The Reality of Utilizing Artificial Intelligence Tools in Teaching Performance from the Perspective of Teachers Who Teach Students with Intellectual Disabilities

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 study intended to explore the point of view of teachers of students with intellectual disabilities (ID) regarding the reality and extent of using artificial intelligence (AI) tools in their teaching performance in the central region of the Kingdom of Saudi Arabia (KSA). The participants were 54 special education teachers of students with ID who completed an online survey. Results showed that teachers agreed on the notion that AI tools can reduce the loss of instructional time. However, some teachers had low confidence in their ability to use AI tools. Moreover, the results demonstrated that no statistically important distinctions were noted in teachers' performance utilizing AI tools based on gender or most grade levels taught. However, significant differences emerged based on training status, with teachers who received AI training demonstrating higher teaching performance than those without training. Also, the results revealed that there were significant differences between teachers with bachelor's degrees and those with doctoral degrees. Additionally, a strong and positive correlation was identified between teachers' utilization of AI tools and their teaching performance.

Keywords: special education, intellectual disability, artificial intelligence, teaching performance.

INTRODUCTION

The current period is going through a prominent knowledge and technology revolution, in which innovative and new technologies have emerged, different than all other existing knowledge, which have succeeded in changing and transforming the style of work, education, and life. AI technologies, as one of the most important and effective technological innovations, have become one of the most important engines of movement and development in many fields and sectors, including the educational sector. These technologies have advanced capabilities to analyze, interpret and simulate data, as well as the personalization of educational content to suit each learner according to his or her needs, and provide solutions to some of the problems of the educational process and propose appropriate solutions to them (Salama, 2021; Rabie & Abdul Fattah, 2024).

AI has enabled the development of intelligent, interactive, and supportive learning environments, especially within the educational environment, opening up new horizons for exploratory and experience-based learning. In this context, many studies have highlighted the role of these technologies in improving student motivation, the quality of learning, and in providing an extensive range of tools and technological applications, including intelligent feedback systems, digital assistants, and digital platforms (Salama, 2021; Rabie & Abdul Fattah, 2024). In addition, Lampropoulos (2025) stated that the integration of AI with other learning technologies, such as augmented and virtual reality, will lead to a qualitative leap in terms of teaching methods and modern learning strategies.

In the special education context, there is a great need to work on benefiting from AI tools when working with students with intellectual disabilities, as these students experience learning difficulties and need accurate and flexible educational interventions. The students with ID need educational programs that consider individual differences and employ repetition techniques and segmentation in addition to visual and auditory support, all of which AI can provide for them. Dumitru, Muttashar Abdulsahib, Ibrahim Khalaf & Bennour (2024) clarified the need to use AI to improve the lives of people with ID by providing them with different educational tools, such as interactive robots that work to develop social and cognitive skills for these students and enable them to interact with others using real scientific experiments. AI technologies can also have promising capabilities, such as developing tools able to analyze the behavior of learners and designing personalized educational content for each student to be in line with their abilities, learning speed, and individual interests (Chemnad & Othman, 2024; Hussein, Hussein & Al-Hendawi, 2025).

In this regard, Chalkiadakis et al., (2024) and Bridges et al., (2022) showed that the use of interactive applications based on virtual and augmented reality positively affected improving communication and self-reliance among students with intellectual disabilities. In the same way, Ramya and Shanthi (2025) confirmed that the use of AI technologies by teachers worked to improve the academic and social aspects of students in school classrooms.

For these reasons, it becomes necessary to research the reality of AI tools used in the performance of teaching from the point of view of teachers working with students with intellectual disabilities since they are the primary implementers of any technical trends within the classroom.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

AI is one of the fields of computer science that aims to develop systems that can perform tasks using human intelligence. Relying on these systems and their technologies, and through analyzing the available data, they have contributed effectively in many ways to making decisions similar to those taken by humans. The term "artificial intelligence" when applied to the field of education refers to the use of advanced systems and software to facilitate and develop the educational process and enhance the interaction between students and teachers. AI in education depends on many tools that have contributed to effective improvement in learning outcomes and enabling innovative interaction with students in an intelligent and independent way. The most important tools are :

1. Adaptive Learning Systems: Systems that are used to adapt educational content to the level and capabilities of the student.

2. Educational Robots: Robots that can be used to stimulate the social skills of students, or support interaction in learning through new and interactive techniques.

3. Predictive Learning: To help analyze the performance of students and predict potential learning problems to prevent and treat them early, in accordance with each student individually.

4. Digital Assistants: Systems such as ChatGPT and text-to-speech or automatic-speech which provide direct support for students during the learning process and help improve their language skills, while providing advanced technology, as well as providing individualized educational content and feedback (Gyonyoru, 2024; Janahi & Obeidat, 2025; Slavova, 2023; Symeonidou, 2025).

Malik, Tayal, and Vij (2019) add to this by asserting that there have been attempts to incorporate intelligent technologies in educational systems and have played an effective role in improving educational outcomes.

AI tools are also utilized to improve the quality of education by creating interactive learning environments, and personalizing the content to meet the needs of each student, in a manner that contributes to the deepening of his understanding and bridging educational gaps, all of which is known as (personalized learning) particularly in the case of classrooms that include students with special needs (Ober et al., 2023). AI systems also provide a great deal of flexibility in the development of innovative educational strategies that are aimed at supporting students in their academic skills, as well as their social skills, in safe and interactive environments (Chalkiadakis et al., 2024). In other words, and to improve the quality of overall education, such technologies can help teachers track their students' progress and, when needed, provide them with immediate feedback.

In the same vein, Garg and Sharma (2020) attempted to verify this role in an Indian context and collected data through interviewing teachers of students with special needs and using content analysis as well. Findings of the study showed that through implementing AI technologies such as interactive educational games and robots helped in facilitating students' learning process. Furthermore, this allowed support for inclusive education as well as the support of students with intellectual disabilities in developing their academic and social skills. Moreover, it gave teachers and parents opportunity to fill in the gaps in students' education through adapting activities used in education to students' needs and support them individually.

Furthermore, Leichert et al. (2025) highlighted how using AI could be beneficial in educating students with intellectual disabilities. Their study findings showed that AI tools offer custom-made and flexible educational resources that can be adapted to meet students' different needs. This includes adapting and personalizing content that is delivered to students during education depending on their level and abilities. Also, this allowed students to learn by themselves as AI provided them with the opportunity to explore and manage their own learning. Students then were able to interact with the content they are learning at their own pace rather than abide by the course time schedule that a classroom setting provides. This helped students improve their independence and motivation.

As a result, it can be seen that using AI for students with special needs is starting to become pivotal. It allows students to get the support they may need by tailoring the content and assessments to fit students' needs and differences. (Alsudairy & Eltantawy, 2024) This is especially important for students with intellectual disabilities because they have significant deficits in their cognitive ability. This makes it difficult for them to learn and process new information which affects their academic achievement when compared to other regular students. These students require educational courses that are individualized to fit their needs and abilities. AI could help improve such courses that can help them interact with the academic content as well as their social skills.

To support the above idea, Alqahtani (2025) and Alsolami (2025) found that AI can be an effective tool for enhancing the quality of education of students with intellectual disabilities. For instance, a teacher can use an intelligent system to monitor the students and provide immediate feedback on their progress to improve their teaching strategies and provide appropriate support. Moreover, Alhajeri and Alotaibi (2024) advised that these tools can be used to provide a rich learning experience for students with intellectual disabilities, which will allow them to keep up academically and socially with their peers.

In the same context, there are some studies and research that were conducted in the Arab world and identified similar realities as those of the main study, yet their degree of

circulation was less. In Egypt, Makary and Agwa (2023) revealed that teachers have positive and optimistic attitudes towards these tools and systems in equipping students with autism and ID in educational systems, however, the level of implementation and dissemination of these technologies was low, despite the high level of awareness among teachers. In Kuwait, Alhajeri and Alotaibi (2024) found that the actual use of the technologies under study was moderate, with only around 57% of the teachers being aware of AI educational tools and 97% having received no adequate training and not utilizing them at the classroom level. In Saudi Arabia, Alqahtani (2025) and Alswilem (2019) found that although teachers are aware of and have a good opinion about the significance of these technologies in education, the actual level of their use is also low due to the obstacles that the school environment has set. In Jordan, Najadat and Obeidat (2024) pointed out in their study that the teachers appreciate the important role of intelligent technologies in the teaching-learning process but also stated that there were some fundamental hindrances on the part of the infrastructure and training, which restricted their use to a greater or lesser degree.

As a result of the prior researches, it can be concluded that AI is a source of strength in enabling better learning outcomes for this group of students with ID, as it is able to offer solutions tailored to each student's needs and challenges, so that can progress with a support academic and social skills, and in addition to that AI help to ease communication between students and teachers and peers in the school which boost their rate of participation and engagement in the school community. For all these reasons, and that makes AI very important to know the level of utilization for AI tools by teachers of students with intellectual disabilities.

Definitions of Terms

Special education: it is defined as specialized support and services for qualified learners with disabilities. 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: it is defined as the significant limitations and weaknesses in both intellectual functioning and adaptive behavior. The intellectual performance of the individual, aged 18 or less, is evidently proved to be less than the average and accompanied by two or more social and practical skills (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).

Teaching performance: it is defined as the observable teachers' behaviors, practices and decisions that contribute to students' achievement and instructional quality (Marzano & Constant, 2017).

Statement of the problem

AI has been widely acknowledged as a catalyst of change that could lead to a paradigm shift in educational practices. A growing body of research evidence has shown the potential of AI to assist teachers in various aspects of their work, including but not limited to lesson planning, personalized student assessments, real-time feedback, and classroom management. While there is a growing awareness of AI's potential to support and enhance teachers' effectiveness and instructional quality, the actual integration and use of AI technologies in daily teaching practice remain less than ideal.

On one hand, teachers seem to understand the value of AI tools to support teacher performance. However, AI tools are not used as routinely and frequently as they can be. A possible reason for this is that teachers are not professionally trained on how to utilize AI to improve their performance. Studies found that teachers believe they don't have the

knowledge or skill set to feel confident to use AI tools. This is not due to a lack of belief in the ability of AI to support them, but many teachers don't have the resources or support and don't know how to take the potential of AI and put it into action and practice in a way that clearly and directly aligns with improving teaching quality.

Technology infrastructure issues have also been found to limit the use of AI in teaching. Thus far, even though AI has the ability to help teachers personalize learning for their students, reduce workload, and help students, AI's effect on teacher performance has been minimal. This lack of knowledge and practice on how AI can impede teachers from improving their performance and develop the required knowledge regarding the potential of AI.

Having such a gap in knowledge and practice, there is a need to further examine the issue of how AI can be integrated into teachers' practice, to what extent it can improve their performance, and how to overcome the existing barriers to its adoption in the classroom.

Purpose of the study

The rationale behind this study was to conduct original research on an emerging and critical topic, which is understanding the reality of utilizing artificial intelligence tools in teaching performance from the perspective of teachers who teach students with Intellectual Disabilities. Therefore, this study mainly aimed to determine the level of teachers' utilization of AI tools in their teaching practices. In addition, the differences in teachers' responses regarding the utilization of AI tools in their teaching performance based on some demographic variables (gender, training, level of education and grade level) have been identified. Finally, the relationships between teachers' utilization of AI tools and their teaching performance have been also determined. Thus, the findings of this research will help in bridging the knowledge gap and offering new insights that can be instrumental in formulating educational policies and practices, guiding classroom efforts, and empowering teachers to effectively utilize artificial intelligence. This will also allow policymakers and researchers to build more realistic and applicable strategies.

Research Questions and Analyses

The following research questions have been postulated to guide the current study: What is the reality of utilizing AI tools in teaching performance from the perspective of teachers who teach students with intellectual disabilities? Three sub-questions were addressed in this study:

1. To what extent do teachers utilize AI tools in their teaching practices?
2. Are there statistically significant differences in teachers' performance utilizing AI tools based on (gender, training, level of education and grade level)?
3. What is the relationship between teachers' utilization of AI tools and their teaching performance?

METHOD

Research Design and Sampling

This study used a non-experimental cross-sectional survey to collect data. Creswell and Creswell (2017) clarified that the descriptive survey method is based on scientific analysis to explore the problem or confirm the existence of the phenomenon under study and is one of the most used methods in social and human sciences, especially in studies involving the realities of individuals and institutions. This method is distinguished by its ability to compare and assess variables or problems, and to identify relationships between them. The descriptive survey method is suitable for this study because it contains questions related to several variables. Therefore, an electronic survey was used to identify the level of utilization

of AI tools in their teaching practices by teachers of students with ID, as well as to uncover the differences in their responses regarding the utilization of AI tools in their teaching performance based on demographic characteristics (gender, training, level of education and grade level). Also, to gain deep understanding of the relationships between teachers' utilization of AI tools and their teaching performance.

The questionnaire comprises 18 questions which are subdivided into two sections: teachers' utilization of AI tools and teachers' teaching performance. Each section contained certain questions about AI which were answered by special education teachers. Simple random sampling was used in this study. It is one of several quantitative sampling strategies that is used within probability sampling. This was the most popular quantitative strategy of probability sampling from a population in the study, and it offered equal chance to all teachers of Qassim State to be selected from the population and be involved in the study (Creswell, 2012). A 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.

Instruments

The researcher utilized two instruments to collect data from the participants: a demographic information questionnaire and a survey. The items of the first tool tackled gender, training, level of education, and grade level. The second instrument developed by the researcher aimed to measure the reality of utilizing AI tools by teachers of students with ID in their teaching performance. It was developed based on the study's objective, methodology, and population and includes 18 items divided into two sections: teachers' utilization of AI tools in terms of teaching 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	Teaching Performance	Consistency Coefficients
1	.709**	1	.914**
2	.817**	2	.807**
3	.839**	3	.986**
4	.631*	4	.891**
5	.924**	5	.986**
6	.696**	6	.891**
7	.812**	7	.585*
8	.746**	8	.914**
		9	.986**
		10	.891**

**. 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 shows the internal consistency/reliability in Cronbach's alpha conducted for each major variable scale and on the entire scale. The results revealed that the utilization of AI tools scale (a=.89) and the teaching performance scale (a=.94), 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 utilization of AI Tools	8	.89
Teaching Performance	10	.94
Total	18	.93

Data Analysis

To address RQ1, the researcher conducted descriptive statistics (frequencies, mean, standard deviation (SD), and percentage) for all the variables. RQ2 also involved exploring the difference using some variables, such as gender and training in AI. The researcher conducted a t-test of independent samples since the gender variable involved two groups (males and females) and the training variable also involved two groups (yes and no). The researcher ran a comparative analysis using ANOVA for the education level and grade level variables to identify differences in teachers' responses towards the utilization of AI tools in their teaching performance. As for RQ3, the researcher conducted a Bivariate Correlation test since this was the appropriate test to measure the relationship between the two quantitative variables: teachers' utilization of AI tools (IV) and teaching performance (DV).

RESULTS

Descriptive Analysis Results

Table 2 also presents the demographic characteristics of 54 special education teachers who worked with students with ID in the central region of Saudi Arabia. In terms of gender, (59.3%) of the teachers who completed the survey were male while 40.7% were female. Furthermore, most of the teachers (50%) earned bachelor's degrees, 22.2% had earned master's degrees, 20.4 % had completed Diploma programs, and 7.4% had earned doctoral degrees. Regarding training in AI, most of the teachers (72.2%) had not received any training in AI whereas 27.8% had received some AI training. In terms of grade level, most of the teachers (38.9%) indicated that they are currently teaching in elementary school, 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 utilize AI tools in their teaching practices?

Teacher utilization of AI Tools Results

Table 3 reports the means and SD for the results of the teachers' utilization of AI tools (TUOAT) scale, which are used to measure the teachers' perceptions of their skill in using AI for teaching. The item coded as (TUOAT -7): *AI tools reduce wasted time while teaching students with intellectual disabilities* had the highest mean score (M = 3.44) among all the TUOAT items and the item coded as (TUOAT -1): I have sufficient confidence in my ability to use AI tools in the classroom had the lowest mean score (M = 3.13) among all the other TUOAT items. In addition, the item coded as (TUOAT -6): It is necessary to use AI tools to manage schools appropriately had the greatest dispersion (SD = .873) among all the other TUOAT items and the item coded as (TUOAT -5): I actively seek out new AI tools to integrate into my teaching had 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: Are there statistically significant differences in teachers' performance utilizing AI tools based on (gender, training, level of education and grade level)?

T-Test Results

An independent t-test was also conducted to explore if there is any difference between male and female teachers on their teaching performance utilizing AI tools. According to the results in Table 4, the independent t-test showed that there was no significant difference between males (M = 35.53, SD = 4.57) and females (M = 34.63, SD = 3.25) on their teaching performance utilizing AI tools, t(52) = .789, p = .43. For the second variable, the researcher conducted an independent t-test to explore if there is any difference in teacher's teaching performance utilizing AI tools between teachers who had any AI training and those who had no AI training. Thus, the independent *t*-test showed that there was a statistically significant difference in teacher's teaching performance utilizing AI tools, t(52) = 4.11, p = .001, between teachers who had any AI training (M = 38.40, SD = 3.31) and teachers who had no AI training (M = 33.92, SD = 3.67).

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

Variables		N	Mean	SD	*T*	Df	Sig.
Gender	Male	32	35.53	4.57	.789	52	.43
	Female	22	34.63	3.25			
Training	Yes	15	38.40	3.31	4.11	52	.00
	No	39	33.92	3.67			

Results of Analysis of Variance (ANOVA)

The results of one-way ANOVA revealed that the teacher's teaching performance utilizing AI tools were statistically significantly different based on their level of education, F (3, 50) = 4.42, p = .008. As shown in Table 5, the teachers' teaching performance utilizing AI tools were slightly different based on the education level mean scores: doctoral (M = 40, SD = .00), master's (M = 37, SD = 4.36), bachelor's (M = 33.81, SD = 3.75), and diploma (M = 34.72, SD = 3.49). In contrast, as shown in Table 6, the results of the Bonferroni test analysis revealed that there was only one statistically significant difference between the teachers' levels of teaching performance utilizing AI tools based on their educational level. The teachers who had bachelor's degrees were significantly different (p = 0.02) from the teachers who had doctoral degrees. However, there was no statistically significant difference between other teachers' education levels.

In contrast, the results on the grade level variable revealed that the teachers' teaching performance utilizing AI tools were not statistically significantly different based on the grade levels they taught, F (2, 51) = .15, p = .85, as shown in Table 5. Thus, the teachers' teaching performance utilizing AI tools were slightly different based on the mean scores: elementary school (M = 34.80, SD = 3.80), middle school (M = 35.16, SD = 4.28), and high school (M = 35.52, SD = 4.40). In contrast, the results of the Bonferroni test analysis were not needed.

Table 5: *Analysis of Variance (ANOVA)*

Variable		*N*	Mean	SD		Sum of Squares	df	F	Sig.
Education Level	Diploma	11	34.72	3.49	Between G.	185.244	3	4.422	.008

	Bachelor's	27	33.81	3.75	Within G.	698.256	50		
	Master's	12	37	4.36	Total	883.500	53		
	Doctoral	4	40	.00					
Grade Level Taught	Elementary	21	34.80	3.80	Between G.	5.357	2	.156	.856
	Middle	12	35.16	4.28	Within G.	878.143	51		
	High	21	35.52	4.40	Total	883.500	53		

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

Variables		Mean Difference	Std. Error	Sig.
Education Level				
Diploma	Bachelor's	.91246	1.33671	1.000
	Master's	-2.27273-	1.55991	.908
	Doctoral	-5.27273-	2.18193	.116
Bachelor's	Diploma	-.91246-	1.33671	1.000
	Master's	-3.18519-	1.29653	.105
	Doctoral	-6.18519-*	2.00213	.020
Master's	Diploma	2.27273	1.55991	.908
	Bachelor's	3.18519	1.29653	.105
	Doctoral	-3.00000-	2.15755	1.000
Doctoral	Diploma	5.27273	2.18193	.116
	Bachelor's	6.18519*	2.00213	.020
	Master's	3.00000	2.15755	1.000

Results Related to RQ3: What is the relationship between teachers' utilization of AI tools and their teaching performance?

Results of Correlation Test

A Pearson correlation analysis was conducted to examine the relationship between teachers' utilization of AI tools and their teaching performance. The results indicated a strong and positive relationship between the two variables, $r(52) = .65$, $p = .001$.

Table 7: *Correlations between variables of interest.*

	Utilization of AI	Teaching Performance
Utilization of AI	.	
Teaching Performance	.65**	.

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

DISCUSSION

Following is a discussion of the results obtained. Discussion is presented based on research questions and the relationship with the literature review presented earlier.

RQ1

Most of the teachers agreed with the statement that *AI tools reduce wasted time while teaching students with intellectual disabilities* while others disagreed with the statement, *I have sufficient confidence in my ability to use AI tools in the classroom.* because the importance of this finding is that it aligns with previous research indicating that AI enhances teachers' ability to track students' progress, provide immediate feedback, and deliver flexible and customizable instructional solutions, ultimately reducing time spent on routine tasks (Alqahtani & Alsolami, 2025; Chalkiadakis et al., 2024; Leichert et al., 2025). However, similar to the results reported by Alhajeri and Alotaibi (2024) and Najadat and Obeidat (2024), many teachers still lack sufficient knowledge and confidence in utilizing AI. This lack of knowledge may contribute to several challenges, particularly those associated with inadequate infrastructure and limited training opportunities.

Q2

The results of the second research question showed no statistically significant difference between male and female teachers regarding their utilization of AI tools scores based on gender. However, there was an unequal distribution of gender in the sample as 59.3% was male. The results obtained could be attributed to such reason. On the other hand, there was a statistically significant difference in teachers' teaching performance utilizing AI tools based on training. Most of the teachers (72.2%) did not receive any training while (27.8%) had received some AI training. However, there was an unequal distribution of training in AI as 59.3% of the reported sample was male; this could be the reason why a statistically significant difference was observed. These findings align with the results obtained by Alhajeri and Alotaibi (2024) which was (97%) regarding the training factor. This indicates that professional development could be a main factor in which AI can be efficiently utilized in teaching. In other words, education and training are crucial for the teachers to incorporate AI and to have optimal skills of using the AI during the teaching process. According to these results, more training and professional development in the AI tools will also lead to better teaching performance. This is an important factor as it has great impact on teachers, especially their readiness and capabilities to integrate AI during the instruction. As a result, more training and professional development in AI should be taken in schools, institutions, and organizations to make the teachers enhance their knowledge in the AI tools which will provide a high standard of teaching with the integration of AI and increase the readiness and efficiency in the utilization of AI during the teaching process.

The current study showed that teachers' teaching performance utilizing AI tools were statistically significantly different based on their levels of education, $F(3, 50) = 4.42$, $p = .008$. Comparison of teachers' performance utilizing AI tools scores showed that teachers who had bachelor's degrees were significantly different ($p = 0.02$) from teachers who had doctoral degrees. This might be interpreted as that graduate programs give students more opportunities to work with the latest and current technologies. This is in line with previous studies by Üretmen Karaoğlu and Doğan (2025) indicated that there was a statistically significant difference in practical AI knowledge scores between teachers who earn doctoral degrees than others. On the other hand, Ferikoğlu and Akgün (2022) found that more educated teachers were more flexible at adapting to technological innovations.

The current study revealed that grade level had no statistically significant difference on students results, $F(2, 51) = .15$, $p = .85$. This might be attributed to the unequal distribution of grade levels in the sample of the study as only (38.9%) of the teachers taught elementary school and high school. Therefore, small size of the sample could be the reason. This is consistent with the studies of Demiröz and Türker (2020) and Üretmen Karaoğlu and Doğan (2025) which found out that there was no statistically significant difference in teachers' AI knowledge based on the grade levels they taught. Teachers' interest in AI may

have less to do with what grade levels they teach and more to do with their personal interest and experience with new technologies.

RQ3

Results from this study revealed that teachers' use of AI tools positively correlated with their teaching performance, r (52) = .65, p = .001. Teachrs' perception of the use AI tools quite matches their perceptions of performance. Increased integration of AI may have a relation to effective instruction. This finding is consistent with prior literature that revealed how AI can help teachers increase their instruction efficiency by improving their capabilities to deliver lessons, allow for more differentiation during instruction, and assess students. When used properly, these components can lead to an increase in teaching performance and quality of education (Alqahtani & Alsolami, 2025; Chalkiadakis et al., 2024; Leichert et al., 2025). Additionally, all of these studies mentioned how the ability for teachers to use AI to track student progress and provide feedback as well as effectively manage the classroom allows for teachers to more effectively teach.

CONCLUSIONS AND RECOMMENDATIONS

The current study sought to determine teachers' levels of utilization of AI tools in their teaching performance; the role of demographic variables in identifying the differences in the performance; and the relationship between the AI utilization and the performance of teachers of students with intellectual disabilities.

The results of the study were quite positive since it showed teachers' agreement regarding the idea that AI tools help save time and make instructional tasks easier for students with intellectual disabilities. However, many teachers had low confidence in their ability to use AI tools, and pertaining this to the lack of skills and in service-training.

The findings also revealed that while gender has no impact in teachers' performance, there was a statistically significant difference in the performance of teaching when using AI tools by training status since trained teachers reported higher levels of teaching performance than untrained teachers.

As for the educational degree, results of the study revealed that educational level may affect comfort or effectiveness when using AI tools since teachers with higher levels of education outperformed those with just bachelor's degrees.

 On the other hand, even though grade level taught had no statistically significant overall effect on the performance of teaching, there was a significant difference between teachers teaching at the elementary and high school levels compared to those teaching in the middle school level. Finally, the study showed a strong and positive correlation between teachers' utilization of AI tools and the performance of teaching, suggesting that increased and effective use of AI tools is associated with improvements in instructional quality and outcomes for students with intellectual disabilities.

Furthermore, different research methods can be applied to confirm the usefulness of AI and the reality of such utilization when teaching students with intellectual disabilities. larger studies with bigger sample size is essentially needed so that the findings and conclusions can be generalized and reinforced to a more extent. This can also help address any statistical discrepancies or gaps that may exist.

Implications for practice can be made from this study. Schools should offer training on how to use artificial intelligence tools and technologies to increase teachers' comfort level and skills which should be part of their professional development. Technical support, tools, and resources need to be provided to teachers for classroom use. Teacher preparation programs should include artificial intelligence skills in their curriculum to help prepare

teachers for what they will need in the classroom. More support should be given to the grade levels that scored lower on this survey (i.e., middle school teachers). School administrators should work to implement artificial intelligence in purposeful and meaningful ways to help teachers with instructional practices and strategies to help their students with intellectual disabilities.

References
1. Alhajeri, O. N., & Alotaibi, A. H. (2024**).** The level of perceptions and
2. effectiveness of using artificial intelligence applications in developing the academic and social skills of students with autism spectrum disorder from the perspective of their teachers. *The Saudi Journal of Special Education, 31*, 58–117. Retrieved from https://doi.org/10.33948/1640-000-031-003
3. Alqahtani, S. S. (2025). Saudi teachers' perceptions on pedagogical
4. affordances of digital applications in teaching students with learning disabilities. *Interactive Learning Environments, 33*(2), 1505–1519. Retrieved from https://doi.org/10.1080/10494820.2024.2372643
5. Alsudairy, N. A., & Eltantawy, M. M. (2024). Special education teachers'
6. perceptions of using artificial intelligence in educating students with disabilities. *Journal of Intellectual Disability–Diagnosis and Treatment, 12*(2), 92–102. Retrieved from https://doi.org/10.6000/2292-2598.2024.12.02.5
7. Alsolami, A. S. (2025). The effectiveness of using artificial intelligence in
8. improving academic skills of school-aged students with mild intellectual disabilities in Saudi Arabia. *Research in Developmental Disabilities, 156*, 104884. Retrieved from https://doi.org/10.1016/j.ridd.2024.104884
9. Alswilem, D. A. A. M. (2019). Saudi English teachers' use of technology
10. in secondary classrooms: Perceptions, barriers, and suggestions for improvement. *Advances in Language and Literary Studies, 10*(6), 168–178. Retrieved from http://dx.doi.org/10.7575/aiac.alls.v.10n.6p.168
11. Bridges, S. A., Robinson, O. P., Stewart, E. W., Kwon, D., & Mutua, K.
12. (2020). Augmented reality: Teaching daily living skills to adults with intellectual disabilities. *Journal of Special Education Technology, 35*(1), 3–14. Retrieved from https://doi.org/10.1177/0162643419836411
13. Chemnad, K., & Othman, A. (2024). Digital accessibility in the era of
14. artificial intelligence Bibliometric analysis and systematic review. *Frontiers in Artificial Intelligence.* Retrieved from https://doi.org/10.3389/frai.2024.1349668
15. Chalkiadakis, A., Seremetaki, A., Kanellou, A., Kallishi, M.,
16. Morfopoulou, A., Moraitaki, M., & Mastrokoukou, S. (2024). Impact of artificial intelligence and virtual reality on educational inclusion: A systematic review of technologies supporting students with disabilities. *Education Sciences, 14*(11), 1223. Retrieved from https://doi.org/10.3390/educsci14111223
17. Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.
18. Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications
19. Demiröz, H., & Türker, F. (2020). EFL instructors' perceptions and
20. attitudes towards using CALL in language classrooms. *Cumhuriyet International Journal of Education, 9*(1), 291–307. Retrieved from https://dergipark.org.tr/en/download/article-file/1012728
21. Dumitru, C., Muttashar Abdulsahib, G., Ibrahim Khalaf, O., & Bennour,

A. (2024). Integrating artificial intelligence in supporting students with disabilities in higher education: An integrative review. *Technology and Disability, 0*(0), 1–22. Retrieved from https://doi.org/10.1177/10554181251355428

22. Ferikoğlu, D., & Akgün, E. (2022). An investigation of teachers' artificial
23. intelligence awareness: A scale development study. *Malaysian Online Journal of Educational Technology, 10*(3), 215–231. Retrieved from
http://dx.doi.org/10.52380/mojet.2022.10.3.407
24. Garg, S., & Sharma, S. (2020). Impact of artificial intelligence in special
25. need education to promote inclusive pedagogy. *International Journal of Information and Education Technology, 10*, 523–527. Retrieved from
https://doi.org/10.18178/ijiet.2020.10.7.1418
26. Gil de Zúñiga, H., Goyanes, M., & Durotoye, T. (2024). A scholarly
27. definition of artificial intelligence (AI): Advancing AI as a conceptual framework in communication research. *Political Communication, 41*(2), 317–334. Retrieved from
https://doi.org/10.1080/10584609.2023.2290497
28. Gyonyoru, K. I. K. (2024). The role of AI-based adaptive learning systems
29. in digital education. *Journal of Applied Technical and Educational Sciences, 14*(2), 380–380.
https://doi.org/10.24368/jates380
30. Hussein, E., Hussein, M., & Al-Hendawi, M. (2025). Investigation into the
31. applications of artificial intelligence (AI) in special education: A literature review. *Social Sciences, 14*(5), 288. Retrieved from https://doi.org/10.3390/socsci14050288
32. Janahi, Y., & Obeidat, M. (2025). *Predictive analytics and AI in education:*
33. A systematic literature review on identifying and supporting at-risk students (SSRN Working Paper No. 5240920). SSRN. Retrieved from https://doi.org/10.2139/ssrn.5240920
34. Lampropoulos, G. (2025). Combining artificial intelligence with
35. augmented reality and virtual reality in education: Current trends and future perspectives. *Multimodal Technologies and Interaction, 9*(2), 11. Retrieved from
https://doi.org/10.3390/mti9020011
36. Leichert, J., Koke, M., Wrede, B., & Richter, B. (2025). Virtual agent
37. tutors in sheltered workshops: A feasibility study on attention training for individuals with intellectual disabilities. *arXiv Preprint arXiv:2504.06031.* Retrieved from
https://arxiv.org/abs/2504.06031
38. Makary, N. M. G., & Agwa, M. S. S. (2023). The reality of employing
39. artificial intelligence applications and its challenges in the habilitation of children with special needs (autism spectrum disorder – intellectual disability) from the point of view of teachers and specialists. *Journal of Scientific Research in Education, 24*(1), 70–146. Retrieved from https://doi.org/10.21608/jsre.2023.199369.1545
40. Malik, G., Tayal, D. K., & Vij, S. (2019). An analysis of the role of
41. artificial intelligence in education and teaching. In P. K. Mohapatra & S. C. Satapathy (Eds.), *Recent findings in intelligent computing techniques: Proceedings of the 5th ICACNI 2017, Volume 1* (pp. 407–417). Springer Singapore. Retrieved from https://doi.org/10.1007/978-981-10-8639-7_42
42. Marzano, R. J., & Constant, C. (2017). *The new art and science of teaching* (Vol. 30). Solution Tree Press.
43. Ministry of Education of Saudi Arabia. (2018). *General Department of Special Education.* Retrieved From
https://departments.moe.gov.sa/EducationAgency/RelatedDepartments/SPECIALED UC ATION/Pages/Hearingdisability.aspx
44. Najadat, M. M., & Obeidat, K. A. (2024). The reality of employing

45. artificial intelligence applications and its challenges in teaching people with learning disabilities from the point of view of teachers (SDGs). *Journal of Lifestyle and SDGs Review, 4*(4), e02939. Retrieved from https://doi.org/10.47172/2965-730X.SDGsReview.v4.n04.pe02939

46. Ober, T. M., Lehman, B. A., Gooch, R., Oluwalana, O., Solyst, J., Phelps, G., & Hamilton, L. S. (2023). Culturally responsive personalized learning: Recommendations for a working definition and framework. *ETS Research Report Series, 2023*(1), 1–14. Retrieved from https://doi.org/10.1002/ets2.12372

47. Rabie, I. H. M., & Abdel Fattah, L. I. A. (2024). The pros and cons of artificial intelligence in quality education: An

48. analytical study. *Scientific Journal Research in the Specific Sciences and Arts, 12*(21), 1–15. Retrieved from https://doi.org/10.21608/BALEXU.2024.369570

49. Ramya, M., & Shanthi, R. (2025). Teacher perceptions of AI-enhanced educational technology for children with multiple disabilities. *Journal of Information Systems and Educational Management, 14*(1), 55–73. Retrieved from https://doi.org/10.52783/jisem.v10i18s.2942

50. Salama, R. A. (2021). Artificial intelligence in education: Opportunities and challenges in personalized learning. *Education and Information Technologies, 26*(2), 1985–2002. Retrieved from https://doi.org/10.1007/s10639-020-10321-2

51. Slavova, N. (2023). ChatGPT: Personal digital assistant in foreign language learning. Retrieved from https://doi.org/10.70456/KTAW5886

52. Symeonidou, E. (2025). Inclusive digital education: The role of social robots. European Schoolnet. Retrieved from https://www.eun.org

53. Üretmen Karaoğlu, S., & Doğan, C. (2025). EFL teachers' insights on incorporating AI in language education. *Journal of Theoretical Educational Science, 18*(3), 630–657. Retrieved from https://doi.org/10.30831/akukeg.1644354

54. Yell, M. L. (2016). *The law and special education* (4th ed.). Upper Saddle River, NJ: Pearson   Education, Inc.