

The Reality and Challenges of Using Artificial Intelligence Applications in Supporting Students with Learning Difficulties: From the Perspective of Teachers at Private Centers

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Abstract:

This study aimed to investigate the reality and challenges of using artificial intelligence (AI) applications in supporting students with learning difficulties, from the perspective of teachers at private centers in the city of Saida. The sample consisted of 70 teachers from specialized centers. The study employed a descriptive method, using a questionnaire as the tool for data collection. The study yielded the following results:

- The level of awareness among teachers at specialized centers regarding the importance of using AI technologies to support students with learning difficulties was high.
- No significant differences were found between male and female teachers in their perceptions of the importance of using AI applications for supporting students with learning difficulties. However, the study indicated statistically significant differences attributed to professional experience, favoring teachers with more than six years of experience.
- There are also obstacles that limit the use of AI applications by teachers.

Keywords: Artificial intelligence applications, supporting students with learning difficulties, teachers at private centers.

1. Introduction

Technology has significantly contributed to the enhancement of learning through various methods, particularly in light of the rapid development in the fields of information technology and computer software. Among the most notable developments is the use of artificial intelligence applications across several domains, especially in education and teaching, both for mainstream learners and for individuals classified within special education categories. AI-based educational programs, also known as intelligent tutoring systems, can help students with special needs adapt to educational content, understand it, and acquire life skills.

Artificial intelligence technology and its applications in education have contributed to developing the educational process by simulating human intelligence and human skills, enabling computers to perform certain tasks instead of humans, particularly tasks that require thinking,

understanding, listening, speaking, and movement. Since students with learning difficulties are considered one of the groups within special education, artificial intelligence can provide these students with multiple educational options, allowing optimal utilization of their abilities, focusing on their strengths, and enhancing and improving them. This is achieved through innovative AI technologies that increase students' interaction with educational content, which in turn increases their motivation to achieve, positively reflecting on their academic and school performance. Thus, artificial intelligence creates an interactive learning environment rich in stimuli that is compatible with the characteristics of students with learning difficulties (Tahrawi & Tamsha, 2022, p. 18).

Moreover, using artificial intelligence in the classroom, for example, can enhance motivation for learning. Teachers have found that using modern computers or any related technology can attract students' attention. Computers can provide many distinctive and effective methods and strong opportunities for teaching and learning. These opportunities include developing practical skills, solving real-world problems, interactive learning, exploratory learning, and connecting learners with various learning resources (Al-Ghamdi & Al-Farani, 2020).

Research Problem:

The integration of artificial intelligence (AI) into the educational system helps improve its outcomes and address potential challenges, contributing to the emergence of new teaching practices. Therefore, incorporating AI applications into education has become an urgent need today. There are numerous AI applications that have been utilized in the educational field, among the most prominent are: expert systems, language recognition applications, character recognition, as well as robots, teaching and speaking applications, shape and pattern recognition, eye-tracking, and course support (Al-Ghamdi & Al-Farani, 2020, p. 16).

The field of special education is one of the areas that has greatly benefited from technology, including the use of artificial intelligence (AI) applications with students who have learning difficulties in several domains, such as diagnosis, reading difficulties, mathematical difficulties, and writing difficulties through program development.

Moreover, studies and research have shown that scientific concepts can be developed among students with learning difficulties through teaching methods that move away from rote memorization and passive learning. Training students to think cannot result solely from acquiring knowledge; obtaining information is not a necessary condition for the ability to think effectively. Therefore, students must be trained in experimental skills from an early age so that they develop the ability to make sound decisions, draw conclusions independently, and accept and adapt to change, through activities that allow the practice of practical skills (Al-Qarni, 2006, p. 84).

Simulations via AI applications have demonstrated an effective role in education and training. There is a global trend toward heavily relying on these applications in most educational fields due to their ease of use, low cost, and capacity to store vast amounts of information. These

applications are based on machine learning or deep learning. Artificial intelligence (AI) can be defined as the science concerned with making electronic systems exhibit intelligence similar to human intelligence, enabling systems to think, make decisions, and act accordingly in a manner suitable to the nature of the tasks assigned to them (Shehata, 2022, p. 312).

Among the studies that have examined the importance of using and integrating artificial intelligence applications in the educational process—particularly in teaching students with learning difficulties—is the study by Jad'a (2021), which demonstrated the effectiveness of the electronic program compared to traditional methods. In addition, the study by Mohamed Kamel et al. (2013) confirmed the effectiveness of various technological tools in reducing attention deficit and hyperactivity among students with learning difficulties, as these tools helped them reorganize their cognitive functions and processes, which may assist them in overcoming learning difficulties.

Furthermore, the study by Katherine Perkins (2014) demonstrated the effectiveness of online simulation applications as an alternative to real laboratories, as well as their effectiveness in improving students' understanding of scientific concepts and related processes. It also highlighted their role in solving problems related to acquiring these concepts, in addition to their effectiveness in developing skill performance levels. The study by Stephen Tomshaw (2012) showed positive changes in students' attitudes toward physics, particularly in terms of structure and reflective thinking, attributed to teaching methods based on technological innovations.

Moreover, the study by Azmi, Abdel Raouf, and Mubariz (2014) revealed the effectiveness of an AI-based e-learning environment in solving computer network maintenance problems among educational technology students. The study by Wadhwa (2017) also indicated that integrating artificial intelligence technologies into the educational process enables teachers to simplify their teaching process while allowing students to receive personalized support tailored to their strengths and weaknesses.

Additionally, the study by Abdeljalil and Al-Mohsen (2024) found that the use of AI-based simulation contributed to the development of scientific concepts among middle school students with learning difficulties. In the same direction, the study by Al-Ghamdi and Al-Farani (2023) demonstrated the impact of using artificial intelligence applications in improving selective attention among female students with learning difficulties at the primary school level.

Overall, previous studies addressing simulation and artificial intelligence have shown their effectiveness in developing certain aspects of learning among students. Accordingly, the current study seeks to highlight the reality of using artificial intelligence applications in supporting students with learning difficulties from the perspective of teachers working in private centers. The research problem was therefore formulated in the following questions:

1. To what extent does the use of artificial intelligence applications contribute to supporting students with learning difficulties from the perspective of teachers in private centers?
2. Are there statistically significant differences at the significance level (0.05) regarding the use of artificial intelligence applications, from the perspective of teachers in private centers in

supporting students with learning difficulties, attributable to the variables of gender and years of experience?

3. What are the obstacles to using artificial intelligence applications in supporting students with learning difficulties from the perspective of teachers in private centers?

Research Hypotheses:

1. The use of artificial intelligence applications contributes to supporting students with learning difficulties to a high degree from the perspective of teachers in private centers.

2. There are no statistically significant differences at the significance level (0.05) regarding the use of artificial intelligence applications, from the perspective of teachers in private centers in supporting students with learning difficulties, attributable to the variables of gender, years of experience, and qualification.

3. There are obstacles that limit the use of artificial intelligence applications in supporting students with learning difficulties from the perspective of teachers in private centers.

Significance of the Study:

The significance of this study lies in revealing the attitudes of teachers in private centers toward the use of artificial intelligence applications in supporting students with learning difficulties, as well as highlighting the importance of employing these applications in developing their reading, writing, and arithmetic skills. The current study may also help in identifying the positive aspects of artificial intelligence in addressing learning difficulties. In addition, it may contribute to clarifying the importance of using artificial intelligence and adopting it as a primary source for obtaining information, as well as encouraging its implementation in schools and specialized centers. Furthermore, it may support the use of AI applications in delivering various types of information to students, especially those with learning difficulties, and promote the inclusion of AI training within professional development programs for teachers and staff working in specialized centers.

Operational Definitions of the Study:

Artificial Intelligence Applications:

Operationally, artificial intelligence applications are defined as electronic applications and computer systems capable of interacting with reading, writing, and arithmetic using AI technologies and converting them into audio, visual, and movement-based outputs to help students with learning difficulties improve these skills.

Supporting Students with Learning Difficulties:

This refers to the set of psychological, educational, and care services provided to students with learning difficulties through offering resources and tools that help integrate and rehabilitate them psychologically and educationally within schools and specialized centers.

Teachers in Private Centers:

These are qualified teachers who teach special-needs groups and who are included in the current study within specialized centers and institutions affiliated with the Ministry of National Solidarity.

Theoretical Framework and Previous Studies

Concept of Artificial Intelligence:

Artificial intelligence is considered an important branch of computer science that focuses on creating and studying computer systems that demonstrate forms of intelligence. In other words, it refers to systems that learn new concepts and tasks, can think and draw conclusions, and are capable of understanding spoken language, recognizing visual patterns, and performing other tasks that normally require human intelligence. Artificial intelligence also involves developing machines capable of simulating human-like responses, based on human abilities such as intention, thinking, and inference (Fahimirad & Kotamjani, 2018, p. 11).

Technology has significantly contributed to the enhancement of learning through various methods, particularly in light of the rapid development in the fields of information technology and computer software. Among the most notable developments is the use of artificial intelligence applications across several domains, especially in education and teaching, both for mainstream learners and for individuals classified within special education categories. Artificial intelligence is defined as one of the branches of computer science concerned with designing software capable of simulating human cognitive abilities, including learning, solving complex problems, planning, inference, decision-making, perception of sensory information, and communication. These capabilities enable intelligent machines to perform new tasks that were not explicitly programmed, without direct human intervention (Abdel Latif & al, 2020, p. 316).

Al-Obaidi defined artificial intelligence as the science that attempts to simulate human intelligence through computer systems that imitate human behaviors, actions, and speech (2015, p. 44).

Types of Artificial Intelligence Applications Used in Education:

Al-Khubairi and Al-Hujaili (2020) and Al-Farani (2020) pointed to several artificial intelligence applications that can be used in education, including:

I. Robotics:

This technology is similar to human intelligence, as it can process information and interact effectively with humans. It is characterized by visual perception, movement, and touch capabilities. It can be used in managing the teaching process, teaching independently, or assisting teachers. It can also support administrative tasks such as task distribution and test grading, in addition to improving learners' motivation and enjoyment of lessons.

II. Computer Science:

This type focuses on producing high-performance computers (Supercomputers) capable of symbolic processing rather than purely numerical processing, with emphasis on hardware components to produce the required software systems.

III.Cognitive Science Applications:

These include adaptive learning systems that adjust their pathways based on information provided by users, in addition to expert systems.

IV.Natural Language Processing (NLP) Applications:

These are among the most important AI applications in expert systems and robotics. They enable machines to understand human language, operate accordingly, and communicate with humans.

Artificial Intelligence Applications and Learning Difficulties

The use of artificial intelligence applications varies across different groups. In education, AI applications have been widely used in special education, particularly for students with learning difficulties. Tahraoui and Tashma (2022) emphasized the importance of AI applications for learners with learning difficulties and their role in solving reading, writing, and arithmetic problems. They also highlighted their effectiveness in remedial education and in enhancing students' motivation toward learning.

These applications can also be used in assessment, diagnosis, and identification of students with learning difficulties. Lanovaz et al. (2020) indicated that AI applications have begun to support specialists' decisions in cases of attention deficit and learning difficulties. Specialists may differ in diagnosing cases; therefore, machine learning programs are used to generate conclusions based on algorithms that are compared with specialists' results, which are usually based on observation and behavioral data.

Previous Studies

1. Al-Hamed (2020):

This study aimed to identify obstacles to using augmented reality technologies in teaching from the perspective of educational supervisors in Riyadh. The researcher used the descriptive survey method and developed a questionnaire. The results showed that participants agreed on the existence of obstacles to using augmented reality in teaching. Financial obstacles ranked first, followed by technical obstacles, then social obstacles, and finally learner-related obstacles.

2. Al-Rawahi and Al-Rahbi (2023):

This study aimed to identify obstacles to employing modern technologies and artificial intelligence applications among Islamic education teachers in Oman. The study adopted the descriptive analytical method and used a questionnaire to collect data from a sample of 151 teachers. The results revealed several obstacles, including the lack of suitable classrooms in schools and insufficient teacher training and experience in using AI applications. The study also found no statistically significant differences attributed to gender or educational stage.

3. Al-Ghuwairi (2023):

This study aimed to identify primary school teachers' attitudes toward using AI teacher applications in addressing learning difficulties. The sample consisted of 170 teachers. The descriptive analytical method was used. Results showed high positive attitudes toward using AI applications. There were statistically significant differences at the significance level (0.05), while no significant differences were found related to years of experience. Differences were found related to academic qualification in favor of postgraduate degree holders.

4. Al-Ghamdi and Al-Farani (2023):

This study aimed to measure the effect of AI applications on improving selective attention among female primary school students with learning difficulties. The results showed statistically significant differences at the significance level (0.05) between pre- and post-measurements, indicating the effectiveness of AI applications in improving selective attention.

5. Al-Ghuwairi (2024):

This study aimed to identify primary school teachers' attitudes toward using AI applications to address learning difficulties. The results indicated high levels of positive attitudes. Statistically significant differences were found at the significance level (0.05) attributed to academic qualification in favor of postgraduate studies, while no differences were attributed to years of experience.

6. Daada (2025):

This study aimed to identify obstacles to using AI applications according to several dimensions (technical infrastructure, physical infrastructure, training and qualification, resistance and concerns, and curriculum integration). The results showed that major obstacles included difficulty accessing modern technologies (such as AR and VR), difficulty updating devices and software, lack of funding, concerns about reducing students' social and emotional skills, and lack of clear strategies for integrating AI into curricula. The study found no statistically significant differences in obstacles based on years of experience or academic qualification.

7. Al-Maqrashi (2025):

This study aimed to identify the reality of using AI applications in teaching students with disabilities from the perspective of teachers in Oman. The results showed a high level of AI application use. Augmented reality applications ranked first, followed by virtual reality and intelligent learning systems. The main obstacle was the lack of training programs for using AI applications. The results also showed statistically significant differences attributed to specialization (in favor of learning disabilities teachers) and years of experience.

Study Procedures and Steps:

Study Population:

The study population consisted of all teachers working in specialized centers, whose total number reached 220 male and female teachers during the 2023/2024 academic year.

Study Sample:

The study sample consisted of 70 male and female teachers who were selected using simple random sampling through a lottery method. They were distributed according to the study variables, as shown in Table (1).

Table (1): Distribution of the Sample According to Study Variables

Variable	Category	Number	Percentage
Gender	Male	22	31.42%
	Female	48	68.57%
	Total	70	100%
Professional Experience	From 0 to 5 years	25	35.71%
	From 6 years and above	30	42.85%
	Total	70	100%

It is clear from the table that the percentage of females among the total number of teachers was estimated at 68.57%, while the percentage of males reached 31.42%. Regarding professional experience, teachers whose experience exceeded 6 years represented 42.85%, compared to teachers whose experience was less than 6 years, which reached 42.85%.

Study Methodology:

The researcher adopted the descriptive method in this study, which is based on studying the phenomenon as it exists in reality, describing it accurately, and expressing it both quantitatively and qualitatively (Al-Daajani, 2012, p. 12).

Study Instrument:

A questionnaire was prepared in its initial form consisting of 30 items after reviewing previous studies related to the topic. It was designed according to the five-point Likert scale, where five response options were identified: (Very High, High, Moderate, Low).

Psychometric Properties of the Study Instrument:

Content Validity:

To verify the content validity of the instrument, the questionnaire was presented to a group of university professors (experts) to examine the questionnaire items, review them, and determine the accuracy of linguistic formulation and clarity of statements. The opinion of the majority was adopted, and items that did not receive agreement were modified. The agreement rate among the experts on the questionnaire items reached 85%, which is considered an acceptable standard by many researchers for accepting or modifying items.

Internal Consistency Validity:

To ensure this, the Pearson correlation coefficient was calculated between the score of each questionnaire item and the total score. The values ranged between 0.45 and 0.88, while non-significant items were removed.

Self-Validity:

Self-validity of the instrument was calculated by computing the square root of the reliability coefficient for each item and each domain of the study instrument. The values ranged between (0.83–0.95), while the overall self-validity reached 0.90, which is a high and positive value indicating that the questionnaire has a high degree of self-validity.

Reliability:

Reliability was calculated using Cronbach’s Alpha equation, which yielded a value of 0.80, which is considered acceptable for research purposes.

Table No. (2) shows the values related to questionnaire scoring

Category	Response
From 4.20 – 5.00	Very High
From 3.40 – 4.19	High
From 2.60 – 3.39	Medium
From 1.80 – 2.59	Low
From 1.00 – 1.79	Very Low

Presentation of the Results of the First Hypothesis:

The use of artificial intelligence applications contributes highly to supporting students with learning difficulties from the perspective of teachers in private centers.

To test this hypothesis, the arithmetic means and standard deviations of the sample members’ responses to the questionnaire dimensions and items were calculated, as shown in Table No. (3).

Table No. (3) shows the ranking of sample responses to the items related to the contribution of using artificial intelligence applications in supporting students with learning difficulties

Item	Statement	Mean	Standard Deviation	Level
13	AI applications enable early and rapid detection of different types of learning difficulties	4.97	0.15	Very High
7	AI applications help increase motivation, attention, and engagement toward the subject	4.94	0.11	Very High
2	AI applications contribute to enhancing learning skills of students with learning difficulties	4.66	0.09	Very High
4	AI applications enable diversification of teaching methods and strategies for students with learning difficulties	4.41	0.22	Very High
3	Using AI applications in the classroom enhances the spirit of competition among students	4.45	1.12	Very High

10	AI applications help raise the academic achievement level of students with learning difficulties	3.97	0.45	High
8	AI applications develop students' language communication skills	3.92	0.22	High
1	AI applications help students integrate and connect concepts and ideas more easily	3.90	1.44	High
20	AI applications help reduce frustration and low self-esteem among students with learning difficulties	3.88	0.35	High
14	AI applications help record educational content and replay it multiple times to reinforce understanding	3.85	0.42	High
12	AI applications help students with learning difficulties integrate and connect concepts and ideas more easily	3.79	0.26	High
6	Using AI improves the quality of education and makes it easier and more flexible for students with learning difficulties	3.74	0.23	High
17	AI contributes to creating a safe learning environment for students with learning difficulties	3.68	1.23	High
11	I use AI to select educational programs for students with learning difficulties	2.97	1.24	Medium
9	I use AI technologies in lesson preparation, implementation, and evaluation	2.92	0.45	Medium
19	Rapid technological development forces me to use AI and its applications	2.90	0.22	Medium
15	AI applications help students use their senses more effectively	2.88	1.01	Medium
18	For me, AI is limited to social media sites	2.74	—	Medium
16	I have prior knowledge about AI applications in teaching students with learning difficulties	1.88	0.11	Low
5	The center provides AI applications and resource rooms for teaching students with learning difficulties	1.77	0.24	Low
Total		3.72	0.42	High

It is clear from Table No. (3) that the level of teachers' estimations regarding the contribution of using artificial intelligence applications in supporting students with learning difficulties was high, with a mean score of (3.72) and a standard deviation of (0.42). The responses of the sample members to items (13, 7, 2, 4, 3) were very high, with mean scores ranging between (4.97 – 3.68) and standard deviations ranging between (0.45 – 0.23). Teachers

believe that the use of AI applications in supporting students with learning difficulties inside the classroom enables early and rapid detection of different types of learning difficulties, increases motivation, attention, and engagement toward the subject matter, enhances the learning skills of students with learning difficulties, and allows diversification in teaching methods and strategies for these students, which enhances the spirit of competition among students in the classroom.

As for the remaining items (10, 8, 1, 20, 14, 12, 6, 17), the sample members' estimations were high, with mean scores ranging between (3.97 – 2.74) and standard deviations between (1.24 – 0.11). The use of AI applications contributes to raising the academic achievement level of students with learning difficulties, developing their language communication skills, and helping them integrate and connect concepts and ideas more easily. In addition, AI applications help reduce feelings of frustration and low self-esteem among these students. These applications also help record educational content and replay it multiple times to reinforce understanding and comprehension, making learning easier and more flexible, and contributing to improving the quality of education while creating a safe learning environment for students with learning difficulties.

The items that received medium-level estimations were (11, 9, 19, 15, 18). Teachers believe that using AI applications helps in selecting educational programs for students with learning difficulties and that their use is mainly through lesson preparation, implementation, and evaluation. They also believe that rapid technological development forces them to use AI and its applications, as these help students use their senses more effectively. However, some teachers still limit AI use to social media platforms.

Finally, items (16, 5) received the lowest estimations, with mean scores ranging between (1.88 – 1.77) and standard deviations between (0.11 – 0.24). Teachers believe that they do not have sufficient prior knowledge about AI applications in teaching students with learning difficulties, and that the centers where they work do not provide AI applications or resource rooms dedicated to teaching students with learning difficulties.

Presentation of the Results of the Second Hypothesis:

There are no statistically significant differences at the significance level (0.05) regarding the use of artificial intelligence applications in supporting students with learning difficulties from the perspective of teachers in private centers, attributed to the variables of gender and years of professional experience.

To test this hypothesis, the results of the t-test were used to examine the significance of differences according to the variables of gender and professional experience in the use of AI applications in supporting students with learning difficulties from the perspective of teachers in private centers.

Table (4) presents the results of the independent samples t-test conducted on two independent groups to examine the significance of differences according to the variables of gender and professional experience in the use of artificial intelligence applications in

supporting students with learning difficulties from the perspective of teachers in private centers

Gender / Experience	Frequency	Mean	Standard Deviation	Calculated (t) Value	Significance Level	Significance of Differences
Males	22	2.06	0.26	-2.34	0.071	Not statistically significant
Females	48	2.10	0.24	—	—	—
0–5 Years	25	3.21	0.15	3.44	0.037	Statistically significant
6 Years or More	30	3.47	0.19	—	—	—

It is clear from Table No. (4) that there are no statistically significant differences in the mean responses of teachers regarding the use of artificial intelligence applications in supporting students with learning difficulties, from the perspective of teachers in private centers, attributed to the gender variable. The calculated t-value reached (-2.34) with a significance level of (0.071), which is higher than the significance level (0.05); therefore, it is not statistically significant.

On the other hand, there were statistically significant differences in the mean responses of teachers regarding the use of artificial intelligence applications in supporting students with learning difficulties, attributed to the professional experience variable. The calculated t-value reached (3.44) with a significance level of (0.037), which is lower than the significance level (0.05); therefore, it is statistically significant.

Table No. (5) shows the ranking of sample responses to the items related to the obstacles to using artificial intelligence applications in supporting students with learning difficulties.

Item	Frequency	Mean	Standard Deviation	Rank
7	Using these technologies requires more time and effort from teachers compared to traditional methods	2.65	0.72	1
2	I do not have knowledge of how to apply AI techniques in teaching	2.62	0.97	2
13	Lack of necessary equipment and software in centers to use them	2.57	0.61	3
10	The classroom environment does not encourage teachers to apply AI techniques	2.52	0.62	4
1	The current curriculum does not keep pace with AI applications	2.47	0.59	5
5	Some students are unable to interact with AI applications	2.40	0.60	6

8	Lack of modern technologies and AI applications that do not match the characteristics of students with learning difficulties	2.34	0.60	7
11	Teachers feel anxious or fearful about using modern AI-based technologies in teaching students with learning difficulties	2.30	0.55	8
14	Lack of internet in centers prevents me from using AI in teaching	2.22	0.59	9
15	Absence of the emotional aspect that AI-designed lessons aim to achieve	1.18	0.31	10
6	No training courses are available for teachers on how to apply these technologies	1.14	0.36	11
9	Traditional methods are better than modern methods in teaching and understanding lessons	1.11	0.40	12
12	Relying on AI applications creates a gap between students and teachers	1.08	0.55	13
3	Some center and school administrators lack awareness of the importance of modern technologies and AI applications	1.06	0.50	14
4	Lack of motivation and support for teachers to apply these technologies in teaching	1.03	0.56	15
Total		2.52	0.36	High

Table 5 indicates that the most prominent obstacles facing teachers in specialized centers when using AI applications to support students with learning difficulties were:

- The fact that using these technologies requires more time and effort from teachers compared to traditional methods, and it is not due to teachers' lack of knowledge on how to apply AI techniques in teaching, nor the lack of necessary equipment and software in the centers to use them.
- The classroom environment does not encourage teachers to apply AI techniques.
- The current curriculum does not keep pace with AI applications.
- Some students' inability to interact with AI applications does not align with the characteristics of students with learning difficulties.
- Teachers' feelings of anxiety and fear about using modern AI-based technologies in teaching students with learning difficulties, due to a lack of control over these tools.
- Lack of internet in centers, which prevents teachers from using AI in teaching.
- The absence of the emotional aspect that AI-designed lessons aim to achieve.

These items topped the ranking and were considered by teachers as the primary obstacles limiting their use of AI applications in supporting students with learning difficulties in specialized centers.

The second group of obstacles, ranked slightly lower, included:

- Absence of the emotional aspect that AI-designed lessons aim to achieve.
- Lack of teacher training courses on how to apply these technologies.
- Teachers' belief that traditional methods are better than modern methods for teaching and understanding lessons.
- Dependence on AI applications may create a gap between students and teachers.
- Some administrators in centers and schools have low awareness of the importance of modern technologies and AI applications.
- Lack of motivation and support for teachers to apply these technologies in teaching.

These factors were also considered by teachers as significant obstacles that hinder the use of AI applications in teaching students with learning difficulties in specialized centers.

Discussion of Results:

The results indicated that teachers in specialized centers have a high level of awareness regarding the importance of using AI technologies to support students with learning difficulties. The researcher attributes this finding to the fact that the successful implementation of AI in various educational contexts contributes to improving learning outcomes and developing the skills of students with learning difficulties, in addition to enhancing teacher performance. Employing modern technologies and AI applications strengthens the learning process and facilitates better progress, providing students with more engaging, effective, and high-quality learning experiences across all levels.

Modern technologies and AI applications also provide feedback to learners, helping them acquire new learning skills, particularly in interacting with smart devices and applications and learning how to benefit from them.

This finding aligns with several studies:

- **Hassnawi (2019)**
- **Al-Ghamdi & Al-Farani (2023)**, which examined the effect of AI applications on improving selective attention among female students with learning difficulties in primary school.
- **Al-Ghuwairi (2023)**, which found that primary school teachers' attitudes toward using AI applications to address learning difficulties were high.
- **Al-Maqrashi (2025)**, which concluded that the use of AI applications for students with disabilities was high, with augmented reality applications ranking first, followed by virtual reality applications and intelligent learning systems.

Modern technologies and AI applications can be employed to support students with learning difficulties through applications that enhance focus and attention, use interactive images and videos to facilitate concept explanation, and employ educational games. These tools help

students overcome gaps in their understanding of scientific concepts and allow correct application in real-life situations through simulation programs provided by AI applications. This, in turn, increases learners' motivation and engagement when AI-based simulations are combined with teaching.

Furthermore, simulation programs using AI provide correct and appropriate information to students at the right time and in the correct manner.

The study also found no differences between male and female teachers in their perception of the importance of using AI applications to support students with learning difficulties. The researcher attributes this to both genders' recognition of the importance and role of AI applications in supporting students through simulation programs that mimic virtual reality and computer-based educational games, which can be used to teach reading and arithmetic to students struggling in these areas. This finding is consistent with Al-Rawahi & Al-Rahbi (2023), Abdeljalil & Al-Mohsen (2024), Al-Shahri (2022), Al-Ghuwairi (2022), Al-Turki (2023), Zada' (2025), and Al-Maqrashi (2025).

One of the main obstacles facing teachers in specialized centers regarding the use of artificial intelligence applications in supporting students with learning difficulties is that using these technologies requires more time and effort from teachers compared to traditional methods. Additionally, the lack of teachers' knowledge on how to apply AI technologies in teaching, the absence of the necessary equipment and software in the centers, the classroom environment not encouraging the use of AI technologies by teachers, the current curriculum not keeping pace with the implementation of AI, and some students' inability to interact with AI applications—which sometimes do not suit the characteristics of students with learning difficulties—constitute the main obstacles that teachers perceive as limiting the use of these technologies in specialized centers. This was highlighted in the studies of Al-Ghuwairi (2022), Al-Turki (2023), Dhaadha' (2025), and Al-Muqrashi (2025).

Conclusion:

From this study, which aimed to shed light on the reality and obstacles of using AI applications in supporting students with learning difficulties from the perspective of teachers in specialized centers, it was found that there is awareness and conviction among teachers about the importance of using AI applications in supporting these students. There is no difference between male and female teachers in this regard. However, applying these technologies faces several challenges mentioned by the participants, such as the lack of infrastructure, equipment, and specialized training courses on how to use and employ these technologies.

Based on these findings, the following recommendations are proposed:

- Emphasize developing the skills of students with learning difficulties and enhancing teachers' ability to use technological innovations in the educational process, including AI applications.
- Focus on using technology simulation through AI and promoting a positive attitude toward it.

- Benefit from the program using AI-based simulation developed in this research to enhance other skills in learners.
- Organize training courses for teachers on how to use these programs and applications in designing and implementing lessons.

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