Exploring the Perspectives of Teachers of Students with Intellectual Disabilities Toward the Impact of Using Artificial Intelligence Tools on Their Students' Academic Performance

Sultan Aldehami
Associate Professor, Department of Special Education, College of education, Qassim University, Buraydah, Saudi Arabia.
https://orcid.org/0000-0002-3574-6449

Abstract
The purpose of this research, which was conducted in central region of the Kingdom of Saudi Arabia (KSA), was to examine the perceptions of teachers of students with intellectual disabilities (ID) about the influence of utilizing artificial intelligence (AI) tools on their students' academic achievement. Fifty-four special education teachers teaching students with ID participated in the study by completing an online survey. The findings reveal that teachers strongly agreed that using AI tools may help decrease the loss of instructional time. However, the other teachers had a low perception of their ability to apply AI tools. Furthermore, no statistically significant differences were found in the teachers' perceptions of the influence of using AI tools on their students' academic achievement according to gender or most grade levels taught. However, statistically significant differences were found according to training status, as those teachers who had training in AI reported a higher student academic achievement than the teachers who had not received any training. Also, there were differences between teachers with bachelor's degrees and teachers with master degrees as well as with doctoral degrees. In addition, a strong and positive correlation between teachers' use of AI tools and their students' academic performance was found. Moreover, the results revealed that teachers' use of AI predicted students' academic achievement significantly.
Keywords: special education, intellectual disability, artificial intelligence, academic performance.

INTRODUCTION

The adoption of technology in educating students with ID has a striking history, and the emergence of AI capabilities holds great promise for further development of a system that can provide them with the best possible support (Marino et al., 2023). The learning process for this category of children is complex as the standard system of schools does not always have the conditions and opportunities

to satisfy their needs (Almufareh, Tehsin, Humayun & Kausar, 2023). For instance, students with intellectual disability may have limitations in abstract reasoning, memory, generalization of acquired skills and adaptive behavior functioning, all of which can contribute to a wide range of poor academic performance (Schalock et al., 2021). Additionally, Students with ID often experience health problems that require constant monitoring that will harm their overall experience in the educational institution. For these students, Kharbat, Alshawabkeh and Woolsey (2021) have proposed the idea of "filling" their minds with AI technology to level out the extent of their deficit in learning, adaptive, and social skills. The system will gather all information about a student in one place and then can send it to teachers, minimizing the occurrence of errors and helping with the student's education.

AI's rapid adoption in education dramatically influenced teaching methods, and special education is no exception. AI- solutions such as adaptive learning programs, intelligent tutoring systems, and assistive communication technologies offer personalized and flexible learning opportunities to students with ID who often face significant barriers in the classroom (Salama, 2021; Rabie & Abdul Fattah, 2024; Xie et al., 2019). Moreover, through AI implementation, intelligent, interactive, and supportive learning environment can be created, which is of particular importance for educational space, opening up new opportunities for exploratory and experience-based learning. For that reason, numerous sources have demonstrated that these technologies are able to improve the quality of students' education, their motivation, and also make a wide range of tools and technological applications available to them, including intelligent feedback systems, digital assistants, and digital platforms (Salama, 2021; Rabie & Abdul Fattah, 2024). In turn, Lampropoulos (2025) stated that the combined implementation of AI with learning technologies such as augmented reality and virtual reality will lead to a qualitative leap in teaching methods and modern strategies.

Therefore, it is necessary to research how AI can influence students with ID school achievement from the teachers' perspective and try to provide evidence that may become a foundation for more inclusive and effective educational practices.

LITERATURE REVIEW

Artificial intelligence (AI) systems appear to offer flexibility in designing novel educational approaches for students with intellectual disabilities (ID). They support the development of academic and social skills by providing safe, interactive, and adaptable learning spaces where personalized instruction and meaningful engagement can occur (Chalkiadakis et al., 2024). AI-based

technologies also allow teachers to track the progress of their students in real-time and provide immediate instructional support to enhance the quality of education (Chalkiadakis et al., 2024).

Garg and Sharma (2020) provided support to the above argument. These authors assessed the role of AI in inclusive education in the Indian context through teacher interviews and content analysis. The results of their study showed that AI-based educational games and robots promoted learning and supported students with disabilities, including intellectual disabilities, in their academic and social skill development. Therefore, AI can be useful for inclusive educational practices.

The effectiveness of AI for students with intellectual disabilities was the topic for several research studies. Alsolami (2025) for example explored how AI-based instruction influenced the academic performance and the social skills of students with ID. Results revealed that there were significant increases in students' academic performance in AI teaching classes versus their peers who experienced traditional instruction. On the other hand, Alatawi (2024) conducted a mixed-methods study that took place in a Saudi school and found similar results in which students who had AI-based intervention showed improvements in their academic performance and retention as well as social integration. In the same vein, Al-Yamahi (2025) explored academic performance and adaptive behavior of students with intellectual disabilities using an AI-based program. Results showed positive significant increases in both academic performance and adaptive behavior. The above results presented confirm the idea that AI is important for cognitive as well as behavioral development for ID students. With the use of AI, teachers and parents are able to address gaps and aid students through individualized and tailored courses.

Another idea investigated in the literature focused on creating whole AI systems devoted to develop ID students' abilities and skills. for example, Ezzaim, et al. (2024) developed an AI-based education system that included a smart adaptive model aimed to change the content taught to students based on their individual needs. Results of this experimental study showed that students who took part in this study revealed increases in their interaction and academic performance after using this system. The study ends with recommending the utilization of AI to help students learn individually based on their profiles. Alhajeri and Alotaibi (2024) confirmed the above results and proposed a similar idea that teachers should use AI as a tool to help varying the learning experiences of students with intellectual disabilities. By doing this, students with intellectual disabilities could have learning experiences that could help them keep up with their typically developing peers academics and socially.

Moving on to another area of interest, several studies acknowledged the positive effect of AI tools on language and communication development. For instance,

Alsudairy and Eltantawy (2024) and Alsolmi (2025) found that AI-powered educational apps help students with intellectual disabilities work on their social communication and language development. When used in classrooms, AI allows students to interact and communicate with their peers in inclusive environments, which allows them to build social communication skills within natural settings. AI apps were also found to benefit students with intellectual disabilities when learning basic skills and concepts such as colors, numbers, and vocabulary. AI programs use repetitive activities, which have been shown to have a high rate of reinforcement.

In the same area of study, Elkot et al. (2025) conducted a research project on the effectiveness of generative conversation AI on the communication skills of students with mild intellectual disabilities. The study was conducted in English. There were two groups: guided AI and unguided AI. Students who were taught through the guided conversation showed significantly better communication skills than their peers who received unguided AI. Measured skills were the student's ability to understand the material and participate in the experience. Therefore, it can be concluded that guided interactions are more effective when teaching languages through AI.

Voultsiou and Moussiades' (2025) study proposed a list of AI-powered and assistive technology tools that can be implemented to work on various areas of areas and skills such as Proloquo2Go, TouchChat HD, and Choiceworks. These apps use visual symbols and structured routines that could help ID students improve their expressive communication, comprehension of tasks, and understanding of basic requests and daily routines. Cognitive training apps, such as CogniFit, provide personalized training that targets memory and executive functioning. Immersive platforms, such as Floreo, allow users to practice and rehearse various social and behavioral skills in a simulated virtual environment. Educational devices, such as Bee-Bot, encourage student engagement, play, and exploration while working on their problem-solving skills and spatial awareness. Finally, smart technology, such as text-to-speech tools, wearable communication devices, and smart watches can be used to promote students' literacy skills, task completion, and independence. The afore mentioned technologies show the diversity of AI in creating opportunities for learning, fostering communication, and promoting inclusion among students with intellectual disabilities.

In their work, several authors have pointed out that AI applications support inclusive education because they meet the different needs and learning profiles of all students, and because the technology can be used to tailor instruction and support students in different ways (Chalkiadakis et al., 2024; Garg & Sharma, 2020). Individualized support, in turn, increases student motivation to engage in academic and social activities. This is particularly important to educators because

AI can help them integrate students with intellectual disabilities into the inclusive classroom.

Hussein, Hussein, and Al-Hendawi (2025) conducted a comprehensive synthesis of the available literature in this area. The reviewed 15 studies published between 2019 and 2024 showed that AI tools can improve academic performance, communication skills, emotional regulation, and physical mobility among students with intellectual disabilities. However, according to Hussein et al. (2025), limitations and barriers remain and include a lack of access to technology in low-resource contexts, a lack of training for teachers, and ethical and social concerns about data privacy and bias in AI algorithms.

Teacher-related factors have also been examined by researchers. Elsayed and Alfawzan (2025) studied teachers' knowledge and use of AI when educating students with intellectual disabilities. Their study was conducted in the Al-Ahsa region of Saudi Arabia. The authors found that teachers' use of AI in their practice had statistically significant gender differences ($\chi 2$ (1) = 8.321, p = .004). The results showed that male teachers used AI more than female teachers did.

Additional studies have also documented the impact of multimedia-based AI instruction. Deveci Topal et al. (2023) have also reported significant improvements in post-test scores among students with ID when multimedia-based instructional materials were used. In addition to better scores, the students showed higher levels of enjoyment, engagement, and motivation to apply AI-supported learning tools in other subjects.

Chemnad and Othman (2024) and Hussein et al. (2025) have also noted the ability of AI applications to adapt instruction to the needs of students and provide immediate reinforcement. The results of the study indicated that AI-supported instruction helped students engage deeply with academic content and hence improved their academic achievement. Such results clearly confirm the idea that AI should be incorporated into special education arena. Sharma et al. (2023) have also focused on the benefits of AI-based tools in the educational context. They suggested that the use of such tools can result in positive changes in ID students' performance. As such, the classrooms will became more inclusive with excessive peer engagement work.

Along with the above studies, other areas of interest have been investigated by different researchers and reported positive results. Researchers such as Wu, Halim, and Saad (2025) reported that students improved their vocabulary by 25% and their reading comprehension by 30%. Aboulkheir (2025) also reported positive results on short-term memory functions, student motivation and more inclusive learning environments.

Memory impairment, specifically short-term memory, is one of the problems that students with intellectual disabilities often face, and which negatively impacts their academic performance. This issue was the focus of the study by Aboulkheir (2025). The author examined the effect of AI tools on students' short-term memory function. The results showed that using AI tools was effective in improving students' short-term memory. These tools also increased student motivation and helped to create more inclusive learning environments for students.

In a related but different study, Dwikat (2025) explored primary school teachers' perceptions of the use of AI for ID students. The study was qualitative in nature, and interviews was the primary tool. The author sampled 10 teachers in Palestine for the study. The results showed that there was a considerable difference between teachers' understanding of AI technologies, which was not at an advanced level. In addition, Dwikat (2025) reported that insufficient specialized training of teachers is a barrier to the effective integration of AI into the educational process.

Definitions of Terms

Special education is defined as specialized supports and services for learners with disabilities who qualify; it is for any individuals between the ages of 3 and 21 who attend educational institutions and get individualized instruction to meet their needs (Yell, 2016).

Intellectual disability is a disability that is identified by significant limitations in both intellectual functioning and adaptive behavior. It is described as a situation in which mental performance is markedly less than the general average and is accompanied by a lack of two or more social and practical skills. Also, it occurs before reaching the age of 18 (Ministry of Education of Saudi Arabia, 2018).

Artificial intelligence (AI): it is defined as " the tangible real-world capability of non-human machines or artificial entities to perform, task solve, communicate, interact, and act logically as it occurs with biological humans." (Gil de Zúñiga, Goyanes, & Durotoye, 2024, p. 320).

Academic performance is how well a student does on achieving the short- or long-term educational goals, which is usually measured by grades, test scores, and overall academic accomplishments as well as evaluations of how well they successes (Bressane, et al., 2024).

Problem Statement

AI tools and their learning applications have been suggested as technologies that have been in the field of education for a long time. The features of the AI such as personalization, adaptation and analysis of data allow it to be used to meet the needs of learners and provide them with personalized education materials as well as exact, fast feedback (Chemnad & Othman, 2024; Hussein et al. 2025). Although the AI technologies are widespread in regular education, there are some issues, and the situation is further complicated by some interrelated factors. For example,

the scarcity of special education teachers' training may create a scenario in which children with ID will not get the necessary, specialized attention and guidance from a trained professional (Aldehami, 2022). As such, the constant increase in technological progress often hinders the ability of teachers to learn to work with new tools, especially in special education, where it is necessary to provide additional training and support.

In addition, while some studies have considered the use of AI tools in regular education contexts, there is a lack of controlled empirical studies looking at the outcomes of AI usage for children with ID. The demand to improve the quality of education is a significant phenomenon in many countries, especially now when the government is implementing new reforms to focus on special education. As such, it is vital to explore the use of AI technology in supporting children with ID who need more flexible and personalized education services. Therefore, this study is aimed at closing this gap and systematically looking at the impact of AI on the academic success of students with ID while also examining the educator's perceptions of this tool.

Purpose of the Study

The study attempts to identify teachers of students with ID perception of the effect of using AI tools on their students' academic performance. Therefore, the main purpose of this research is to explore the level of using AI tools in teachers' practices. Besides, the second purpose is to identify the differences in teachers' responses concerning students' academic performance with using AI tools in light of some demographic variables. The third purpose of this study is to identify the relationships between the teachers' use of AI tools and the students' academic performance. The fourth aim is determining whether teachers' perceptions of using AI tools significantly predict the academic performance of students with ID. In addition, the results of this study can help to fill the knowledge gap, provide new insights to develop policies and practices in education, guide the classroom efforts, and allow teachers to use artificial intelligence tools more effectively. Furthermore, policymakers and researchers will be able to build more realistic and applicable strategies.

Research Questions and Analyses

This study was guided by the following overarching research question: What are the perspectives of teachers of students with intellectual disabilities toward the impact of using artificial intelligence tools on their students' academic Performance?

Three sub-questions were addressed in this study:

1. To what extent do teachers' use AI tools in their teaching practices?

2. What are the differences in teachers' perspectives toward the impact of using AI tools on their students' academic performance based on (gender, training, level of education and grade level)?
3. What is the relationships between teachers' using of AI tools and students' academic performance ?
4. To what extent do teachers' perceptions of using of AI tools predict students' academic performance?

METHOD

Design and Sampling

The type of research used for this study to collect data is a non-experimental cross-sectional survey. Creswell and Creswell (2017) stated that the descriptive survey method is derived from the scientific analysis to study the problem or to confirm the existence of the phenomenon, and it is one of the most frequently used methods in the social and human sciences; it is especially suitable for studies that deal with the realities of individuals and institutions. It is distinguished by several features, including the ability to compare and measure variables or problems, and the ability to determine the relationships between these variables. The reason for the appropriateness of using the descriptive survey method for this study is that the study contains a number of questions related to several variables. For this reason, the electronic survey was used to determine the level of use of AI tools among teachers of students with ID, and to reveal differences in their answers about these tools based on the demographic variables (gender, training, level of education, and grade level). In addition, identifying the relationship between teachers' use of AI tools and students' academic performance. Also, determining whether teachers' use of AI tools significantly predicts the academic performance of students with ID.

The survey consisted of 19 questions divided into two parts: the first is about the use of AI tools and the second is about academic performance. Each part asked special education teachers different questions related to AI. The study used a simple random sampling. It is one of the quantitative sampling strategies from probability sampling. It is the most popular sampling strategy for the probability sampling from a population. In addition, it gave each teacher in Qassim State an equal opportunity to be selected from the population and take part in the study (Creswell, 2012). preliminary pilot study was conducted with fifteen teachers from the same study community to examine the validity of the questionnaire prior to the main data collection. In contract, the study sample consists of 54 teachers of students with ID working in public schools in the central region of Saudi Arabia. The study sample included 54 teachers of students with ID who worked in public schools in the central region of Saudi Arabia.

Instruments

The researcher employed two types of measuring tools to collect data from the participants: demographic questionnaire and survey. The demographic questionnaire tackled teacher's gender, training, level of education, and grade level. On the other hand, and based on the study's aims, methodology, and population, the researcher designed a 19 items scale to learn about teachers' of students with ID perspectives toward the effect of the use of AI tools on their students' academic performance. The survey divided into two sections: teachers' utilization of AI tools in terms of student academic performance. The Likert-type scale was provided with its 4-point system: (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree).

Validity and Reliability

Content Validity was used and assessed by a panel of special education professionals in Qassim University. The agreement rate of the panel was (85%) which is high enough to accept the items. Moreover, the internal consistency of the instrument was also assessed using Cronbach's Alpha coefficient (α). Table 1 shows the internal consistency validity of the instrument; Pearson's Correlation Coefficient was calculated to confirm the internal consistency validity of the instrument. Pearson correlation between each item and the total score being statistically significant ($p < 0.05$). This means that all items contributed positively to the scale, and the scale has good internal consistency.

Table 1 *Internal consistency of questionnaire items*

Teacher utilization of AI Tools	Consistency Coefficients	Academic Performance	Consistency Coefficients
1	.709**	1	.761**
2	.817**	2	.934**
3	.839**	3	.934**
4	.631*	4	.934**
5	.924**	5	.980**
6	.696**	6	.753**
7	.812**	7	.980**
8	.746**	8	.723**
		9	.877**
		10	.877**
		11	.934**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Reliability Data Collection

Table 1 represents the internal consistency/reliability in Cronbach's alpha conducted for each major variable scale and for the whole scale prior to running any statistical analysis to answer the research questions. As shown, the utilization of AI tools scale (a=.89) and the students' academic performance scale (a=.96), while the reliability coefficient for the entire scale was (a= .95), indicating an excellent level of internal consistency.

Table 1 *Internal Consistency Reliability Coefficients in Cronbach's Alpha*

Subscales	No. of Items	Reliability Coefficient
		Current Study
Teacher utilize of AI Tools	8	.89
students' academic performance	11	.96
Total	19	.95

Data Analysis

For RQ1 the researcher applied descriptive statistics: frequencies, means, standard deviation (SD) and percentages were reported for all variables. RQ2 also involved looking for differences in some variables such as gender, and training in AI, thus, the researcher conducted a t test of independent samples because there were two groups for gender: males and females, and for training: yes and no. The researcher conducted a comparative analysis using ANOVA for the education level, and grade level variables to determine if there are differences in teachers' responses regarding the impact of using AI tools on their students' academic performance. For RQ3 the researcher conducted a Bivariate Correlation test because it is the appropriate test to measure the relationship between two quantitative variables which were teachers' use of AI tools (IV) and students' academic performance (DV). The researcher used linear regression analysis to answer RQ4, because it provides deeper insights in predicting students' academic performance. The one predictor (independent) variable was teachers' use of AI tools. The outcome (dependent) variable was students' academic performance.

RESULTS

Descriptive Analysis Results

Table 2 represents the demographic characteristics of 54 special education teachers who taught students with ID in the central region of Saudi Arabia. As concerning gender, (59.3%) of the participants who responded to the survey were male, and 40.7% were female. Furthermore, most of the teachers (50.%) had

earned bachelor's degrees, 22.2% had earned Master's degrees, 20.4 % had completed Diploma programs, and 7.4% had earned doctoral degrees. In terms of training in AI, a majority of the teachers (72.2%) had no prior training in AI while 27.8% had some sort of AI training. Regarding grade level, most of the teachers (38.9%) indicated that they currently taught in elementary school, the same proportion (38.9%) in high school, while the remaining (22.2%) taught in middle school.

Table 2 *Demographics of the Teacher Respondents*

Variables	(*N* = 54)	
	Frequency	Percentage
Gender		
Male	32	59.3%
Female	22	40.7%
Education level		
Diploma	11	20.4 %
Completed Bachelor's degree	27	50.%
Completed Master's degree	12	22.2%
Completed PhD degree	4	7.4%
Grade level		
Elementary	21	38.9%
Middle	12	22.2%
High	21	38.9%
Training in AI		
Yes	15	27.8%
No	39	72.2%

Results Related to RQ1: To what extent do teachers' use AI tools in their teaching practices?

Teacher utilize of AI Tools Results

Table 3 reports the means and SD of the teachers' utilization of AI tools (TUOAT) scale results, which reflect the teachers' estimations of their expertise in the utilizing AI in their teaching. The item coded as (TUOAT -7): *AI tools reduce wasted time while teaching students with intellectual disabilities* yielded the highest mean score (*M* = 3.44) among all the TUOAT items. In contrast, the item coded as (TUOAT -1): *I have sufficient confidence in my ability to use AI tools in the classroom* indicated the lowest mean score (*M* = 3.13) among all other TUOAT items. Furthermore, the item coded as (TUOAT -6): *It is necessary to use AI tools to manage*

schools appropriately showed the greatest dispersion (*SD* = .873) among all other TUOAT items whereas the item coded as (TUOAT -5): *I actively seek out new AI tools to integrate into my teaching* indicated the least variation (*SD* = .496) among all TUOAT items.

Table 3 *Item Means and Standard Deviations (SD) of the Teacher Utilize of AI Tools (TUOAT) Scale.*

Item Code	Mean	SD
TUOAT -1: I have sufficient confidence in my ability to use AI tools in the classroom	3.13	.802
TUOAT -2: Incorporating AI tools into my teaching has allowed me to provide more personalized support	3.31	.668
TUOAT -3: Using AI tools is an essential part of my teaching practice	3.15	.684
TUOAT -4: I regularly use AI-based tools in planning and delivering my lessons	3.30	.662
TUOAT -5: I actively seek out new AI tools to integrate into my teaching	3.41	.496
TUOAT -6: It is necessary to use AI tools to manage schools appropriately	3.26	.873
TUOAT -7: AI tools reduce wasted time while teaching students with intellectual disabilities	3.44	.691
TUOAT -8: I believe AI tools will play an increasingly important role in the future of special education	3.43	.690

TUOAT = Teacher Utilize of AI Tools

Results Related to RQ2: What are the differences in teachers' perspectives toward the impact of using AI tools on their students' academic performance based on (gender, training, level of education and grade level)?

T-Test Results

The researcher conducted an independent t-test to determine whether there was a difference between male teachers and female teachers' responses in regards to using AI tools impacting their students' academic performance. From Table 4, independent t-test revealed that there was no statistically significant difference between male teachers (M = 38.65, SD = 5.24) and female teachers (M = 39.50, SD = 4.45) when inquiring about using AI tools impacting their students' academic performance t(52) = -.61-, p = .45. Moving on to the second variable, the researcher conducted an independent t-test to determine whether there was a

difference between teachers who had AI training and teachers who had no AI training when inquiring about using AI tools impacting their students' academic performance. The independent t-test revealed that there was a statistically significant difference when inquiring about teachers' training, t(52) = 3.38, p = .001, between teachers who had any AI training (M = 42.33, SD = 3.13) and no AI training (M = 37.71, SD = 4.89).

Table 4: *t-Tests for Teachers' Responses*

Variables		*N*	Mean	SD	*T*	Df	Sig.
Gender	Male	32	38.65	5.24	-.61-	52	.54
	Female	22	39.50	4.45			
Training	Yes	15	42.33	3.13	3.38	52	.00
	No	39	37.71	4.89			

Results of Analysis of Variance (ANOVA)

Results of a one-way ANOVA indicate that teacher's perspectives regarding the impact of using AI tools on their students' academic performance were statistically significantly different based on level of education, $F(3, 50) = 5.38$, $p = .003$. As shown in Table 5, teacher's perspectives were slightly different regarding the impact of using AI tools on their students' academic performance based on mean scores: doctoral ($M = 44$, $SD = .00$), master's ($M = 41.75$, $SD = 3.81$), bachelor's ($M = 36.88$, $SD = 4.60$), and diploma ($M = 39.36$, $SD = 5.06$). As shown in table 6, Bonferroni test analysis indicated that the mean teacher's perspectives regarding the impact of using AI tools on their students' academic performance who had bachelor's degrees were different from teachers who had master degrees (p = .015). Also, teacher's perspectives regarding the impact of using AI tools on their students' academic performance who had bachelor's degrees were significantly different from teachers who had doctoral degrees (p = .024).

Nonetheless, the findings on the grade level variable revealed that teachers' attitudes towards using AI tools affecting students' grades were not significantly different depending on what grade levels they taught, F(2, 51) = .22, p = .801 (see Table 5). Therefore, teachers' attitudes were somewhat different towards using AI tools affecting their students' grades: elementary school teachers (M = 39.14, SD = 4.97), middle school teachers (M = 38.16, SD = 4.64), and high school teachers (M = 39.33, SD = 5.18). The Bonferroni test was not necessary.

Table 5: *Analysis of Variance (ANOVA)*

Variable		*N*	Mean	SD		Sum of Squares	df	F	Sig.

Education Level	Diploma	11	39.36	5.06	Between G.	312.538	3	5.384	.003
	Bachelor's	27	36.88	4.60	Within G.	967.462	50		
	Master's	12	41.75	3.81	Total	1280.000	53		
	Doctoral	4	44	.00					
Grade Level Taught	Elementary	21	39.1429	4.97	Between G.	11.095	2	.223	.801
	Middle	12	38.16	4.64	Within G.	1268.905	51		
	High	21	39.33	5.18	Total	1280.000	53		

Table 6: *Post Hoc Analysis (Bonferroni Test)*

Variables		Mean Difference	Std. Error	Sig.
Education Level				
Diploma	Bachelor's	2.47475	1.57342	.732
	Master's	-2.38636-	1.83615	1.000
	Doctoral	-4.63636-	2.56833	.462
Bachelor's	Diploma	-2.47475-	1.57342	.732
	Master's	-4.86111-*	1.52613	.015
	Doctoral	-7.11111-*	2.35668	.024
Master's	Diploma	2.38636	1.83615	1.000
	Bachelor's	4.86111*	1.52613	.015
	Doctoral	-2.25000-	2.53964	1.000
Doctoral	Diploma	4.63636	2.56833	.462
	Bachelor's	7.11111*	2.35668	.024

	Master's	2.25000	2.53964	1.000

Results Related to RQ3: What is the relationships between teachers' using of AI tools and students' academic performance ?

Results of Correlation Test

A Pearson correlation analysis was conducted to examine the relationship between teachers' using of AI tools and students' academic performance The results indicated a strong and positive relationship between the two variables, r(52) = .68, p = .001.

Table 7: *Correlations between variables of interest.*

	Utilization of AI	Teaching Performance
Using of AI	.	
students' Academic Performance	.68**	.

**. Correlation is significant at the 0.01 level (2-tailed).

Results Related to RQ4: To what extent do teachers' perceptions of using AI tools predict students' academic performance?

The researcher used a simple linear regression to assess whether teachers' use of AI predicted students' academic performance in educational environments. Results shown in Table 8 indicate that teachers' use of AI significantly predicted students' academic performance, β = .793, $t(52) = 6.72$, $p < .001$. Additionally, regression results suggest that teachers' use of AI explained 46.5 % of the variance, R2 = . 465, $F(1,52) = 45.183$, $p < .001$ students' academic performance. Specifically, each additional unit in teachers' use of AI was associated with a .793-point increase in students' academic performance.

Table 8 *Linear Regression Analysis of Teachers' Use of AI*

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	T	Sig.
(Constant)	18.032	3.158		5.709	.000
Use AI	.793	.118	.682	6.722	.000

R Square = .465.

DISCUSSION

Q1

Results from this study revealed teachers responded at a moderate level to

implementing AI tools in their instruction with students who have intellectual disabilities. Educators responded that they felt AI tools helped with wasting less time during instruction. These results support the idea that AI-supported technology could be used to create efficient lessons in special education classrooms. This aligns with Chalkiadakis et al. (2024) who discovered that AI creates flexible and adaptable learning environments for students and allows for organized and efficient instruction.

Despite teachers' recognition of such benefits, they reported lower confidence in their ability to implement AI tools. Dwikat (2025) supports this finding indicating that teachers appreciate AI technology to various degrees; however, they are not confident enough to use AI because they do not have the appropriate. preparation. Hussein et al. (2025) also found that lack of teacher training was a main contributor. Together, these findings suggest that while teachers acknowledge the value of AI tools, their actual use remains constrained by confidence and professional readiness rather than resistance to technology.

Q2

The results revealed that teachers' gender was found to be insignificant to their perceptions.. Even though Elsayed and Alfawzan (2025) found differences in teachers' use of AI based on their gender, teachers' beliefs regarding AI impact on student academic performance does not seem to differ between male and female; particularly because AI tools has become more accessible and widely acknowledged and discussed in educational settings.

On the other hand, teachers who had training on AI held significantly more positive perceptions of its importance, use and effect on student academic performance than their counterparts who did not receive training. This result is highly consistent with Hussein et al. (2025) who found that teacher training played a crucial role in facilitating teachers to enable maximum learning outcome when using artificial intelligence teaching tools. To add to this, Sharma et al. (2023) found out that students with proper training in AI are able to incorporate their training ideas and procedures into their teaching and that their students' academic performance would be improved.

Teacher level of education was also found to play a crucial role in their perceptions. These differences may be attributed to the different levels of teachers' technological adaptability to apply new innovations during instructional time. Supporting this idea, Ferikoğlu and Akgün (2022) found that teachers with higher education levels were more flexible and adaptive when applying technological innovations during their instruction. Üretmen Karaoğlu and Doğan (2025) supported this notion by finding a statistically significant difference in scores regarding practical artificial intelligence knowledge in favor of teachers with doctoral degrees when compared to their less educated counterparts. Taken together, these studies showed that teachers with higher academic qualifications

may have more technological knowledge and be more adaptable to technology use.

Finally, grade level had no effect on teachers performance in classes they taught. Such results aligns with previous research revealing how AI tools can be tailored to students at different educational levels to aid students with intellectual disabilities (Ezzaim, et al., 2024; Chalkiadakis et al., 2024).

Q3

The answer to question three was concluded from a finding that revealed a highly significant positive correlation between the use of AI tools by teachers and students' academic performance. Numerous studies outlined in this review support this finding because they concluded that AI-based instruction was positively associated with students' academic performance among students with intellectual disabilities. For example, Deveci Topal et al. (2023) found that students' academic achievement was significantly improved through AI instruction using multimedia which also motivated them to learn. Additionally, Wu et al. (2025) found students had significantly better vocabulary and reading comprehension when they learned with the assistance of AI.

Students' academic performance improved because students with intellectual disabilities benefit more from lessons that are individualized, offer immediate feedback, and allow them to practice (Chemnad & Othman, 2024; Hussein et al. 2025). Aboulkheir (2025) found that AI tools also promote cognition such as short term memory which is known to have a strong association with academic achievement.

Q4

The regression analysis indicated that teacher's use of AI tools was able to predict student academic performance levels and accounted for a large amount of variance in student academic performance. These results align with experimental data showing academic improvements associated with AI use. For instance, Alsolami (2025) found that students who received instruction through an AI-based program significantly outperformed students who received traditional instruction. Similarly, academic performance and adaptive behavior were both improved through the use of AI-based programs (Al-Yamahi, 2025).

Teacher's use of AI tools predicting student academic achievement also aligns with studies showing the benefits of adaptive AI programs. Ezzaim, et al. (2024) found that when AI programs adapted to learners' needs, learners had better academic achievement and interaction. These studies have in common that AI tools positively affect student outcomes when they are used by teachers and intentionally incorporated into instruction. Hussein et al. (2025) argue this point by stating that the AI tool itself is not what matters, it is how teachers use the tool.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to determine teachers' use of AI tools in their practices; examine whether demographic variables (years of teaching experience and education level, gender, grade level) played a role in differentiating groups; find out whether teachers' use of AI tools are related to students' academic performance; and lastly determine whether teachers' perception in using AI tools predict students' academic performance significantly.

The results of this study revealed that AI use has a significant contribution to students' academic performance. The higher the use of AI tools by teachers, the higher the students with intellectual disabilities (ID) performed in school and it can also significantly predict their academic performance. The study supports what other literature has stated that students with ID benefit from using AI as it helps provide them with specific, individualized, adaptive, and fun ways of learning (Chalkiadakis et al., 2024; Alsolami, 2025).

There is another interesting result of the study related to teachers' variables and its an rule. Teachers who had knowledge on AI through training had significantly higher scores than teachers who had not received any training. This could indicate that teachers should be trained on how to use AI as well as the effects it has. There was also a significant difference when analyzing the teacher's education level. Perhaps teachers who pursued higher education gave better AI instruction to their students. No significant differences were found when looking at gender and what grade levels the participants taught. This study can help indicate that AI tools can be used throughout all levels with the correct knowledge and training.

To conclude, this study was able to show information that reinforce how AI can be used for students with intellectual disabilities. AI can not only be used as an intervention to help students with ID but can also have positive effects shown in their academic performance. More research should be conducted that looks at how teachers are trained to use AI. As a results, professional development seems vital when using AI in special education classrooms. Teachers should know how to use the tools and how they can be beneficial for their students. In addition, education policies and institutions infrastructure should be more developed to meet the needs of incorporating AI tools in the educational system. Teachers also should learn more about AI in their pre and during graduation programs. This will increase teachers' knowledge of AI before they start teaching.

longitudinal and experimental designs of research is important to verify the long term effects on the academic and social functioning of ID students when using AI. Future research can also tackle students and parents' perspectives when AI is introduced into special education.

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