

THE REALITY OF EMPLOYING ARTIFICIAL INTELLIGENCE APPLICATIONS AND ITS CHALLENGES IN TEACHING PEOPLE WITH LEARNING DISABILITIES FROM THE POINT OF VIEW OF TEACHERS (SDG'S)

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ABSTRACT

Purpose: This study aims to investigate the reality of employing artificial intelligence applications and its challenges in teaching children with learning Disabilities from the point of view of teachers and specialists in Amman- Jordan schools.

Theoretical Reference: The study is grounded employing artificial intelligence applications and its challenges in teaching children with learning Disabilities from the point of view of teachers and theories of learning disabilities.

Method: The descriptive analytical approach was followed, The researcher prepared a study A self-designed measure of employing artificial intelligence applications in the education of children with learning Disabilities from the point of view of teachers and the challenges they face was administered to special education teachers in capital Amman city, Jordan, focusing on their. The questionnaire underwent validity and reliability assessments to ensure its appropriateness for the study. Statistical analyses, including means, standard deviations, and t-tests, were employed to analyze the data.

Results and Conclusion: The study results found that learning disabilities teachers demonstrated a medium level of knowledge regarding reality of hiring teachers with learning Disabilities for artificial intelligence applications. However, while the results indicated that the challenges facing teachers came with a high degree.

Implications of Research: The findings suggest a need for targeted professional development and support for special education teachers to enhance their effectiveness employing artificial intelligence applications in teaching children with learning Disabilities. Policymakers and educational leaders could use these insights to develop comprehensive strategies and resources that empower teachers and promote a safer learning environment for all students.

Originality/Value: The research contributes to understanding the use AI applications for children with learning disabilities. It raises awareness among officials about artificial intelligence applications and accessibility for these children with learning disabilities.

Keywords: learning disabilities, artificial intelligence, quality education, sustainable development goals (SDGs).

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1 INTRODUCTION

Over the past three decades, the field of artificial intelligence and machine learning has been growing at an ever-increasing rate. Many tools have been developed to meet the needs of students ranging from elementary education to college level. The concept of AI technology is consistently applied to the education sector, helping to develop skills and testing systems. The continued development of AI educational arrangements has also helped to reduce gaps in learning and teaching (Mackenzie, 2017). Artificial intelligence can raise the degree of competence, facilitate the tasks of the principal and provide teachers with the time and opportunity to provide understanding and flexibility to learners of different abilities. The vision of AI in education is for AI to be integrated into teaching and learning for the benefit of students. Based on scientific research, which confirms that artificial intelligence will be prevalent in the future, our educational institutions must be open to the use of artificial intelligence technologies for innovation. For example, teachers need to leverage AI-based virtual technology by developing study plans that will foster student growth in challenging academic environments. (Darwish, 2020)

The concept of artificial intelligence has also made a major breakthrough in the field of education and learning, as the application and use of artificial intelligence in education is based on a set of principles of science and disciplines related to the educational process, and the results of research. One of the most important features of artificial intelligence is its ability to meet the challenges faced by the educational system and innovate advanced teaching and learning practices, accelerate progress towards achieving the goals of the educational system, and develop the educational process in general. UNESCO has stressed the importance of disseminating artificial intelligence technology in education in order to enhance human capabilities for effective cooperation between man and machine in life, learning and work, and enhance its leading role in the field of artificial intelligence in the field of education, as a global laboratory for ideas and standard setting.

The field of special education is one of the areas that benefited from the presence of technology, including the use of artificial intelligence applications

with students with learning Disabilities in several areas, including: diagnosis, reading Disabilities, arithmetic Disabilities and writing Disabilities. An application has been developed that detects and relieves reading and writing Disabilities based on artificial intelligence with the processing of linguistics. The application has not helped children with dyslexia. The application has won the award for the best analytical examination tool from UNESCO, but there have been some Disabilities that still affect the learning process of people with learning Disabilities, such as their weak ability to pay attention, which may affect their academic and social performance, and it may also affect the acquisition of social skills in daily life and relationship with peers (Al-Ghamdi and Al-Qarni, 2022).

The importance of artificial intelligence applications has not been limited to the field of computer science, but has become important in all fields, including the educational aspect. Artificial intelligence and its applications are of great importance to people with disabilities and their families, starting with the provision of educational programs and individual plans that suit the needs and abilities of people with special needs (Al-Qahtani and Al-Sudais, 2022). Artificial intelligence applications are an effective factor in achieving psychosocial integration in the lives of people with special needs, whether at the personal, academic or even social levels (Al-Ghamdi and Al-Qarni, 2022). Artificial intelligence applications can also be used to diagnose groups with special needs. There are applications for artificial intelligence with some groups with special needs, such as Sign: Story, Live transcribe, and home at Listen for the deaf. For children with autism spectrum disorder, smart applications have been designed to solve some of their problems in order to facilitate their integration within society, including modus Miracle, Ahvaz, 5 Autism, and other applications (Al-Qahtani and Al-Sudis, 2022).

Despite the importance of artificial intelligence and its effectiveness as explained above, there are a number of challenges facing its employment. There are deficiencies in its applications in the educational aspect, including the lack of specialized trained cadres, the lack of infrastructure of wireless communications, computers and software, the fulfillment of education intentions, the use of computers, the rehabilitation of trainers and the

development of their traditional skills, the inability to renew knowledge, the difficulty of converting experience into codes used in building expert systems, and the weakness of sound language due to the entry of some foreign terms .

The global prevalence of learning disabilities has risen to approximately 79.2 million individuals, a figure that continues to rise steadily (UNICEF, 2021). These disabilities significantly affect various cognitive domains including listening, speaking, reading, writing, spelling and mathematical abilities making them eligible to receive special education services. In the United States alone, more than 15% of public school students, about 2.3 million are enrolled in special education programs due to learning disabilities. Students with learning disabilities consistently face challenges in academic performance, evidenced by their low scores across subjects such as reading, science and math as well as emotional and social Disabilities. Research shows that people with learning disabilities experience increased negative emotional experiences, including depression and loneliness, among students with learning disabilities significantly higher than their non-disabled peers.

1.2 STUDY PROBLEM

The introduction of artificial intelligence in education can help improve the learning of people with special needs by providing artificial intelligence applications such as machine learning, deep learning and intelligent data analysis, which can be used to identify individual learning needs and provide customized educational plans for each student. It can also help identify the strengths and weaknesses of learning among students with special needs in general and those with learning Disabilities in particular. Therefore, identifying the skills that must be developed, appropriate educational methods for them and applications of artificial intelligence can carry with them renewed possibilities to enhance the inclusiveness of classrooms. A number of studies that highlighted the employment of artificial intelligence in teaching and learning indicated that it contributed to helping students exercise more freedom and allowed them more self-learning (monthly, 2022)

In light of the development of teaching systems based on artificial intelligence technology and its growing educational importance, the issue of teacher preparation and professional development has become a professional one to face the developments of life and the requirements of the era of the digital knowledge economy. Artificial intelligence applications must be used within the educational process in order to improve the teaching profession and the quality of teachers. In most advanced societies, teacher preparation and training systems have been reviewed in particular, through the design of professional development programs aimed at providing them with professional knowledge and skills and technical expertise in the field of employing artificial intelligence in planning, teaching and evaluating student learning, as well as helping them to be aware of global technological developments, and enabling them to employ artificial intelligence applications.

The special education teacher has received great attention, with the recent emergence of global attention to students with disabilities and the provision of highly qualified teachers who can afford to teach this group. In particular, the role of special education teachers is different from that of regular student teachers. No, they are dealing

With a group of students who need a special understanding because of their characteristics and behaviors, which requires the use of appropriate methods, strategies, activities and models that suit their various levels (Hamadneh, *et al* 2015).

Through the above, the research problem can be formulated in the following questions:

1. What is the reality of employing teachers with learning disabilities for artificial intelligence applications?
2. What challenges do teachers with learning disabilities face in employing AI applications?

1.3 RESEARCH OBJECTIVES

The present research aims to:

- 1- Revealing the reality of employing artificial intelligence applications in the educational field with children with disabilities;
Special needs (learning Disabilities) from the point of view of teachers - and specialists.
- 2- Revealing the challenges that hinder the employment of artificial intelligence applications in the educational field with Children with special needs (learning Disabilities) from the point of view of specialized teachers;
- 3- Revealing the trends of teachers and specialists towards employing artificial intelligence applications in Educational field with children with special needs with learning disabilities
- .4 Theoretical importance:
 - (a) Providing a theoretical framework on the applications of artificial intelligence used with the category of learning disabilities;
 - B- This research is to meet the requirements of the age of technology and to determine the extent of its employment in a class service Learning Disabilities;
 - C. The research provides a visualization of the challenges faced by teachers in employing AI applications from their point of view;
- 5 - Applied Importance
 - A- The research contributes to forming an integrated picture of the reality of employing artificial intelligence applications with children - learning Disabilities;
 - B. The research contributes to directing the attention of officials about artificial intelligence applications and accessibility of which in the service of our children with learning disabilities;
 - C- The research contributes to helping the executive bodies based on graduating teachers and specialists of learning Disabilities to develop a strategy to overcome the challenges of employing artificial intelligence applications.

1.4 PREVIOUS STUDIES

Al-Qaraqish, Al-Salahat and Abu Jaber (2021) used the descriptive survey approach to identify the degree of awareness of special education teachers of the use of education technology in teaching special needs students in Amman, Jordan. The results of the study indicated that the degree of awareness of special education teachers in Amman was high, in addition to the existence of statistically significant differences due to the variable of educational qualification in favor of graduate studies.

The monthly study (2022) of teacher trends towards employing artificial intelligence applications in the face of learning Disabilities in Asir region in the Kingdom of Saudi Arabia found a medium to high level of awareness of the advantages and possibilities of employing artificial intelligence applications in solving the problems of learning Disabilities. The level of emotional and behavioral attitudes was high, which indicates the turnout of special education teachers to employ these techniques, while there was agreement on the existence of Disabilities to employ this type of techniques.

The study of Al-Ghamdi and Al-Qarni (2023) aimed to measure the impact of the use of artificial intelligence applications in improving the selective attention of female students with learning disabilities in the primary stage of a sample of (24) students with learning Disabilities. One of the most important results of the study was the existence of statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the average scores of female students in the pre and post measurements of the experimental group in measuring the skill of selective attention; in favor of the post application, which indicated the impact of the use of artificial intelligence applications in improving the selective attention of the student

Al-Ghuwairi's study (2023) aimed to identify the trends of primary school teachers towards employing artificial intelligence applications in the face of learning Disabilities. The results indicated that the trends of primary school teachers towards employing artificial intelligence applications in the face of learning Disabilities came to a high degree. The results also indicated that there

are statistically significant differences for the variable of educational qualification and in favor of higher education.

The results of the veins study (2024) showed that the degree of orientation of the teachers of the first three grades in Al-Rusaifa district in Zarqa towards the use of artificial intelligence techniques in inclusive education was average. The results also showed that there were no statistically significant differences due to gender variables, scientific qualification and years of administrative experience.

Korea and Alexopoulos (2024) attempted to present the perspectives of secondary education students with specific learning disabilities regarding the use of artificial intelligence (AI) in language teaching interventions. An online questionnaire was distributed to 120 students from “language” departments in Greece and the results and expectations were improved skills, but there were also concerns about providing ready answers. In addition, students expect parents and colleagues to reject the use of AI

Bhatti *et al.* (2024) reviewed sixteen studies that looked at the use of AI to help students with learning disabilities. Ten studies focused on dyslexia, with only one focusing on dyscalculia, and the remaining studies addressed learning disabilities in a broader context. Notably, only half of the studies targeted school-age children. Across these studies, seven distinct categories of AI applications were identified, including adaptive learning, facial expression analysis, chatbots, communication assistants, proficient learning systems, intelligent teaching systems, and interactive robots. Of these categories, adaptive learning emerged as the most prevalent. - It was recognized that AI has been applied in a variety of capacities to support learning disabilities, with cases observed across levels of substitution, augmentation, modification, and redefinition. While the findings underscore the potential of AI to help people with learning disabilities, the limited number of empirical studies also highlight significant gaps, suggesting the need for further research into the broader role of AI beyond simply identifying and diagnosing learning disabilities.

Al-Momani's study (2024) aimed to determine the extent of the use of artificial intelligence applications by teachers in merging schools in Ajloun governorate. The descriptive analytical approach was adopted, and the results

indicated that the degree of use of artificial intelligence by teachers in merging schools in Ajloun governorate is low.

2 METHOD AND PROCEDURES

2.1 RESEARCH METHODOLOGY

The descriptive analytical approach was followed to describe the phenomenon in question.

2.2 RESEARCH COMMUNITY AND SAMPLE

Table 1.

Distribution of study individuals according to variables

	Categories	Frequency	Percentage %
Gender	Male	105	8
	Female	80	2
Education	Bachelor's degree	161	87.0
	Higher Diploma and above	24.00	13
Years of Service	Less than 10 years	102	1.
	10 years and above	83	9
Total		185	100

2.3 THE STUDY TOOL

The measure of employing artificial intelligence applications in the education of children with learning Disabilities from the point of view of teachers and the challenges they face : The researcher prepared a study tool employing artificial intelligence applications in the education of children with learning Disabilities from the point of view of teachers and the challenges they face by reviewing previous references and literature and Arab and foreign standards related to the subject of the study and adopting the behavioral aspects that compose the employment of artificial intelligence applications in the education of children with learning Disabilities from the point of view of teachers and writing its paragraphs in the form of phrases describing the level of this knowledge among the members of the study sample guided by them,

including Al-Ghuwairi (2023), Al-Ghamdi and Al-Qahtani and Al-Garni (2022), Al Momani (2024), Korea, Alexopoulos 2024) and Bhatti *et al* (2024).

The scale was then drafted in its initial form. The scale consists of two parts: the first part covers the basic information as follows:

Teacher Name/School Name

The educational place/ stage of study.

Gender

Years of experience dealing with people with learning disabilities

Teacher's Educational Qualification

The second section covered the areas of the scale, which consisted as a whole of (21) paragraphs distributed on the scale, which consisted of two parts:

The first part: The reality of employing artificial intelligence applications for people with learning Disabilities by (11) paragraphs.

Part Two: Challenges of using artificial intelligence applications from the point of view of teachers by (10) paragraphs.

The five-point Likert scale was adopted to correct the study tools, by giving each of its paragraphs one of its five scores (strongly agree, agree, neutral, strongly disagree, disagree), which is numerically represented (5, 4, 3, 2, 1) respectively, and the following scale was adopted for the purposes of analyzing the results:

1.00- 2.33 Low

2.34- 3.67 medium

3.68- 5.00 High

And so on

2.4 SCALE RATING

Building Validity (The Reality of Employing Artificial Intelligence Applications for People with Learning Disabilities) To verify the validity of the construction of the study tool, it was applied to a survey sample consisting of (30) teachers from the study community and outside the sample, with the aim of verifying the validity of the internal construction of the tool, by calculating

the Pearson correlation coefficients between the paragraphs and the total degree of the tool , and Table (2) shows this.

Table 2.

Pearson correlation coefficients between the paragraphs and the total degree of the tool

Item No.	Correlation coefficient with the gadget	Item No.	Correlation coefficient with the gadget	Item No.	Correlation coefficient with the gadget
1	.510* *	5	.738* *	9	.612* *
2	.707* *	6	.553* *	10	.496* *
3	386 x 99 =	7	.662* *	11	.539* *
4	562	8	.639* *		

* Statistically significant at the level of significance (0.05).

* * Statistically significant at the level of significance (0.01).

It should be noted that all correlation coefficients were of acceptable scores and statistically significant, therefore none of these paragraphs were omitted.

2.5 BUILDING VALIDITY (CHALLENGES OF USING AI APPLICATIONS)

To verify the validity of the construction of the study tool, it was applied to a survey sample consisting of (30) teachers from the study community and outside the sample, with the aim of verifying the validity of the internal construction of the tool, by calculating the Pearson correlation coefficients between the paragraphs and the total degree of the tool , and Table (3) shows this: Correlation coefficients between vertebrae and

Table 3.

Pearson correlation coefficients between the paragraphs and the total degree of the tool

Item No.	Correlation coefficient with the gadget	Item No.	Correlation coefficient with the gadget	Item No.	Correlation coefficient with the gadget
1	.899* *	5	.702* *	9	.446*
2	.881* *	6	.709* *		
3	.794* *	7	.462*		
4	.636* *	8	.687* *		

* Statistically significant at the level of significance (0.05).

* * Statistically significant at the level of significance (0.01).

It should be noted that all correlation coefficients were of acceptable scores and statistically significant, therefore none of these paragraphs were omitted.

The validity of the questionnaire was verified as follows

2.6 STABILITY OF THE STUDY TOOL

The internal stability of the questionnaire is measured through the Cronbach Alpha coefficient. The table below shows these coefficients.

Table 4.

Cronbach-Alpha internal consistency coefficient

Scale	Cronbach-Alpha	Paragraphs.
The Reality of Employing Artificial Intelligence Applications	.808	11
Challenges of Using AI Applications	.863	9

The table shows that these values are suitable for the purposes of this study, as the Cronbach alpha coefficient is between (1) and (0), and in general, if the alpha is less than (0.4), the stability is low, and the paragraphs are of medium stability, as its value is between(0.4-0.7), while the stability is high if its value is higher than(0.7) (Al-Qahtani,2015).

3 PRESENT AND DISCUSS FINDINGS

3.1 PRESENTING THE RESULTS RELATED TO THE FIRST QUESTION: WHAT IS THE LEVEL OF EMPLOYMENT OF TEACHERS WITH LEARNING DISABILITIES FOR ARTIFICIAL INTELLIGENCE APPLICATIONS?

To answer this question, arithmetic averages and standard deviations were calculated for the level of employment of teachers with learning Disabilities for artificial intelligence applications. The arithmetic averages ranged between (1.98 - 2.71), where paragraph No. (5), which stipulates "employing artificial intelligence techniques to raise the level of quality of life for people with learning Disabilities" came first with an arithmetic average of (2.71) and an average level, and paragraph No. (11), which states "Artificial intelligence applications help the teacher to provide realistic examples of educational materials to develop the abilities of students with learning Disabilities" came last with an arithmetic average of (1.98) and a low level, and the arithmetic average of the employment of artificial intelligence applications as a whole was (2.41) and an average level.

This result can be interpreted based on the teachers' interest in students with learning Disabilities and the awareness of their suffering and the strong desire to help them overcome Disabilities to improve their psychological lives and treat them like ordinary students to increase their self-confidence and invest their energies. This result also indicates the lack of infrastructure that helps teachers use artificial intelligence applications in providing education services for learning Disabilities.

3.2 PRESENTING THE RESULTS RELATED TO THE QUESTION: WHAT IS THE LEVEL OF CHALLENGES FACED BY TEACHERS WITH LEARNING DISABILITIES IN EMPLOYING ARTIFICIAL INTELLIGENCE APPLICATIONS?

To answer this question, arithmetic averages and standard deviations were calculated for the level of challenges facing teachers with learning Disabilities in employing artificial intelligence applications. The arithmetic

averages ranged between (2.80 - 3.93). Paragraph (3), which states that "there is a lack of awareness of the importance of artificial intelligence techniques among some teachers and decision makers in schools," came first with an arithmetic average of (3.93) at a high level. Paragraph (4), which states that "the high cost of using artificial intelligence technology and the low budget allocated for it " came last with an arithmetic average of (2.80) at an average level, and the arithmetic average of the challenges of using artificial intelligence applications as a whole was (3.57) at an average level.

The researcher believes that the challenges of employing artificial intelligence applications in solving the problems of learning Disabilities from the teacher's point of view came to a high degree, and this indicates the existence of many obstacles and Disabilities in employing artificial intelligence applications in solving the problems of learning Disabilities from the teacher's point of view. This result is consistent with the Al-Shahri study (2022)

REFERENCES

- Al-Ghamdi, Enas, Al-Ghamdi, Sahar and Al-Qarni, Lina (2023) *The impact of the use of artificial intelligence applications in improving selective attention among students with learning disabilities in the primary stage*. Journal of Educational and Psychological Sciences. (7)
- Al-Ghamdi, Samia and Al-Qarni, Lina Ahmed (2020) *The reality of using artificial intelligence applications in private education schools in Jeddah from the point of view of teachers and the trend towards them*, International Journal of Educational and Psychological Studies ISSN2520 - 41949
- Al-Ghuwairi, Safaa (2023) *Primary School Teachers' Attitudes Towards Employing AI Applications in the Face of Learning Disabilities*, Journal of University Studies for Comprehensive Research, ISSN: 2707-2675
- Al-Shehri, Bandar (2022) *Teacher's Attitudes towards Employing Artificial Intelligence Applications in the Face of Learning Disabilities in the Aseer Region in the Kingdom of Saudi Arabia*, Egyptian Association for Knowledge and Reading. Volume (23).
- Al-Qahtani, Ream bint Maid bin Khashnan, Al-Sudais Ashjan bint Ali bin Abdulaziz (2022) *Educational applications of artificial intelligence for the category of people with special needs in integration schools for the middle stage from the point of view of their teachers in Riyadh*, Master Thesis, Faculty of Education, Imam Muhammad bin Saud Islamic University. Saudi Arabia.
- Al-Qaraqish, Nisreen and Al-Salahat, Amna and Abu Jaber, Majed (2021) *The degree of awareness of special education teachers of the use of educational technology in teaching special needs students in Amman, Jordan*. International Journal of Educational and Psychological Studies, ISSN:2520-4130
- Darwish, Amr Al-Laithi, Ahmed (2020) *The impact of the use of artificial intelligence platforms in the development of habits of mind and academic self-concept for a sample of low-achieving middle school student*, Journal of the Faculty of Education - Ain Shams University. Number (44)
- Al-Waridat, Asma (2024) *Directions of teachers of the first three grades in the Rusayfah district towards the use of artificial intelligence techniques in inclusive education*, Scientific Journal of the Faculty of Education- Assiut University. The fourth issue.
- Bhatti, I., Mohi-U-din, S. F., Hayat, Y., & Tariq, M. (2024). *Artificial Intelligence Applications for Students with Learning Disabilities: A Systematic Review*. *European Journal of Science, Innovation and Technology*, 4(2), 40-56. Retrieved from <https://ejsit-journal.com/index.php/ejsit/article/view/397>

- Hamadneh Burhan Mahmoud, AL-Azzam Mamoun, Alqarni Turki, Almalki Abdulaziz (2024) *The Degree of Special Education Teachers' Employment of Electronic Educational Games in Teaching Disabled Students*, International Journal of Education in Mathematics, Science and Technology, Vol. 12 1, 53-67.
- Korea, Maria. Alexopoulos, Panagiotis (2024) *higher education students' views ON the use OF artifical intelligence for teaching students with special learning experiences*, European Journal of Open Education and E-learning Studies. Vol 9, No 1 (2024)
- Mackenzie, A. (2017). *Machine Learners: Archaeology of a Data Practice*. Mit Press
- Momani, Lina (2024) *The extent of the use of artificial intelligence applications by teachers in integrated schools in Ajloun Governorate*, Journal of Human and Natural Sciences, number (5).
- Nasaireh, M. A., & Obeidat, K. A. (2022). *The Level of School Bullying and Its Relationship to Self-Esteem among Students with Learning Difficulties*. Educational Research (IJMCER), 4(2), 201-206.