environments (Lakhal et al., 2020).

The Universal Design for Learning (UDL) framework supports the effectiveness of assistive technology in special education by providing multiple ways for diverse learners to access and engage with learning materials. This framework emphasizes the importance of offering various means of representation, action, and engagement to optimize learning opportunities. Assistive technology, aligned with UDL principles, not only accommodates individuals with disabilities but also enhances accessibility and usefulness for all students. As a result, it promotes equitable educational experiences for everyone (Kaczorowski et al., 2023).

Theoretical Frameworks Supporting Reading Comprehension and Assistive Technology

Various theoretical frameworks that elucidate the impact and use of assistive technology (AT) in educational settings provide support for the efficacy of AT in enhancing reading comprehension among underprivileged pupils. These frameworks offer the theoretical basis for understanding how assistive technology might enhance students' reading comprehension skills, even when they have cognitive challenges (Kaczorowski et al., 2023).

The Cognitive Load Theory (CLT) is a well-recognized concept that proposes that the limited capacity of working memory constrains the process of learning (Talip et al., 2021). Technologies such as text-to-speech software and graphic organizers alleviate the cognitive load by offloading tasks that would otherwise overload working memory. This allows students to focus their attention more effectively on understanding and integrating textual content (Apostolou & Linardatos, 2023). Afify (2020) argues that artificial technology (AT) reduces cognitive load, leading to enhanced processing of knowledge and better retention and application of comprehension abilities, which are crucial for academic success.

Furthermore, the Technology Acceptability Model (TAM) offers a valuable understanding of the aspects that impact the acceptability and usage of assistive technology (AT) among instructors and students. The Technology Acceptance Model (TAM), introduced by Davis in 1989, posits that individuals' acceptance and utilization of technology are shaped by their perception of its utility and simplicity. The impact of assistive technology (AT) on enhancing students' reading comprehension and boosting teachers' confidence in utilizing these resources plays a crucial role in the successful integration of these tools in the classroom (Şahin et al., 2023). Similarly, the extent to which these technologies enhance students' reading comprehension skills primarily relies on their attitudes towards assistive technology (AT), which are influenced by their judgments of its benefits and use (Almgren Bäck et al., 2024).

In addition, according to Meyer, Rose, and Gordon (2014), the Universal Design for Learning (UDL) paradigm advocates for the proactive development of educational materials and environments that accommodate a variety of learning needs. Universal Design for Learning (UDL) promotes equitable access to educational opportunities and enhances

students' motivation and engagement by including diverse modalities of representation, action, and participation in curriculum design (CAST, 2020). AT aligns closely with UDL principles and promotes inclusive teaching approaches by providing flexible resources and supports that cater to individual learning styles and abilities (Burgstahler, 2021).

Studies on Specific Assistive Technologies for Reading Comprehension

Studies on assistive technology (AT) developed to improve reading comprehension in children with learning difficulties have provided valuable knowledge about the efficacy of different tools and approaches. The studies demonstrate the wide variety of applications of assistive technology (AT) and how they enhance reading comprehension strategies, reading abilities, and overall academic achievement (Svensson et al., 2021).

Text-to-speech (TTS) software is a type of assistive technology (AT) that converts written text into spoken language. Students often use it to improve their ability to understand and analyze written information. Studies have shown that Text-to-Speech (TTS) improves students' capacity to reach course information, aids in self-directed reading, and enhances understanding by reinforcing textual knowledge through audio means (Raffoul & Jaber, 2023). Furthermore, Al-Jarf (2022) contends that TTS offers flexible attributes that accommodate diverse learning styles and preferences, as well as different levels of reading ability and speed.

Graphic organizers are a form of assistive technology that visually organize and depict written material to aid pupils in their reading comprehension. Graphic organizers promote cognitive engagement and improve students' capacity to identify crucial concepts, connections, and supporting elements in texts by assisting them in organizing and combining information (Brady et al., 2022). Research indicates that the consistent utilization of graphic organizers promotes students' capacity to retain information, improves their understanding skills, and enhances their ability to identify and integrate important information (Qi & Jiang, 2021).

Moreover, the use of interactive and multimedia digital platforms, such as eBooks with features like highlighted text and audio narration, offers creative approaches to improve reading comprehension in children who struggle with learning. These technologies improve the level of engagement and comprehension of textual content by offering various learning methods that accommodate varied sensory preferences and learning styles (Lim et al., 2021).

Impact of Assistive Technology on Reading Strategies and Skills

Utilizing assistive technology (AT) considerably enhances the academic progress of students with learning difficulties by facilitating the usage and improvement of reading methods and skills. Assistive technology solutions significantly enhance students' reading comprehension and proficiency by providing alternative methods for accessing textual content and by supporting cognitive processes (Svensson et al., 2021).

The impact of assistive technology (AT) on reading approaches is mostly attributed to its role in enhancing word recognition and decoding skills. Text-to-speech (TTS) software is a beneficial tool for children with dyslexia or other reading difficulties since it verbally displays text, aiding in correct pronunciation and improving phonological awareness (Hess, 2023). Barr and Brennan (2020) assert that auditory reinforcement is essential for children to develop the necessary skills for proficient reading, including word recognition, automaticity, and fluency.

Furthermore, AT tools such as digital highlighters and annotation features enable students to actively interact with textual information and proficiently employ

comprehension strategies (Azmuddin et al., 2020). These technologies promote active reading and enhance students' ability to identify main ideas, summarize information, and draw conclusions by allowing users to highlight, annotate, or mark important passages (Stranford et al., 2020). Research suggests that the regular use of digital annotation tools improves students' comprehension skills and encourages deeper engagement with academic resources (Bjorn, 2023).

In addition, graphic organizers are another form of assistive technology that aids in the organization and synthesis of knowledge during reading activities. Visual aids enhance students' understanding and memory of information by assisting them in structuring their thoughts, identifying connections between ideas, and establishing meaningful associations within texts. Studies have shown that using graphic organizers improves students' comprehension of complex texts and promotes the development of essential critical thinking skills necessary for academic success (Imsaard, 2022).

Challenges and Considerations in Implementing Assistive Technology

In order to efficiently support students with learning disabilities, educators and stakeholders need to address several challenges and concerns when incorporating assistive technology (AT) into educational settings. Understanding these barriers is crucial for implementing AT initiatives that maximize benefits and address hurdles to adoption and sustainability (Atanga et al., 2020).

The accessibility and availability of assistive technology (AT) options tailored to address the diverse needs of students with learning problems provide a significant challenge. Despite technical advancements leading to a greater availability of assistive technology solutions, disparities in access nevertheless persist across various educational settings and geographic regions. The equitable availability of assistive technology to all students who could benefit is hindered by schools' limited capacity to offer comprehensive AT support due to financial and resource constraints (Fernández-Batanero et al., 2022).

Another crucial component is the professional development and training of educators in effectively utilizing assistive technology tools in educational activities. Research suggests that teachers may lack sufficient training in selecting suitable technology, integrating assistive technology into curriculum development, and effectively guiding students in utilizing these tools. To enhance educators' confidence and proficiency in utilizing assistive technology (AT) to enhance teaching and learning outcomes, it is essential to implement professional development programs that emphasize hands-on training, collaborative projects, and ongoing support (Başer & Arslan-Ari, 2023).

The implementation of AT projects is further impeded by obstacles pertaining to infrastructure and the compatibility of technology. Schools must ensure that assistive technology (AT) is compatible with existing hardware and software, provide adequate technical support, and address issues related to connectivity and reliability. In order to stay pace with technological advancements, it is essential to engage in proactive planning and invest in infrastructure to maintain and update assistive technology resources (Zheng & Khalid, 2022).

Furthermore, the issues around privacy and data security emphasize the importance of ethical norms in using assistive technology solutions. When utilizing assistive technologies that integrate digital platforms and cloud-based services, educators and school administrators need to consider data protection regulations and secure confidential student information. Establishing trust and maintaining confidentiality in the application of assistive technology (AT) relies on transparent and truthful communication with all parties involved and adherence to ethical principles (Dhirani et al., 2023).

Methodology

Research Design

This study employed a quantitative research design to investigate the impact of assistive technology on the reading comprehension skills of students with learning disabilities. This approach enabled the systematic collection and analysis of numerical data to identify patterns and relationships.

Population

The study sample comprised educators from the special education department who were engaged in instructing students with learning impairments.

Sample

A random sample of 200 teachers was chosen using simple random sampling to ensure that every individual in the population had an equal probability of being included in the study.

Research Tool

The primary research tool utilized was a self-developed questionnaire, which was informed by a comprehensive literature study. The survey comprised of close-ended inquiries specifically formulated to collect information regarding instructors' perspectives and encounters with assistive technology.

Validity and Reliability

A pilot study with a small part of the sample was done to make sure that the questionnaire was valid and reliable. The questionnaire was made better with the help of feedback from the pilot study. Cronbach's alpha was also used to check how consistent the questionnaire questions were with each other.

Data Collection

The data was collected online through a Google Form link, which made the questionnaire easy for people to view and fill out.

Ethical Considerations

The ethical concerns involved obtaining informed consent from all participants, ensuring the confidentiality and anonymity of their responses, and obtaining approval from the relevant institutional review board. The participants were informed of the study's purpose, their right to withdraw from the study at any time, and the measures taken to protect their data.

Data Analysis

The information collected was analyzed using descriptive and inferential statistics. The data was analyzed using SPSS software to detect patterns, correlations, and potential effects of assistive technology on reading comprehension abilities.

Results

Table 1

<i>Frequency Distribution at the Basis of Demographics</i>			
Title	Description	Frequency	Percentage (%)
Gender	Male	66	33.0%
	Female	134	67.0%
		200	100%
Age of Respondents	21-30 Y	33	16.5%
	31-40 Y	87	43.5%
	41-50 Y	79	39.5%
	51-60 Y	1	0.5%
		200	100%
Designation	SSET	109	54.5%
	JSET	91	45.5%
		200	100%
Qualification	Master	67	33.5%
	M.Phil.	133	66.5%
	PHD	0	0.0%
		200	100%
Place of Posting	School	110	55.0%
	Center	90	45.0%
		200	100%
Area of Posting	Rural	108	54.0%
	Urban	92	46.0%
		200	100%
Experience	1-5 Y	0	0.0%
	6-10 Y	198	99.0%
	11-15 Y	2	1.0%
	>15 Y	0	0.0%
		200	100%

The frequency distribution table offers a thorough summary of the demographic attributes of the participants. The sample comprised 200 teachers, with a gender distribution of 33% male (66) and 67% female (134). The majority of individuals fell within the age range of 31-40 years (43.5%) and 41-50 years (39.5%), while a lesser percentage were aged 21-30 years (16.5%) and 51-60 years (0.5%). Regarding designation, 54.5% of the individuals were classified as SSET (109), while 45.5% were classified as JSET (91). The educational credentials data revealed that 66.5% of the respondents possessed an M.Phil. degree (133 individuals), while 33.5% held a Master's degree (67 individuals). None of the participants reported holding a Ph.D. The location of employment was nearly evenly divided, with 55% assigned to schools (110) and 45% assigned to centres (90). Similarly, the distribution of work areas was comparable, with 54% assigned to rural areas (108) and 46% assigned to urban areas (92). The distribution of experience levels was highly concentrated, with 99% of respondents having 6-10 years of experience (198), while just 1% had 11-15 years of experience (2). None of the respondents reported having more than 15 years or fewer than 6 years of experience.

Table 2
Frequency Distribution at Basis of Questions Asked

Sr.	Statements of Questions	SA	A	UD	DA	SDA	M	SD
1	Assistive technology has significantly improved my ability to understand reading materials.	28 14%	161 81%	11 6%	0 0%	0 0%	4.09	0.43
2	I find it easier to comprehend complex texts when using assistive technology tools.	61 31%	138 69%	1 1%	0 0%	0 0%	4.30	0.47
3	Assistive technology helps me retain information from reading assignments better.	66 33%	132 66%	1 1%	0 0%	1 1%	4.31	0.53
4	The use of assistive technology reduces the time it takes for me to complete reading tasks.	59 30%	134 67%	3 2%	4 2%	0 0%	4.24	0.58
5	I feel more confident in my reading comprehension skills when I use assistive technology.	27 14%	160 80%	8 4%	5 3%	0 0%	4.05	0.52
6	Assistive technology has made reading more enjoyable for me.	76 38%	119 60%	5 3%	0 0%	0 0%	4.36	0.43
7	I rely on assistive technology to help me understand key concepts in my reading materials.	37 19%	161 81%	2 1%	0 0%	0 0%	4.18	0.47
8	Assistive technology tools like text-to-speech have enhanced my ability to follow along with reading passages.	46 23%	146 73%	5 3%	3 2%	0 0%	4.18	0.53
9	My reading comprehension has improved due to the use of assistive technology.	37 19%	162 81%	1 1%	0 0%	0 0%	4.18	0.58
10	I feel that assistive technology has helped me keep up with my peers in reading assignments.	56 28%	134 67%	9 5%	1 1%	0 0%	4.23	0.52
11	Using assistive technology has decreased my frustration with difficult reading tasks.	76 38%	119 60%	5 3%	0 0%	0 0%	4.36	0.53
12	Assistive technology has allowed me to better organize and summarize reading materials.	76 38%	119 60%	5 3%	0 0%	0 0%	4.36	0.41
13	I am able to answer comprehension questions more accurately with the help of assistive technology.	37 19%	161 81%	2 1%	0 0%	0 0%	4.18	0.41
14		46	146	5	3	0	4.18	0.53

	The use of assistive technology has positively affected my overall academic performance.	23%	73%	3%	2%	0%		
15	Assistive technology provides me with the necessary support to understand different genres of reading materials.	37 19%	162 81%	1 1%	0 0%	0 0%	4.18	0.40
16	I believe that continued use of assistive technology will further improve my reading comprehension skills.	56 28%	134 67%	9 5%	1 1%	0 0%	4.23	0.17

The frequency distribution table displays the opinions of participants regarding the influence of assistive technology on their ability to understand written text. 95% of the participants agreed or strongly agreed that assistive technology had enhanced their comprehension of reading content. The mean score was 4.09, with a standard deviation of 0.43. Furthermore, all participants said that they experienced enhanced comprehension of intricate texts when using assistive technology, yielding an average score of 4.30 (standard deviation = 0.47). Assistive technology was found to improve information retention for 99% of respondents (mean = 4.31, SD = 0.53). Additionally, 97% of respondents reported a decrease in the time required to complete reading tasks (mean = 4.24, SD = 0.58). The majority of respondents (94%) reported having a high level of confidence in their reading comprehension skills, with a mean score of 4.05 and a standard deviation of 0.52. Additionally, 98% of respondents considered reading more enjoyable when using assistive technology, with a mean score of 4.36 and a standard deviation of 0.43. Furthermore, a total of 100% of participants depended entirely on assistive technology to comprehend important ideas, with a mean score of 4.18 and a standard deviation of 0.47. Additionally, 96% of participants expressed that technologies such as text-to-speech greatly improved their capacity to keep up with reading passages, with a mean score of 4.18 and a standard deviation of 0.53. All respondents (100%) recognized the significant enhancement in reading comprehension, with a mean score of 4.18 and a standard deviation of 0.58. Additionally, 95% of the participants agreed that assistive technology was beneficial in helping them stay on par with their classmates, with a mean score of 4.23 and a standard deviation of 0.52. Significantly, 98% of participants exhibited a reduction in annoyance when faced with challenging activities (mean = 4.36, SD = 0.53), and an equal percentage indicated improved organization and summarizing of materials (mean = 4.36, SD = 0.41). All respondents provided accurate replies to comprehension questions, with a mean score of 4.18 and a standard deviation of 0.41. Additionally, 96% of respondents reported a favorable impact on their overall academic performance, with a mean score of 4.18 and a standard deviation of 0.53. Finally, all participants (100%) agreed that assistive technology enhances comprehension of various genres of literature (mean = 4.18, SD = 0.40). Additionally, 95% of participants expressed their expectation of further enhancing their skills through continuing use of assistive technology (mean = 4.23, SD = 0.17).

Table 3*Gender*

Gender	N	M	SD	df	t	Sig.
Male	66	68.18	3.73	198	1.98	0.049
Female	134	67.25	2.82			

The data from Table 3 shows that there is a substantial difference in the average scores between male (M = 68.18, SD = 3.73) and female (M = 67.25, SD = 2.82) participants in terms of their views on how assistive technology affects reading comprehension skills. This difference is statistically significant, as indicated by the t-test result ($t(198) = 1.98, p =$

0.049). Male participants exhibited marginally higher average scores in comparison to female participants, indicating a subtle gender disparity in perceptions.

Table 4
Designation

Designation	N	M	SD	df	t	Sig.
SSET	109	68.41	2.96	198	4.38	0
JSET	91	66.53	3.11			

Table 4 displays a notable disparity in the average scores between SSET (mean = 68.41, standard deviation = 2.96) and JSET (mean = 66.53, standard deviation = 3.11) participants in terms of their views on how assistive technology affects reading comprehension skills. The t-test result with 198 degrees of freedom is 4.38, indicating a statistically significant difference. The p-value is less than 0.001. The respondents in the SSET group had higher average scores than those in the JSET group. This suggests that individuals in SSET roles perceived a more significant influence of assistive technology on their reading comprehension skills compared to individuals in JSET roles.

Table 5
Area of Posting

Area of Posting	N	M	SD	df	t	Sig.
Rural	108	68.15	3.13	198	2.92	0.004
Urban	92	66.86	3.09			

Table 5 shows that there is a substantial difference in the average scores between respondents in rural (M = 68.15, SD = 3.13) and urban (M = 66.86, SD = 3.09) areas when it comes to their judgements of how assistive technology affects reading comprehension skills. This difference is statistically significant, as indicated by the t-value of 2.92 and p-value of 0.004, based on a sample size of 198. Participants residing in rural regions exhibited higher average scores in comparison to those residing in urban areas, indicating that educators in rural settings see a more pronounced beneficial influence of assistive technology on reading comprehension abilities than their urban counterparts.

Table 6
Place of Posting

Place of Posting	N	M	SD	df	t	Sig.
School	110	68.11	3.23	198	2.78	0.006
Center	90	66.88	2.97			

Table 6 shows that there is a significant difference in the average scores between respondents from schools (M = 68.11, SD = 3.23) and centers (M = 66.88, SD = 2.97) in terms of their judgements of how assistive technology affects reading comprehension skills, $t(198) = 2.78$, $p = 0.006$. Participants from educational institutions reported significantly higher average scores compared to those from centers, indicating that teachers in school environments see a more pronounced positive influence of assistive technology on reading comprehension abilities than those in center-based settings.

Table 7
Age

Age	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	146.558	3	48.853	5.173	.002
Within Groups	1850.837	196	9.443		
Total	1997.395	199			

The findings of an analysis of variance (ANOVA) investigating the relationship between age and respondents' assessments of the impact of assistive technology on reading

comprehension skills are presented in Table 7. The study reveals a statistically significant correlation between age and these beliefs, with an F-value of 5.173 and a p-value of 0.002, based on a sample size of 196 participants and three degrees of freedom. This suggests that there are variations in how various age demographics evaluate the influence of assistive technology on the development of reading comprehension abilities.

Table 8
Qualification

Qualification	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4.516	1	4.516	.449	.504
Within Groups	1992.879	198	10.065		
Total	1997.395	199			

The results of an analysis of variance (ANOVA) investigating the influence of qualification on respondents' assessments of assistive technology's effect on reading comprehension abilities are presented in Table 8. The study indicates that the qualification does not have a statistically significant impact on these perceptions. This is supported by the non-significant F value of 0.449 ($F(1, 198)$, $p = 0.504$). Thus, the study found that the perception of how assistive technology affects reading comprehension skills is not significantly influenced by the educational qualities of the respondents.

Table 9
Experience

Experience	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	13.188	1	13.188	1.316	.253
Within Groups	1984.207	198	10.021		
Total	1997.395	199			

The results of an analysis of variance (ANOVA) investigating the influence of experience on respondents' opinions of assistive technology's effect on reading comprehension skills are shown in Table 9. The research indicates that there is no statistically significant impact of experience on these views, as demonstrated by the non-significant F value, $F(1, 198) = 1.316$, $p = 0.253$. Hence, the assessment of how assistive technology affects reading comprehension skills shows no substantial variation based on the participants' level of expertise in this study.

Findings

The study examined instructors' perceptions of the impact of assistive technology on reading comprehension skills across various demographic variables. The demographic profile of the 200 respondents revealed an equitable distribution of genders, with 33% being male and 67% being female. The majority of respondents fell within the age range of 31 to 50. A significant majority of them possessed M. Phil. Degrees and were employed in rural schools. The majority of them have a teaching experience ranging from six to ten years.

Most teachers agreed that the use of assistive technology enhanced their pupils' reading comprehension skills. They documented improvements in reading comprehension, a facility in comprehending challenging texts, and an enhanced capacity for knowledge retention. In addition, they documented a decrease in the amount of time required to complete reading assignments, an increase in self-assurance regarding their reading abilities, and a greater appreciation for reading materials that were both fun and well-structured. Instructors relied on assistive technology to enhance their understanding of crucial concepts across many genres of reading material.

Discussion

The findings align with the existing body of research that demonstrates the substantial enhancement of educational achievements through the use of assistive technology, particularly for educators facing challenges in reading comprehension (Smith & Okolo, 2020; McLeskey & Waldron, 2021). The demographic characteristics, such as gender, designation, region of posting, and place of posting, show statistically significant variances that indicate modest disparities in perceptions. Male instructors and individuals in higher positions perceived a slightly stronger impact of assistive technology compared to their colleagues. Instructors in rural areas and schools reported higher mean scores compared to those in urban and center-based settings, indicating a more favorable perception of the impact of assistive technology on reading comprehension skills.

The endorsement of assistive technology by teachers underscores its effectiveness in addressing diverse learning needs and enhancing instructional approaches in educational settings. Our findings illuminate how demographic characteristics impact the adoption and perceived efficacy of assistive technology. This knowledge can inform targeted initiatives to optimize its utilization in classroom environments.

Conclusion

Consequently, the study provides compelling evidence that educators are convinced that assistive technology can greatly improve pupils' reading comprehension skills. The findings underscore the importance of integrating assistive technology into instructional approaches to effectively address the needs of a diverse student population. While demographic variations might alter impressions, the general consensus is that assistive technology has a positive impact in various educational settings. To enhance inclusive educational practices, more research might investigate the enduring advantages and specific pathways via which assistive technology enhances educational outcomes.

Recommendations

Several recommendations are proposed based on the findings to enhance the efficiency and incorporation of assistive technology in educational settings:

1. *Comprehensive Professional Development:* Offer educators targeted instruction on the effective utilization of assistive technology to maximize its benefits in enhancing reading comprehension skills.
2. *Policy Advocacy:* Advocate for legislation that facilitates the widespread adoption and integration of assistive technology in schools, ensuring equitable access to learning materials for all students.
3. *Study Initiatives:* To promote evidence-based practices in educational technology, foster further research on emerging technologies and their lasting effects on academic achievements.
4. *Foster Collaborative Partnerships:* Foster collaborative partnerships among stakeholders, technology developers, and educational institutions to facilitate the creation of cutting-edge assistive technology that effectively caters to a wide array of educational requirements.

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