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The reality of using artificial intelligence applications by teachers of learning disabilities in education

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ABSTRACT

This research aims to identify the reality of the use of artificial intelligence (AI) applications by teachers of students with learning disabilities (LD) in education. The descriptive approach was used to achieve the objectives of the research, in which 40 female teachers who teach students with LD were participated. A questionnaire was applied and it included 30 items classified into three themes (cognitive awareness, use, and obstacles). The results shown that there is weak cognitive awareness for AI among the study sample, the results also indicated a weak level of use for AI applications among the study sample, and that there were multiple obstacles in using these applications from the point of view of teachers of students with LD; most importantly, the challenge is in the financial constraints and the prices of AI applications in general. The study referred to a set of recommendations and implications based on the findings.

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1. INTRODUCTION

The world is witnessing tremendous developments in the field of information and communication technology, making technology a part of our daily lives, as it affects various areas. It has influenced the means of communication, methods of searching for information, how we interact with each other, and even the methods of learning and teaching. Perhaps one of the most important and prominent innovations in this field is artificial intelligence (AI) technology.

The AI techniques that accompanied the spread of modern communication technology are among the modern technological trends that will change the form of education in the future, and they have only emerged prominently as important developments in educational technology [1]. As a new technology used in the educational process, AI applications have brought about positive changes in improving the learning experience for learners through the existence of a customized learning environment that is adjustable based on cognitive needs and interests [2], transforming it from a method of indoctrination to a method of creativity and interaction [3].

Studies have defined [4]–[8] the concept of AI from several perspectives, which can be summarized in the following characteristics: the main tool for the development of AI depends on the engineering and structuring of the hardware and software components of computers through programming languages. It is based on inventing machines that perform various tasks simulating the characteristics and capabilities of human intelligence, such as thinking, learning, understanding, differentiation, analysis, perception, and the ability to move. It adopts programs and applications that enable computers to perform human mental functions and abilities in certain ways. It can symbolize by dealing with symbols that are processed to obtain information for representation. It can handle large, incomplete, or confirmed data and provide acceptable solutions. It can

respond quickly and instantly in a flexible manner with high accuracy. It has a base of knowledge and information that includes linking and representing cases and results. Additionally, it features characteristics of the experimental research method through setting probabilities and hypotheses to solve problems.

The most prominent applications of AI in the educational process for students with learning disabilities (LD) include:

- Robotics, which are machines based on AI systems that are programmed to perform multiple and different tasks and actions according to the context, that is, faster, stronger, more efficient, and safer than humans [9].
- Intelligent tutoring systems, which are computer-based intelligent tutoring systems that attempt to provide individual guidance based on the educational status of learners [10]. classifications that fall under this type are augmented reality applications, virtual reality applications, interactive chatbots, and the Internet of things [11].
- Expert systems, which are the most powerful systems based on intelligence techniques. They simulate the performance of expert human decision-making in a specific field and can integrate with information systems to improve their accuracy and performance [12].
- Adaptive learning systems are formative and corrective automated systems that can modify and adapt themselves to suit individual learners' characteristics, needs, and preferences [13].
- One of the most prominent applications of AI in education for students with LD is adaptive/recommendation-type systems that identify knowledge gaps and suggest suitable content [14].
- Natural language processing, which is the ability of computer devices to understand and process natural human language, whether spoken words or written, in the same way it is spoken and written [15], Google Assistant and Google Translate.
- Computer vision is one that enables computers and systems to extract meaningful information from digital images, videos, and other visual inputs and take actions or make recommendations based on that information [10], such as an image recognition service, which is available in Facebook [16].

As a result of the recent rapid changes in the education process in the field of LD due to the knowledge revolution and technological developments, there is a necessity to review policies, systems, and strategies for teaching students with LD to keep pace with the requirements of the modern era and available technologies. These new skills and qualifications are becoming essential for teachers of students with LD. The importance of these AI applications in the educational process lies in their efficient, effective, speedy, and intelligent capabilities, creating a need to harness these capabilities to support and facilitate learners' learning and establish a flexible and easy learning environment through which educational content is developed and adapted according to the needs and characteristics of each learner [17]. This is becoming increasingly urgent for students with LD [18].

In addition, many studies and conferences have recommended paying attention to the topic of AI technology and its applications in education in general and for people with special needs. Since the researcher practices training teachers of students with LD on methods of teaching this category, she recognizes the importance of revealing the knowledge and ability of these teachers to engage with modern technology.

To achieve this successfully, it is necessary to stand first on the actual status of how teachers of students with LD are using these applications, which is what the current research seeks to identify the actual status of using AI applications by teachers of students with LD, and the research tries to answer the following questions: i) What is the degree of LD teachers' knowledge about AI applications? ii) What is the degree of AI applications' use by LD teachers? and iii) What are the obstacles ahead of using AI applications by LD teachers? The current research aims at identifying the level of LD teachers' knowledge with AI applications. It also tries to identify the of LD teachers' level of awareness towards using AI applications. The study also identifies the obstacles that face LD teachers when using applications of AI.

There are many factors that reveal the importance of this study. The first is the growing interest in AI in the field of teaching students with LD. The second is the lack of research carried out in the field of AI with reference to teaching students with LD. Besides, the research may benefit those in charge of educating people with LD in identifying the actual status of using AI applications by LD teachers when making decisions to support the education of this category.

There are several limitations of this study. Temporal and spatial boundaries, as the research was applied in the second semester of the academic year 2022/2023 to teachers of students with LD. Also, thematic limitations, which is the measurement of cognitive awareness in the light of the concept of AI and its application in teaching students with LD.

- AI applications: computerized applications that are produced to simulate the behaviour of intelligent humans, whether by solving issues, deciding, solving problems with proper training [19].
- Teachers of students with LD: teachers who obtain educational qualifications that enable them to teach students who have been diagnosed with LD in school education.

– The actual status of the use of AI applications which is measured through the response of teachers (study sample) to the items of the questionnaire consisting of three themes, which are (the level of knowledge of AI applications, awareness of using AI applications, and obstacles ahead of using AI applications).

2. METHOD

The study relied on the analytical descriptive approach, with the aim of identifying the actual status of the use of AI concepts and applications by teachers of students with LD because it is the appropriate approach to answer the questions of this study. The study sample consisted of all 40 female teachers of students with LD in Amman First Directorate, and they were selected using the available sampling method.

The researcher used the questionnaire according to the five-point Likert scale to collect data, after reviewing the theoretical literature and previous studies related to the subject of the study such as the studies of [20]–[22]. The questionnaire was prepared according to the scientific basics used in building questionnaires, and the questionnaire consisted of three themes: i) theme one aims to measure the level of LD teachers' knowledge about AI applications, and it includes ten paragraphs; ii) theme two aims to identify the level of using AI applications when teaching students with LD and includes ten paragraphs; and iii) theme three aims to identify the obstacles to the use of AI applications by teachers of students with LD, and it includes ten paragraphs.

The validity of the questionnaire was verified using the indications of logical validity-content validity, where the questionnaire was presented in its initial form to five arbitrators from different specializations related to the required task. They were asked to express their opinion on the test in terms of the suitability of the questionnaire for the female teachers, the correctness of the scientific content of the questionnaire, the integrity of the linguistic wording of the paragraphs, and the deletion, modification, or addition of other paragraphs. The paragraphs that 80% of the arbitrators agreed to be valid were retained, and some paragraphs were modified, while inappropriate paragraphs were deleted in the light of the arbitrators' observations. Thus, the test in its final form includes 30 paragraphs distributed equally over the three themes-ten paragraphs for each theme in a way that it has the same evaluation weight.

After arbitrating the instrument and reaching its final form, the questionnaire was applied to a stability sample, which amounted to 23 female teachers, who were from within the study community and elsewhere; that is, to examine the indications of the stability of the parameters' responses to the questionnaire, by calculating the internal consistency coefficient of the questionnaire. The value of stability using the Cronbach's alpha equation was 0.83, which is a high stability coefficient suitable for the purposes of this study. As shown in Table 1, the instrument and its subscales have a high and acceptable degree of internal stability.

Table 1. Cronbach's alpha stability and internal consistency coefficients for the study instrument and its subscales

Theme	Stability coefficient	Coefficient of internal consistency
Cognitive level	0.88	0.84
Use level	0.87	0.87
Obstacles	0.83	0.86
Total	0.87	0.83

The study instrument was corrected in the light of the 5-point Likert scale, where it is given a score of (5) for strongly agreeing, a score of (4) for agreeing, a score of (3) for a neutral degree, a score of (2) for disagreeing, and a score of (1) for strongly disagreeing. A weight was given to the alternatives shown in the Table 2 to be treated statistically. To achieve the objectives of the study, the researcher used the following statistical methods: frequencies and percentages, Cronbach's alpha coefficient to measure the stability of the study instrument, arithmetic means, and standard deviations.

Table 2. Correction of the study instrument

Degree of approval	%	Mean
Strongly disagree	21 – 1	1.80 – 1.00
Disagree	41 – 22	2.60 – 1.81
Neutral	61 – 42	3.40 – 2.61
Agree	81 – 62	4.20 – 3.41
Strongly agree	100 – 82	5.00 – 4.21

3. RESULTS AND DISCUSSION

3.1. What is the degree of knowledge about AI applications for teachers of students with learning disabilities?

To answer this question, the arithmetic means, standard deviations, rank, and percentage of the respondents' responses were calculated on a questionnaire about the actual status of using LD parameters for AI applications in the first theme: the level of knowledge of AI applications and Table 3 shows these results. It is noted in Table 3 that the arithmetic averages for the paragraphs of this theme ranged between (3.15-2.05), with a proportion ranging between (63.0%-41.0%), where the paragraph *"AI contributes to the development of all fields and sciences,"* came with the highest average, (3.15), with a (neutral) score, while the paragraph *"AI is programmed in several languages, the most popular of which are Python, Java, and C++,"* came with the lowest score of (2.05), (I don't agree). The results also indicate that there are five paragraphs that got a score of (neutral), and five paragraphs that got a score of (I don't agree).

Table 3. The arithmetic means, standard deviations, rank, and percentage of the level of knowledge of LD parameters for AI applications

#	Rank	Paragraph	Mean	SD	%	Degree
1	2	Terms and concepts related to AI technologies in the field of education (such as machine learning, deep learning, natural language processing, computer vision, smart systems, and robots)	2.87	1.05	57.4	Neutral
2	5	AI is mainly related to computer science, mathematics, physics, engineering, and industry	2.65	1.25	53.0	Neutral
3	6	Software controls the operation of AI machines and robots	2.58	2.22	51.6	Disagree
4	9	Programming is the primary tool for the development of AI technology	2.14	1.05	42.8	Disagree
5	1	AI contributes to the development of all fields and sciences with all their branches	3.15	0.25	63.0	Neutral
6	4	The science of AI supports a variety of sciences to create intelligent software in any field	2.66	0.98	53.2	Neutral
7	3	I can learn about educational applications of AI and how to integrate them in my teaching	2.68	1.65	53.6	Neutral
8	10	AI is programmed in several languages; the most famous of which are Python, Java, and C.++	2.05	1.25	41.0	Disagree
9	8	AI is like human intelligence in its behavior such as thinking, analysis and decision making	2.25	1.22	45.0	Disagree
10	7	The history of AI dates to the fifties of the twentieth century, which indicates that it is not a modern science	2.66	2.24	51.2	Disagree
		Overall theme	2.56	1.08	51.2	Disagree

The researcher attributes this result to the fact that the study individuals are all specialized in special education, which is not related to technology topics in general and AI topics, and therefore the general average of the study sample's responses to all items was low (2.56), with a rate of (51.2%), and a degree of (I don't agree). This indicates the importance of providing teachers of students with LD with sufficient knowledge and experience of AI and its educational applications. The value of the standard deviation of the arithmetic mean of the theme is equal to (1.08), which is a value and an indication of the great homogeneity among the responses of the study sample, according to the fact that they are all from the same specialization and their experiences are close to each other. This result differs from what was concluded in the study of article [20] which refers to that university students had a neutral average of their knowledge of AI. This may be attributed to the fact that the sample of this study included students specializing in computer science, and this is what led to a rise in their averages, as they study these subjects during their undergraduate level. The study Al-Attal *et al.* [22] have shown a high degree of students' knowledge about AI at Princess Noura Bint Abdul Rahman University, and this is attributed to the same reason, which is the difference in the sample.

3.2. What is the degree of use of AI applications by teachers of students with learning disabilities?

To answer this question, the arithmetic means, standard deviations, rank, and percentage of respondents' responses were calculated on a questionnaire about the reality of using AI applications by female teachers of students with LD. In the second theme, Table 4 shows the level of using AI applications. It is noted in Table 4 that the arithmetic averages for the terms of this theme ranged between (4.13-0.84), with a percentage ranging at (82.6%-16.8%). The paragraph *"I use search engines that work with intelligence technology such as the written, audio and image search engines in Google,"* came with the highest arithmetic average of (4.13), with degree of approval stating, "I agree". On the other hand, the paragraph *"I use the technology of the Internet of things to help me accomplish my scientific tasks faster such as the Alexa device from Amazon to play audio clips or search for information,"* came with the lowest average score (0.84), with degree of approval stating,

"strongly disagree". The results also indicate that there are two paragraphs that got "I agree" as a degree of approval, one paragraph got a degree "neutral", two paragraphs got a degree stating, "I don't agree", and five paragraphs stating, "I strongly disagree".

Table 4. The arithmetic means, standard deviations, rank, and percentage of the level of use of AI applications by female teachers of students with LD

#	Rank	Paragraphs	Mean	SD	%	Degree
1	2	Using AI translation applications such as Google Translate	4.02	0.55	80.4	Agree
2	1	I use intelligence-powered search engines such as Google text, audio, and image search engines	4.13	1.03	82.6	Agree
3	8	I use ChatGPT	1.03	1.34	20.6	Strongly disagree
4	3	Use personal assistants in your mobile phone to search for information (e.g., Siri, Assistant, Bixby, and Microsoft Cortana)	3.00	1.72	60.0	Neutral
5	9	I use smart teaching systems based on an immediate analysis of my initial cognitive skills: and then provide a teaching strategy appropriate to my abilities such as language learning applications (Elsa and Duolingo)	1.01	0.59	20.2	Strongly disagree
6	4	I use augmented reality applications in education (such as Elements 4D and Aursama)	1.84	0.73	36.8	Disagree
7	6	I use a range of applications that help students with LD (e.g., Write Words, Letter School, Alpha Writer, ABC Pocket Phonics, Word Magic, and The Writing Machine)	1.74	0.82	34.8	Strongly disagree
8	10	I use the technology of the Internet of things to help me complete my scientific tasks faster (such as an Amazon Alexa device to play audio or look up information)	0.84	0.32	16.8	Strongly disagree
9	5	I use virtual reality applications in education (for example, wearing 3D glasses while watching 360-degree technical videos)	1.83	0.93	36.6	Disagree
10	7	I work with voice recognition and analysis applications (e.g., Google Voice)	1.05	0.47	21.0	Strongly disagree
		Overall theme	2.05	1.01	41.0	Disagree

The researcher attributes this result to the fact that the study individuals did not receive these skills during their study at the university at the undergraduate level, as well as the lack of training and qualification in these skills during work, which impedes their use of these skills at work as teachers for students with LD. Thus, the general average of the study sample's responses to all items was low (2.05), with a rate of (41.0%), with a degree of "I don't agree". The value of the standard deviation of the arithmetic mean of the theme is equal to (1.01), which is a value and an indicator of the great homogeneity between the responses of the study sample, bearing in mind that they are all from the same specialty and their experiences are close to each other. This result is consistent with the study of article [14], in which the researcher indicated the weak use of AI applications by female teachers in education. This was not compatible with the study Al-Attal *et al.* [22], the results of which indicated that female students used AI applications to a high degree, and the reasons are due to the difference in the sample and to the interest of universities at the present time in teaching students to use these applications in general.

3.3. What are the obstacles ahead of the use of AI applications by teachers of students with learning disabilities?

To answer this question, the arithmetic means, standard deviations, rank, and percentage of respondents' responses were calculated on the questionnaire of the reality of the use of AI applications by teachers of students with LD in the third theme. This includes obstacles to the use of AI applications by teachers of students with LD as shown in Table 5. It is noted in Table 5 that the arithmetic averages for the paragraphs of this theme ranged between (4.89-2.83), with a percentage ranging between (97.8%-56.6%), where the paragraph *"High prices of some educational AI applications,"* came with the highest arithmetic average of (4.89), and a score "strongly agree", while the paragraph *"Not enough time to use educational AI applications during education,"* came with the lowest arithmetic mean of (2.83), and a score of "neutral". The results also indicate that there are five items that got a score of "strongly agree", three items got a score of "I agree", and two with "neutral".

The researcher attributes the fact that the study individuals agree on the obstacles of using AI applications by teachers of students with LD, where the general average of the study sample's responses to all paragraphs was high (4.05), with a rate of (81.0%), and a degree of "I agree", to the large amount of job burdens that occupy most of their time. This limits the possibility of following technological developments, especially

in the field of AI. There are other factors that include the high prices of living in relation to the income of the teacher in Jordan; this prevents these teachers from following the updated developments in educational technology in general and AI. Other factors include weakness of training and qualification that has been emphasized as a major obstacle in employing AI applications in the learning process of students with LD.

Table 5. the arithmetic means, standard deviations, rank, and percentage of obstacles to the use of AI applications by teachers with LD

#	Rank	Paragraphs	Mean	SD	%	Degree
1	5	Lack of equipment and capabilities needed to use and employ AI applications properly	4.23	1.00	84.6	Strongly agree
2	6	Poor infrastructure, internet, and lack of modern devices	4.02	0.98	80.4	Agree
3	9	Weak technical support for AI technologies in the event of any technical problems	3.40	0.87	68.0	Neutral
4	4	Teachers of students with LD lack awareness and knowledge of the services provided by AI applications in the educational process	4.32	1.02	86.4	Strongly agree
5	3	Poor technical skills that were trained during the university study period	4.58	0.88	91.6	Strongly agree
6	2	Lack of training courses offered in the field of AI applications and their educational uses	4.77	0.55	95.4	Strongly agree
7	8	Scarcity of guidelines that explain the mechanisms of using AI applications and their employment in teaching LD	3.69	1.20	73.8	Agree
8	7	Not supporting some educational AI applications related to LD	3.78	0.79	75.6	Agree
9	1	High prices of some educational AI applications	4.89	0.32	97.8	Strongly agree
10	10	Not having enough time to use educational AI applications during education	2.83	1.23	56.6	Neutral
		Overall theme	4.05	0.87	81.0	Agree

This result is consistent with the studies of [21], [23]–[25], which concluded that there are obstacles ahead of using AI applications in education, including the high cost and difficulty of obtaining specialized software, from the point of view of university students and teachers of physical education. The value of the standard deviation of the arithmetic mean of the overall theme is equal to 0.87, which is a value and an indication of the great homogeneity between the responses of the study sample, according to the fact that they are all from the same specialization and their experiences are close to each other.

The findings of this study underscore the need for a significant shift in how AI is integrated into the educational landscape for students with LD. As AI continues to evolve, its potential to enhance individualized learning experiences for students with LD is immense. However, to fully realize this potential, it is crucial to invest in teacher training, development programs, and resources that foster a deeper understanding and proficiency in AI applications. On a global scale, this study suggests that educational systems must prioritize AI literacy for educators, equipping them with the necessary tools to effectively implement AI in their classrooms.

Additionally, study like Altakhaineh *et al.* [25] highlights the significance of tailored interventions, such as the use of visual stimuli, which can be integrated into AI applications to improve learning outcomes for children with specific educational needs. Moreover, Zibin *et al.* [26] highlights that there are some assistive technologies that can enhance interaction, collaboration between teachers and students, and increase learning, suggesting that AI-based tools could further support the development of complex skills in children with LD.

Furthermore, addressing the barriers highlighted in the research, such as financial constraints and the complexity of preparing AI-integrated learning environments, will be vital in creating equitable access to AI-driven education for students with LD worldwide. The future pedagogical impact of AI in this context holds promise not only for enhancing learning outcomes but also for fostering inclusive education practices that cater to diverse learning needs. As AI technologies continue to advance, ongoing research into their effectiveness, adaptability, and scalability will be essential to ensuring that they contribute meaningfully to the development of students with LD, creating a more inclusive and accessible educational environment for all.

4. CONCLUSION

The motives for conducting this study were the growing interest in AI in the field of teaching students with LD and the benefit to those in charge of educating people with LD in identifying the actual status of AI application usage by LD teachers when making decisions to support the education of this group. This study explores the level of LD teachers' knowledge of AI applications and their level of awareness regarding the use of AI applications. It sheds light on the obstacles that LD teachers face when using AI applications. The limited

knowledge of LD teachers about AI applications implies a need for more engagement in workshops and hands-on training about AI applications. Furthermore, pre-service LD teachers should have training courses to qualify them to use AI applications in education. The study highlights the obstacles to using AI applications in education, including the high cost and difficulty of preparing a suitable environment for AI applications. Considering the results of the study, the researcher recommends conducting research on the impact of employing AI applications in courses taught to students with LD.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Author states no conflict of interest.

INFORMED CONSENT

I have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

The researcher related to human use has been complied with all the relvent nation regulations and institutional polices and has been approved by the authors institutional review board.

DATA AVAILABILITY

The data that support the findings of the study are available on request from the corresponding author, [LD].

REFERENCES

[1] S. A. Becker *et al*., "NMC horizon report: 2018 higher education edition," Louisville, CO: EDUCAUSE, 2018.
[2] A. Panigrahi and V. Joshi, "Use of artificial intelligence in education," *The Management Accountant Journal*, vol. 55, no. 5, 2020, doi: 10.33516/maj.v55i5.64-67p.
[3] A. H. Farzaneh, Y. Kim, M. Zhou, and X. Qi, "Developing a deep learning-based affect recognition system for young children," *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, vol. 11626 LNAI, pp. 73–78, 2019, doi: 10.1007/978-3-030-23207-8_14.
[4] D. L. Poole and A. K. Mackworth, *Artificial intelligence: foundations of computational agents (2nd ed.)*. Cambridge University Press, 2017.
[5] B. Marr, *Artificial Intelligence in Practice: How 50 Successful Companies Used AI and Machine Learning to Solve Problems*. Hoboken, NJ, USA: Wiley, 2019.
[6] M. Chassignol, A. Khoroshavin, A. Klimova, and A. Bilyatdinova, "Artificial intelligence trends in education: a narrative overview," *Procedia Computer Science*, vol. 136, pp. 16–24, 2018, doi: 10.1016/j.procs.2018.08.233.
[7] A. R. Harkins Brown, L. Z. Carling, and D. C. Peloff, "Artificial intelligence in special education," *Encyclopedia*, vol. 5, no. 1, 2025, doi: 10.3390/encyclopedia5010011.
[8] D. Zhu, "Analysis of the application of artificial intelligence in college English teaching," in *Proceedings of the 2017 2nd International Conference on Control, Automation and Artificial Intelligence (CAAI 2017)*, 2017, pp. 235–237, doi: 10.2991/caai-17.2017.52.

[9] A. M. Mahmoud, "Artificial intelligence applications an introduction to the development of education in light of the challenges of the Corona virus (COVID 19) pandemic," *International Journal of research in Educational Sciences*, vol. 3, no. 4, pp. 1–54, 2020.
[10] Y. Akyuz, "Effects of intelligent tutoring systems (ITS) on personalized learning (PL)," *Creative Education*, vol. 11, no. 06, pp. 953–978, 2020, doi: 10.4236/ce.2020.116069.
[11] W. F. Al-Maliki, "The role of artificial intelligence applications in enhancing educational strategies in higher education (literature review)," *Journal of Educational and Psychological Sciences*, vol. 7, no. 5, pp. 93–107, Feb. 2023, doi: 10.26389/AJSRP.K190922.
[12] S. Russell and P. Norvig, *Artificial intelligence: a modern approach*, *4th ed*. Pearson, 2021.
[13] X. Zhai *et al.*, "A review of artificial intelligence (AI) in education from 2010 to 2020," *Complexity*, vol. 2021, 2021, doi: 10.1155/2021/8812542.
[14] S. Panjwani-Charania and X. Zhai, "AI for students with learning disabilities: a systematic review," in *Uses of Artificial Intelligence in STEM Education*, Oxford University Press, 2024, doi: 10.1093/oso/9780198882077.003.0021.
[15] S. Montalvo, J. Palomo, and C. De La Orden, "Building an educational platform using NLP: a case study in teaching finance," *Journal of Universal Computer Science*, vol. 24, no. 10, pp. 1403–1423, 2018.
[16] K. Nagao, *Artificial intelligence accelerates human learning: discussion data analytics*. Springer Singapore, 2019, doi: 10.1007/978-981-13-6175-3.
[17] M. Loftus and M. G. Madden, "A pedagogy of data and artificial intelligence for student subjectification," *Teaching in Higher Education*, vol. 25, no. 4, pp. 456–475, 2020, doi: 10.1080/13562517.2020.1748593.
[18] I. Roll and R. Wylie, "Evolution and revolution in artificial intelligence in education," *International Journal of Artificial Intelligence in Education*, vol. 26, no. 2, pp. 582–599, Jun. 2016, doi: 10.1007/s40593-016-0110-3.
[19] H. H. Al-Faqih and L. A. Al-Farani, "The reality of the use of artificial intelligence applications by female students of the Faculty of Graduate Studies in Education at King Abdulaziz University in light of some variables," (in Arabic), *Journal of Educational and Psychological Sciences*, vol. 7, no. 1, pp. 1–19, Jan. 2023, doi: 10.26389/AJSRP.Q070822.
[20] F. Al-Ghamdi and L. A. Al-Farani, "The reality of using female teachers at the special education schools the to the educational applications of artificial intelligence (AI) and their attitude towards it," (in Arabic), I*nternational Journal of Educational & Psychological Studies*, vol. 8, no. 1, pp. 54–76, Aug. 2020, doi: 10.31559/EPS2020.8.1.4.
[21] A. S. Alkahtani and S. S. Aldayel, "The level of conceptual awareness and attitude toward artificial intelligence and its applications in education among Princess Nourah Bint Abdul Rahman University students," (in Arabic), *Journal of Educational & Psychological Sciences*, vol. 22, no. 1, pp. 163–192, 2021, doi: 10.12785/jeps/220105.
[22] M. H. Al-Attal, I. Al-Enezi, and A. Al-Ajmi, "The role of Artificial Intelligence (AI) in education from the point of view of students at the Faculty of Basic Education in the State of Kuwait," (in Arabic), *Journal of Studies and Educational Researchers*, vol. 1, no. 1, pp. 30–64, 2021.
[23] M. B. S. Aba Al-Khail, "The Extent of awareness of health and physical education teachers in secondary schools in Riyadh regarding artificial intelligence," (in Arabic), *Educational Sciences*, vol. 29, no. 4, pp. 65–91, Oct. 2021, doi: 10.21608/ssj.2021.260660.
[24] S. Garg and S. Sharma, "Impact of artificial intelligence in special need education to promote inclusive pedagogy," *International Journal of Information and Education Technology*, vol. 10, no. 7, pp. 523–527, 2020, doi: 10.18178/ijiet.2020.10.7.1418.
[25] A. R. M. Altakhaineh, A. Zibin, and R. N. Alkhatib, "On the acquisition of the arabic grammatical gender by Arabic-speaking children with ASD," *Journal of Psycholinguistic Research*, vol. 49, no. 6, pp. 1027–1045, 2020, doi: 10.1007/s10936-020-09732-5.
[26] A. Zibin, A. R. M. Altakhaineh, D. Suleiman, and B. Al Abdallat, "The effect of using an arabic assistive application on improving the ability of children with autism spectrum disorder to comprehend and answer content questions," *Journal of Psycholinguistic Research*, vol. 52, no. 6, pp. 2743–2762, 2023, doi: 10.1007/s10936-023-10019-8.

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