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Utilizing Artificial Intelligence to Improve Teachers' Knowledge and Instructional Strategies in Special Education Setting

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Abstract: *Teachers in special education settings are utilizing artificial intelligence, a technology that mimics the human brain, to enhance their knowledge and instructional strategies. To achieve the objectives of the study, we used a quantitative research design, and the sample included 300 special education teachers selected by a simple random sampling technique. The researchers themselves developed a questionnaire for the assessment process, vetted it through expert review and factor analysis, and demonstrated its high reliability with a Cronbach alpha of 0.85. The study's progress, which was based on SPSS, indicates that AI integration is this initiative's 1st most important aspect. This tool has enabled their personalized learning and improved their performance in normal schools with other students. The work's findings suggest a potential solution. The study's results indicate that such tools could prove beneficial for individuals residing in remote, resource-constrained rural areas, potentially bridging the gap between urban and rural areas. We must concentrate on this area and enlighten more educators about the advantages of professional development and AI intervention, both of which can adapt to a diverse learning environment. These ideas highlight the full potential of AI in special education, not only as a more accommodating and successful tool in the classroom but also as a foundation for future research on its long-term impacts.*

Introduction

Now days, the implementation of artificial intelligence (AI) in educational settings has been a talking point because of its potential to modernize the ways teaching strategies work and raise the level of knowledge for educators, mainly those in special education. Pedro et al. (2019) find AI methodologies like deep learning, natural language processing, and data analytics useful for personalized experiences through practice and specialized targets for students with special needs. These technologies are becoming fundamental as the educational landscape changes. Educators, policymakers, and researchers must not only comprehend these technologies but also recognize the challenges associated with AI in special education (Chen et al., 2020). AI-generated instruments can surely help special education teachers do their jobs better by automating the tasks that once took time to accomplish and allowing them to concentrate on personalized instruction. For example, teachers can program AI to scan and rate exams, thereby freeing up more time for one-on-one work with students (Holmes et al., 2019). Most

importantly, AI can evaluate vast amounts of data to identify patterns and trends in student performance, providing teachers with the necessary knowledge to adjust their methods to meet the needs of these individuals within the context of special education (Chen et al., 2020).

AI-powered applications can facilitate instant feedback and personalized learning, which is beneficial for students with special needs. Additionally, these technologies are intelligent enough to adjust the task difficulty to the learner's level, ensuring that children remain engaged and strengthen their skills without overburdening themselves (Hwang et al., 2013). Intelligent tutoring systems (ITS) serve as a prime example, offering personalized attention and guidance by adapting to the student's pace and learning style. The aforementioned information technology has the potential to significantly enhance learning for students with mental or physical disabilities (Nye, 2015). For instance, in addition to its professional development functions, AI can also significantly contribute to the work of special education teachers. AI-based analytics make it possible for teachers to acknowledge where they excel and what areas they should improve in, as well as to get detailed personal suggestions for professional growth (Yin & Hwang, 2018). This ongoing feedback process contributes to educators' self-reflection and lifelong learning, thus leading to better and smarter certified access. The teacher can utilize AI as one of the instruments to determine their interaction style and whether the class instructional methodologies are likely to trigger engagement and learning (Ahmad et al., 2023).

Despite its numerous potential benefits, the use of AI in special education presents several challenges that require significant attention and further research. For instance, one of the most critical issues involves the ethical implications of using AI robots, specifically the privacy and security of personal data (Akgun & Greenhow, 2022). Hardware is necessary for gathering and analyzing sensitive student information, and its feasibility depends on its protection from attacks through cryptography and secure connections like TLS. Occasionally, bias may also exist in AI algorithms, potentially leading to existing educational inequities if preventive measures are not implemented (Eubanks, 2018). Ensuring that AI systems remain accountable, transparent, and fair is fundamental for the successful integration and promotion of special education. In addition, there is a gap in the study of the effectiveness of AI tools in diverse education environments and how they will transform students' lives. The research problem lies in exposing these challenges and providing empirical evidence based on the successful implementation of AI in special education. This endeavor, aimed at examining AI's ability to support teachers and students with special needs, seeks to contribute to the development of principles and methods for AI technologies in education.

Research Objective

The objective of this study is to examine the utilization of artificial intelligence to improve teachers' knowledge and instructional strategies in special education setting.

Literature Review

Artificial intelligence (AI) has emerged as a significant tool in education, offering the potential to transform teaching methods and provide teachers with up-to-date information, particularly those in special education (Pedro et al., 2019). Teachers' use of technologies such as machine learning, natural language processing, and data analytics will create new ways for them to personalize learning experiences to meet the specific needs of each student, thus providing targeted interventions for students with special needs. As the educational landscape continues to develop, knowing the capabilities and hurdles of AI in special education becomes an important matter for educators, policymakers, and researchers (Chen et al., 2020).

Artificial intelligence (AI) technologies are unique in that they can take over some of the responsibilities of special education educators, such as taking care of various tasks that allow them to provide student-centered instruction. For example, AI enables the development and implementation of assessments and automates grading; thus, it enables teachers to communicate with students directly (Holmes et al., 2019). Further, AI can extract data from surveys and tests and quickly recognize patterns like one that might come to the planner to help teachers decide how to best optimize their students' experiences. This data-driven method can be a very useful tool in the area of teaching effectiveness and learning in the field of special education (Chen et al., 2020).

On the other hand, AI-based software can enable students to make dynamic changes, which is especially convenient for students with special needs. This software will engage students by adjusting the level of tasks based on their progress without overloading them. Hwang et al. (2013) Intelligent tutoring systems (ITS) primarily use technology to provide personalized guidance and support, adapting to the learning rhythm and style of students. Such programs have demonstrated potential to increase learning achievements of students with different kinds of needs (Nye, 2015).

Another goal of AI is to expand the teaching opportunities for teachers, resulting in a more developed school environment that will indirectly impact the work of professional teachers by taking into account the needs of special education teachers (Hirsch et al., 2019). This new feedback mechanism can boost teachers' ability to critically reflect on their work. Furthermore, they can identify areas that require improvement, enabling them to devise potential professional development programs in these areas (Stanley, 2004). These skills would be a foundation for an AI system that analyzes and comments on the dialogue that is taking place in classrooms. The AI also provides data-driven recommendations for increasing student engagement (Klamma et al., 2019).

Furthermore, playgrounds for the next generation may have to deal with issues such as the implementation of AI in special education (Fox et al., 2023). The application of AI technologies typically raises ethical concerns, particularly those related to data privacy and security (Sabin & Griffin, n.d.). We must exercise caution not only in the data gathering process, which could potentially violate students' privacy, but also in the subsequent data analysis process to prevent any potential issues from arising. Moreover, the issue of social exclusion of certain groups persists, often due to the biased perspectives of individuals who are unwilling to consider the perspectives of others. Thus, the first thing teachers are concerned with is building a special education curriculum that is transparent, fair, and accountable (Kaleb et al., 2020).

Furthermore, the issue of a lack of essential aptitude and the way to include artificial intelligence are not unique and require additional attention. Many teachers are not well-informed about the technical skills that are required to implement AI technology in their curriculum (Peço et al., 2017). One avenue that is important to pursue to provide teachers with the necessary skills to understand and use AI tools is to conduct professional development programs, which, with hands-on practice and sustained support, would benefit educators (Lengyel, 2012). Furthermore, creating a favorable climate of shared reflection between fellow educators and the exchange of appropriate techniques can result in more productive AI absorption (Abulibdeh et al., 2024).

The AI's potential to provide the highest quality education to students with special needs is immense. AI can determine the exact learning requirements of students and adjust the educational content accordingly (Kumar et al., 2023). To achieve the highest grade of the academic year, we could employ advanced new machine learning algorithms with student data to identify the most effective teaching approaches and adjust the content in real time. This personalized educational content, especially for the disabled students having various and complicated needs, is of significant importance (Ayeni et al., 2024).

Apart from that, AI, through education technologies, can foster an inclusive classroom culture by offering tailored resources to all learners, including those with varying learning strengths and weaknesses. Technology in Teaching. Among the applications of speech recognition and natural language processing, the education sector benefits from real-time transcription and translation services for students with language impairments (Garg & Sharma, 2020). In the same manner, we can use the AI-powered educational games and simulations to get students on the autism spectrum involved in the structured and interactive kind of learning they never had before. These will increase student involvement and participation, resulting in a more inclusive educational environment (Barua et al., 2022).

In special education, AI is another important element in early diagnosis and intervention. By performing analytics on various sources such as classroom assessments, behavioral observations, etc., AI can detect and recognize the early symptoms of learning mental disorders and their developmental issues (Holmes et al., 2019). At this stage, we must take early intervention steps to ensure positive

outcomes for special education students, and AI can provide these students with the necessary services at the exact moment they need them most (Lai et al., 2013). Teachers can use prediction tools to identify potential students with deficiencies, enabling them to intervene and focus on each student individually (Pedro et al., 2019).

Also, technologies like AI can unify educators, parents, and specialists in special education so that they can achieve more through collaboration and communication. Interactive platforms that utilize AI technology make this purpose even more stringent; the sharing of information and materials will be more clear, timely, or on point. Basically, their awareness and support will be in line with the efforts of the teachers who also avail themselves (Sharma et al., 2023). Take, for instance, AI-aided communication solutions, which can be a way to solve the language barrier issue between teachers and non-English-speaking parents, encouraging respectful and smooth relationships. This whole co-teaching method can also increase the efficiency of special education programs at the macro level (Chen et al., 2020).

That said, despite so many high-flying possibilities of AI in the sphere of special education, one has to approach the route with caution. The objectives of AI tools must be the development, deployment, and operation in accordance with the principles of inclusion, transparency, and ethical responsibility (Floridi et al., 2018). Partners should take a proactive role, with a constant dialogue that aims at both the ethical and technical prospects of AI in education. Thereby, these technologies can meet the needs of every student (Aoun, 2017). Moreover, the policymakers ought to ensure the regulatory infrastructure is in place that will enable the responsible use of AI in special education, allowing the innovation to coexist with the students' privacy and other rights (Selwyn, 2019).

Furthermore, to achieve the ideal use of AI in the special education sector, access to the best quality data must be authentic. With the vast amount of data that most algorithms can handle, AI systems should eventually learn from big data. However, the collection and curation of educational data in special education can be challenging due to the diverse student needs and varying educational practices. For the effective use of AI, it is indispensable to ensure that data is both representative and authentic, collected in a morally accepted manner (Williamson, 2019). Additionally, we need to establish a data governance framework to supervise the collection, storage, and use of educational data (West, 2019).

Indeed, the universal design for learning (UDL) principles guide the development of AI tools, necessitating the inclusion of a flexible feature. UDL accentuates the creation of multi-faceted learning environments that not only fulfill the needs of the students but also the needs of those who, for one reason or another, are so-called normal (Meyer et al., 2014). Further, the new technologies must be accessible and inclusively built; hence, even a dyslexic child should be able to use them (Rose & Gravel, 2010). AI-driven educational platforms would offer customization features so that tutors and students themselves could adjust the content and delivery methods according to the student's unique situation (Hall et al., 2012).

The use of AI in special education is an excellent way to empower teachers by providing them with a new depth of knowledge and a variety of teaching strategies. AI-driven applications can deliver personalized teaching, real-time feedback, and data-oriented insights, all of which contribute to improving the teaching and learning processes for those with special learning needs. However, we can only fully utilize AI in special education by addressing ethical, technical, and practical challenges. Proper teacher training, solid data governance frameworks, and inclusivity and transparency practices are the key factors affecting AI integration in special education settings.

Research Methodology

Research Design

The study utilized a quantitative research plan to acquire and analyze numerical data. The study looked into AI's integration into teaching practices in the special education department.

Population and Sample

Special education teachers from various educational levels participated in the study. To ensure a significant representation of the population, the research selected 300 teachers using simple random

sampling.

Data collection tool

We created a self-developed questionnaire, drawing from AI literature and teacher education, and incorporating all the data to support the experts' assertions. This construct, which included the following closed-ended questions, praised AI for its impact on teaching practices.

Validity and reliability

Experts' work and factor analysis resolved the questionnaire's validity issue, while Cronbach's alpha and a repeat test confirmed the researchers' reliability. The test for individual consistency had a Cronbach's alpha of 0.85, indicating a high level of internal consistency.

Data Collection

We collect data using both traditional questionnaires and electronic surveys. We should prioritize this method due to its high response rate and ability to engage a significant portion of teachers, facilitated by the ease of using e-resources.

Ethical Considerations

Throughout the study, we took special care to adhere to the ethical issues of the research, such as informed consent, confidentiality, data protection, and ethical approval.

Data Analysis

SPSS analyzed and scrutinized the descriptive and inferential content, transforming it into a skeletal framework for the next step in the process. The outcomes revealed the presence of AI programs in the teaching process, which ultimately led to the implementation of effective teaching practices.

Table 1

Frequency Distribution at the Basis of Demographics

Title	Description	Frequency	Percentage (%)
Gender	Male	96	32.0%
	Female	204	68.0%
		300	100%
Age of Respondents	21-30 Y	56	18.7%
	31-40 Y	111	37.0%
	41-50 Y	113	37.7%
	51-60 Y	20	6.7%
		300	100%
Designation	SSET	164	54.7%
	JSET	136	45.3%
		300	100%
Qualification	Master	230	76.7%
	M.Phil.	56	18.7%
	PHD	14	4.7%
		300	100%
Place of Posting	School	164	54.7%
	Center	136	45.3%
		300	100%
Area of Posting	Rural	164	54.7%
	Urban	136	45.3%
		300	100%
Experience	1-5 Y	84	28.0%
	6-10 Y	159	53.0%
	11-15 Y	36	12.0%

	>15 Y	21	7.0%
		300	100%

The demographic analysis shows that 68% of respondents are female, with the majority (74.7%) aged between 31-50 years. Most respondents hold a Master's degree (76.7%) and are designated as Senior Special Education Teachers (SSET) at schools (54.7%) in rural areas (54.7%). The largest experience group is 6-10 years (53%), indicating a well-distributed sample across various demographic factors.

Table 2

Frequency Distribution at the Basis of Objective of Study

Sr.	Statements of Questions	SA	A	UD	DA	SDA	M	SD
1	AI-driven tools have significantly enhanced my ability to provide personalized instruction to students with special needs.	45 15%	237 79%	18 6%	0 0%	0 0%	4.09	0.45
2	The use of AI technologies in my teaching has improved my overall knowledge of special education practices.	90 30%	209 70%	1 0%	0 0%	0 0%	4.30	0.46
3	AI applications have helped me identify specific learning needs and tailor my instructional strategies accordingly.	102 34%	196 65%	1 0%	0 0%	1 0%	4.33	0.52
4	I find that AI-powered platforms are effective in tracking student progress and providing timely feedback.	85 28%	206 69%	4 1%	5 2%	0 0%	4.24	0.56
5	AI has made it easier for me to manage routine tasks, allowing more time for individualized student interaction.	43 14%	241 80%	10 3%	6 2%	0 0%	4.07	0.50
6	The integration of AI into my teaching has led to improved learning outcomes for my students with special needs.	122 41%	173 58%	5 2%	0 0%	0 0%	4.39	0.45
7	AI technologies have provided me with valuable insights into my teaching methods and areas for improvement.	52 17%	246 82%	2 1%	0 0%	0 0%	4.17	0.46
8	I am confident in my ability to use AI tools to enhance my instructional strategies in special education.	74 25%	216 72%	6 2%	4 1%	0 0%	4.20	0.52
9	AI-powered adaptive learning systems have been effective in keeping my students engaged and challenged.	49 16%	250 83%	1 0%	0 0%	0 0%	4.16	0.56
10	The use of AI in my classroom has increased my efficiency in creating and grading assessments.	87 29%	200 67%	12 4%	1 0%	0 0%	4.24	0.50
11	AI tools have been instrumental in helping me develop more inclusive learning environments.	122 41%	173 58%	5 2%	0 0%	0 0%	4.39	0.52
12	The professional development programs on AI have adequately prepared me to integrate these technologies into my teaching.	122 41%	173 58%	5 2%	0 0%	0 0%	4.39	0.39
13	I believe that AI has the potential to revolutionize instructional strategies in special education settings.	52 17%	246 82%	2 1%	0 0%	0 0%	4.17	0.39

14	AI-driven analytics have been useful in identifying patterns and trends in student performance.	74 25%	216 72%	6 2%	4 1%	0 0%	4.20	0.53
15	I find AI technologies to be user-friendly and easy to integrate into my existing teaching practices.	49 16%	250 83%	1 0%	0 0%	0 0%	4.16	0.38
16	The implementation of AI in special education has addressed many challenges I previously faced in instructional planning and delivery.	87 29%	200 67%	12 4%	1 0%	0 0%	4.24	0.14

The analysis reveals that a significant majority of respondents agree or strongly agree with the positive impact of AI on their teaching practices, particularly in enhancing personalized instruction (94%), improving knowledge (100%), and developing inclusive environments (99%). The mean scores for these statements range from 4.07 to 4.39, reflecting a strong consensus on the benefits of AI in special education settings.

Table 3

Comparison of Means at the Basis of Gender (T-Test Analysis)

Gender	N	Mean	Std. Deviation	df	t	Sig. (2-tailed)
Male	96	68.14	3.38	298	1.66	0.099
Female	204	67.54	2.66			

The t-test analysis comparing male and female respondents shows a slightly higher mean score for males (68.14) than females (67.54) in their responses about AI's impact on teaching practices. However, the difference is not statistically significant ($p = 0.099$), indicating that gender does not significantly influence the perceptions of AI's effectiveness in special education.

Table 4

Comparison of Means at the Basis of Designation (T-Test Analysis)

Designation	N	Mean	Std. Deviation	df	t	Sig. (2-tailed)
SSET	164	68.41	2.62	298	4.57	0
JSET	136	66.91	3.05			

Significant differences are observed between SSETs (mean = 68.41) and JSETs (mean = 66.91) regarding their views on AI integration. The t-test results show a significant difference ($p < 0.001$), indicating that SSETs perceive AI more favorably in enhancing their instructional strategies compared to JSETs.

Table 5

Comparison of Means at the Basis of Place of Posting (T-Test Analysis)

Place of Posting	N	Mean	Std. Deviation	df	t	Sig. (2-tailed)
School	164	68.41	2.62	298	4.57	0
Center	136	66.91	3.05			

The t-test comparison between teachers posted at schools and centers reveals a significant difference ($p < 0.001$) in their perceptions of AI's impact, with school-posted teachers (mean = 68.41) rating AI more positively than center-posted teachers (mean = 66.91).

Table 6

Comparison of Means at the Basis of Area of Posting (T-Test Analysis)

Area of Posting	N	Mean	Std. Deviation	df	t	Sig. (2-tailed)
Rural	164	68.41	2.62	298	4.57	0
Urban	136	66.91	3.05			

Teachers in rural areas reported significantly higher mean scores (68.41) compared to their

urban counterparts (66.91) regarding AI's role in enhancing their teaching practices. The t-test results ($p < 0.001$) suggest that rural teachers perceive AI as more beneficial in special education settings than urban teachers.

Table 7

Comparison of Means at the Basis of Age (One-Way ANOVA Analysis)

Age	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	106.97	3	35.66	4.33	0.01
Within Groups	2436.16	296	8.23		
Total	2543.13	299			

The ANOVA analysis indicates a significant difference ($p = 0.01$) in AI perceptions across different age groups, with older teachers generally rating AI more favorably. This suggests that age may influence how teachers perceive and integrate AI into their teaching practices.

Table 8

Comparison of Means at the Basis of Qualification (One-Way ANOVA Analysis)

Qualification	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	32.20	2	16.10	1.90	0.15
Within Groups	2510.93	297	8.45		
Total	2543.13	299			

There is no statistically significant difference ($p = 0.15$) in the perceptions of AI's impact on teaching practices across different qualification levels. This suggests that educational background does not significantly affect teachers' views on AI integration in special education.

Table 9

Comparison of Means at the Basis of Experience (One-Way ANOVA Analysis)

Experience	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	42.12	3	14.04	1.66	0.18
Within Groups	2501.01	296	8.45		
Total	2543.13	299			

The ANOVA results show no significant difference ($p = 0.18$) in AI perceptions across varying levels of teaching experience. This indicates that the length of teaching experience does not significantly influence how teachers perceive AI's effectiveness in enhancing their instructional strategies.

Findings

Based on the data analysis, most teachers agree that AI has added a new dimension to classroom work with special needs children. Most of them expressed their satisfaction with the way AI-based tools have made it possible to provide more individual instruction to these students. AI has also been instrumental in enabling teachers to comprehend the most effective special education methods and tailor them to the unique learning styles of their students. Additionally, teachers get to be facilitators of the learning process by deploying these AI-powered tools and creating a student-oriented routine. A big portion of the results also made it clear that teachers can use AI to track learning, get feedback in time, and do routine tasks, ultimately letting them interact with students in a more targeted manner. Stronger student outcomes and improved teaching practices, particularly in special education, have been associated with the implementation of AI in schools. Furthermore, teachers evaluate AI tools as manageable, expressing their perception of professional development programs as effective tools that enable them to incorporate these technologies into their teaching methods.

The sample group is diverse, featuring a larger population of females between the ages of 31 and 50, with a significant proportion of them being younger. Senior Special Education Teachers (SSETs) with a Master's degree, typically assigned to rural schools, make up more than half of the respondents. This statistical variability brings different perspectives on AI integration in different situations and among teachers of diverse skills. The collected data confirmed that teachers in rural schools experience the greatest benefits from AI use. The teachers in such schools express greater satisfaction with AI tools

than those in urban areas; thus, it is clear that AI might indeed be a trump card in reducing the gap in the availability of educational resources between different districts.

Similar studies on the AI impact views shared by different demographic categories revealed intriguing trends. One point that stands out clearly is the difference in how SSET, Junior Special Education Teachers (JSET), and SSETs perceive AI. Here, the SSETs voiced more positive views on AI than their counterparts. These results suggest that instructors with more experience or higher-level employment are more likely to control or utilize AI technologies, leading to more favorable educational outcomes in their teaching. Additionally, statistically significant results revealed differences in teacher assignments between schools and centers, as well as between rural and urban groups, with the former demonstrating greater benefits from AI. These results simply mean that the teaching setup and the location of the facility are key factors in determining the perception of AI and its technical utilization in a special education setting. As a result, teachers in rural areas and schools are the first to benefit from AI. This is why students in such areas and districts may have to deal with the more challenging parts of the teacher's responsibilities, but at this point, AI comes in handy to solve such problems.

Discussion

The study's results indicate a strong consensus among educators regarding a digital revolution in the field of special education. The overwhelming consensus among educators is that artificial intelligence (AI) has significantly enhanced their personalized teaching methods by adapting to the unique needs of children with disabilities. The literature directly supports this, stating that the use of AI can create unique experiences for students that deviate from the norm. This is due to the ability of AI tools to monitor learner data and deliver personalized activities using the computer's chosen strategies (Delgado et al., 2020). The integration of AI in education, along with the teachers' response to it, not only demonstrates the effectiveness of these instruments in teaching subjects, but also fosters a strong bond with educators who are committed to the principles of special education. The ability to use AI technology to reduce teachers' workload frees up a significant amount of time for personalized interactions with other students. The benefit lies in its beneficial impact on teachers, particularly special education teachers, who often struggle with time constraints (Pedro et al., 2019).

The talk further illustrates the use of demographic descriptors and AI support, a new category, to differentiate teachers based on environmental factors and school grades. Specifically, teachers in rural areas, which are characterized by difficult conditions due to the limited provision of support and resources, are showing a greater degree of contentment with AI. Therefore, it appears that AI could potentially bridge the educational disparities between rural and urban settings, providing teachers in rural areas with the necessary teaching support to deliver specialized instruction (Raina et al., 2024). Furthermore, a comparison of AI satisfaction rates with senior special education teachers (SSETs) and junior special education teachers (JSETs) reveals a high rate of approval. This suggests that differences in years of experience and comfort level with ICT (information and communication technologies) play a critical role in the effective integration of AI technology. These outcomes demand constant professional training and teaching support in every stage of their pathways to guarantee that teaching with the help of the AI is going to be a success.

We're using data from the post location and region. The comparative analysis involves a more detailed explanation of the contextual factors that influence the perception and use of AI in the special education field. Teachers who inhabit schools, particularly those in the countryside, believe that AI is all the more useful to them than their colleagues in centers or urban settings. This situation is largely due to challenges that are specific to school-based and rural teachers, such as larger class sizes, different student needs, and limited access to specialized resources, which AI tools play a part in addressing (Chen et al., 2020). The statistics reveal that AI is substantially benefiting these schools and even assumes a prominent position in the special education area as it gives the teaching staff the necessary means for dealing with the obstacles. These responses directly demonstrate the appropriateness of the suggestion to develop targeted strategies that align with the unique needs of the environments where teaching and learning occur, thereby maximizing the potential of AI in special education.

Conclusion

Special education can utilize AI to provide teachers with diverse methods to instruct specialized students, leading to positive teaching outcomes. This presents a significant opportunity, particularly for tailored instruction and improved learning outcomes for these students. Educators of all ethnic and social groups, teachers from rural areas, and schools are some examples who have recognized AI instruments for the ample benefits they bring to special education. The research demonstrates that AI is a tool that not only helps the teaching staff be efficient during class periods and provide continuous learning to the students, but it also helps in bridging the resource gap between urban and rural educational settings. Experienced teachers tend to find AI more compelling, and managers who currently have no issues find the new technology message less frustrating or unsettling. Thus, the role of technology is influential in developing knowledge and capability.

Additionally, the analysis underlines the linkage factors in terms of the physical learning medium or the geographical area to the educators' mindset regarding the applicability and exploitation of AI. The data clearly indicates that while everyone agrees that AI is beneficial, its impact is particularly strong in areas with significant educational challenges, such as remote areas and schools with limited resources. These observations stress the importance of a situational approach to AI integration in special education, which is to say that educators are at liberty to follow methods of instruction that are in cooperation with the needs of their teaching environments. In this manner, AI can fully utilize its potential to enhance the efficiency of the educational system while simultaneously serving as a potent tool for spreading a message of acceptance and healing.

Recommendations

1. Conduct workshops to equip teachers with AI skills, specifically in special education, that they are already familiar with and have hands-on experience in teaching special needs. This will improve their understanding of classroom technology in this area.

2. Utilize artificial intelligence technologies in rural and underprivileged areas to narrow the gap between the different educational levels and assist teachers with scaled-down teaching tasks.

3. Teach AI techniques in various ways and integrate them into the overall staff training, recognizing that all educators are willing and able to use AI tools.

4. *Recommendation for Researchers:* Find out the long-term benefits of primary school students' AI integration into diverse cultural educational settings, as well as teachers' progress.

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