

The role of Artificial Intelligence (AI) in tests and assessment from the perspective of teachers in Jeddah education

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Abstract

With AI's growing integration into various sectors, its potential to transform educational assessment practices is increasingly apparent. This research aims to examine how school teachers perceive the use of AI in creating, administering, and evaluating assessments, as well as its potential benefits and challenges. A quantitative-methods approach was employed, with 219 participants being surveyed. The results indicate that the perspectives of school teachers in Jeddah reveal a nuanced view of AI in educational assessments. The study also identifies several significant challenges that hinder the integration of AI in assessment in Jeddah's educational sector. These challenges include a lack of training, financial and resource constraints, ethical concerns, resistance to change, and technical reliability issues. No significant differences were found in the perceptions of AI's importance in assessment according to gender, school level, or experience. However, public-school teachers demonstrated significantly higher mean scores compared to private-school teachers, indicating a stronger belief in AI's potential to enhance assessment practices.

Keywords: Artificial Intelligence (AI), Tests, Assessment, Teacher, Educational Assessment, Personalized Feedback, Automated Grading, Ethical Considerations.

1. Introduction

The integration of Artificial Intelligence (AI) has generated mounting interest within pedagogy, particularly in terms of how it can transform assessment and testing methods. AI presents various potential benefits, including the ability to automate grading, tailor assessments to individual student needs, and provide real-time feedback. For example, AI-powered systems are capable of analyzing student performance and adapting the difficulty of test questions, creating more personalized learning experiences (Luckin et al., 2016). As AI becomes more prominent in classrooms, it is imperative to understand the perspectives of teachers, who play a key role in implementing these technologies.

While AI may well enhance efficiency and provide detailed insights into student progress, teachers' attitudes toward these tools are critical to their successful adoption. Studies suggest that while some educators are optimistic about the potential for AI to reduce workload and offer more objective grading, others are concerned about issues including algorithmic bias, data privacy, and the potential loss of control over the assessment process (Holmes et al., 2019). Teachers may also worry about whether AI tools can accurately assess complex student skills, such as creativity or critical thinking, which are often better evaluated through human judgment (Williamson & Eynon, 2020).

Given these mixed views, understanding teachers' perceptions of AI in assessment is crucial. Their acceptance or skepticism can directly influence how effectively AI tools are integrated into the classroom. Research shows that professional development and training are essential for helping teachers to feel confident in using AI for assessment (Selwyn, 2019). Without proper support, teachers may resist adopting these technologies, even if they offer potential benefits for student learning.

This study aims to explore teachers' perspectives on the use of AI in assessment and testing. By investigating their concerns, expectations, and experiences, we hope to

gain insights into how AI can be implemented in ways that address teachers' needs and that enhance educational outcomes. Key questions include:

- What is the importance of AI technology in assessment from the perspective of school teachers in Jeddah?
- What are the challenges facing the use of AI technology in assessment from the perspective of school teachers in Jeddah?
- How do selected variables (gender, experience, school type, school level) impact the perspectives of school teachers in Jeddah on the use of AI technology in assessment?

Addressing these questions will provide a clearer understanding of the opportunities and challenges for AI in education, particularly in tests and assessments. The following section recounts the key themes and findings from the general body of literature on AI in assessment, before homing in specifically on the importance of centering teachers' perspectives in such research.

2. Literature Review

2.1. General Overview of AI in Assessment:

In recent years, various fields have been transformed by the emergence and development of AI. Indeed, its impact on the field of education is becoming increasingly notable. Among the most significant developments in this context is the application of AI in assessment and testing, which is fundamentally changing the way that educators evaluate students' performance and learning outcomes. Traditionally, educational assessments have relied on standardized tests, essays, and teacher-led evaluations. Such methods, while effective in certain respects, often fail to capture the full complexity of student learning. These conventional approaches can be time-consuming, prone to bias, and limited in their ability to provide real-time feedback. However, with the advent of AI, there is a growing

potential to address these limitations by creating more adaptive, personalized, and objective assessment frameworks.

That being said, during the early stages of the AI boom in education, it was not uncommon to see educational institutions instinctively moving to restrict or entirely ban the use of AI in assessments in the interests of academic integrity (Cheung & Wong, 2023; Cotton et al., 2023; Leung & Niazi, 2023; Nagoya University, 2023; Perkins, 2023; Plata et al., 2023; Uzun, 2023). With time, however, more balanced approaches have developed in line with a greater understanding of the capacities and limitations of the AI technologies in question (Fowler et al., 2023; Group of Eight Australia, 2023; Harvard University, n.d.; Lodge et al., 2023; Stanford University, 2024; Yale University, 2023). While policymakers in educational institutions continue to focus primarily on academic (mis)conduct and the implicated ethical concerns, there is also a general recognition of the importance of supporting students' learning and outcomes in relation to the use of AI.

On this note, several studies have demonstrated AI's capacity to enhance students' skills and learning experiences in various specific contexts. As summarized by Furze et al. (2024), such studies have explored the role of AI in supporting students from disciplines as varied as STEM (Amano et al., 2023; Cooper, 2023; Forero & Herrera-Suárez, 2023), creative arts (Bussell et al., 2023; Gozalo-Brizuela & Garrido-Merchan, 2023), and computer science (Liu et al., 2024), and in the development of core skills such as writing and composition (Cummings et al., 2024; Knowles, 2024). As noted by both Furze et al. (2024) and Yan et al. (2024), however, there is a tendency in such research to maintain a limited focus on text-based AI tools, often failing to look further than ChatGPT and thus overlooking the more nuanced evolving applications and capacities of AI.

One of the foremost benefits of AI in an assessment context is that it is able to deliver adaptive testing environments. Unlike traditional assessments, which present the same set of questions to all students, AI-powered adaptive tests are capable of adjusting question difficulty dynamically according to the learner's responses. This method, often referred to as computerized adaptive testing (CAT), ensures that each student is evaluated at an appropriate level of challenge, making the assessment more accurate and fairer. Research has shown that adaptive tests can reduce testing time while maintaining or even increasing the precision of the assessment (Van der Linden & Glas, 2018). By continuously calibrating question difficulty, AI systems can pinpoint a student's proficiency more accurately than static tests.

In addition to adaptive testing, AI facilitates the automation of grading processes, particularly in areas that traditionally require subjective judgment, such as essay scoring. Automated essay scoring (AES) systems implement natural language processing (NLP) techniques in order to analyze the content, structure, and coherence of written responses. These systems are trained on large datasets of human-graded essays to mimic the grading process of expert evaluators. Although AES is not without its controversies, particularly regarding its ability to understand nuanced arguments and creativity, studies have shown that it can achieve a level of reliability comparable to human graders (Shermis & Burstein, 2013). Moreover, the use of AES allows for immediate feedback, enabling learners to recognize and grow from their mistakes, thus more quickly improving their writing skills.

AI's role in formative assessment is also noteworthy. Formative assessments are ongoing processes that provide feedback to students and teachers throughout their learning journey. By contrast, summative assessments evaluate students' learning specifically at the end of an instructional period. AI-powered formative assessment tools are able to track learners' progress in real-time, identifying strengths and

areas for improvement as they arise. These tools use data analytics to detect patterns in student performance, offering insights into how well students are grasping the material. For instance, intelligent tutoring systems (ITS) leverage AI in order to generate personalized learning experiences, adjusting instructional content based on a learner's needs. According to a study by Ma et al. (2014), ITS can lead to a significant improvement in learning outcomes by providing targeted feedback and scaffolding that aligns with individual learning trajectories.

Furthermore, AI's predictive analytics capabilities are being increasingly applied to educational assessment. By analyzing sizable pools of data on student performance, AI is able to recognize trends and generate predictions regarding future learning outcomes. This predictive modelling can be invaluable for educators in anticipating which students may need additional support or intervention. Predictive analytics can also inform curriculum design by highlighting areas where students commonly struggle, allowing educators to refine instructional strategies and resources. This data-driven approach to education could potentially enhance not only individual student outcomes but also the overall efficacy of educational programs more widely.

However, integrating AI into assessment comes with several notable challenges and ethical considerations. One major concern is the potential for AI algorithms to (re)produce biases. This can occur if the training data that is used in the development of these systems is not representative of the diverse student populations they are meant to serve. For example, if the data used to train a given AI system is based on one specific demographic group—most often white, middle-class, Anglophone males (Bender et al., 2021; Crawford, 2021)—, it may perform less accurately for students from different backgrounds, leading to biased outcomes. Such outcomes may include the generation of discriminatory or offensive content (Sun et al., 2024). Therefore, it is essential that AI systems in

education are trained and tested using diverse datasets in the interest of improving fairness and equity (West et al., 2019).

Moreover, the integration of AI into assessment naturally prompts questions around data security and privacy. Since AI-based systems harvest and analyze huge quantities of student data, there exists a growing concern that such information might be misused, compromised, or sold (Eynon, 2022; Pangrazio & Sefton-Green, 2022). It is therefore imperative that educational institutions conduct rigorous measures to protect their students' data and to ensure transparency in terms of how they are used. Similarly, there are concerns regarding copyright infringement and intellectual property in the training of GenAI models and the generation of their content (Perrotta et al., 2022). Given the complexities of international copyright law, this particular issue is at the forefront of discourse around the legality of GenAI technologies, as evidenced by the proliferation of high-profile and long-term lawsuits in recent years (Ozcan et al., 2023). Maintaining ethical integrity is particularly vital in an educational context, where there is a growing expectation that teachers prepare their students to enter into an AI-centered society. Based on these factors, there is a need for clear regulations and guides of best practice to govern the implementation of AI in education, protecting students' rights and ensuring that AI is used ethically and responsibly (Baker & Smith, 2019).

To summarize this general overview of current literature on AI in assessment, it is clear that AI has the capacity to revolutionize educational assessment by creating more adaptive, personalized, and data-driven learning experiences. Specifically, its potential to automate grading, to offer real-time feedback, and to predict student outcomes offers significant advantages over traditional assessment methods. However, for these benefits to be fully realized, it is vital that the various and notable challenges associated with AI are clearly addressed. These include issues of bias, privacy, and ethical use. With its continued and inevitable evolution, AI

will play an increasingly pivotal part in influencing the future of education, offering new opportunities to enhance learning and assessment practices.

The following subsection will shift to a more specific focus on the importance of incorporating teachers' perspectives into research on AI in assessment.

2.2. Teachers' Perspectives on AI in Assessment:

As discussed above, the implementation of AI in educational assessment and testing is rapidly transforming the landscape of modern education. As these technologies evolve, it is essential to understand the implications that they hold for the teaching profession. As such, conducting research that gathers and analyzes teachers' perspectives on AI's role in assessment and testing is of paramount importance for several reasons.

Firstly, by centering teachers' perspectives in such research, we are better situated to understand the practical challenges and opportunities of AI in assessment. Teachers are the primary agents of assessment and instruction, making their insights crucial to the effective integration of AI into education. Research focused on their perspectives can reveal the practical challenges that they face, including the compatibility of AI tools with existing curricula, the reliability of AI-driven assessments, and the degree to which these tools can be seamlessly integrated into everyday teaching practices. Moreover, teachers can identify opportunities where AI could enhance educational outcomes, such as through personalized learning experiences or more efficient grading systems. By understanding these practical challenges and opportunities, stakeholders can develop AI tools that are both advanced in technological terms and in alignment with the realities of classroom teaching.

Another reason to center teachers' perspectives in research on AI in assessment is that this facilitates a greater awareness of the necessary ethical considerations and

of the importance of teacher autonomy. As raised in the previous section, the integration of AI into education prompts significant ethical concerns, particularly concerning data privacy, bias, and the transparency of AI algorithms. Teachers are uniquely positioned to evaluate these ethical implications, as they are responsible for safeguarding student welfare and ensuring that assessments are fair and equitable. Research that includes teachers' views can help to address concerns regarding AI's potential to reinforce existing biases and to diminish teacher autonomy. Such research can inform the development of ethical guidelines and policies in order to ensure that AI is used in ways that uphold the integrity of the educational process and protect the rights of all students.

A further advantage of teacher-led research is that it can lead to the enhancement of AI tools through teacher feedback. Teacher feedback is vital in refining AI tools to better serve educational purposes. Teachers' on-the-ground experience with students allows them to provide detailed, context-specific feedback on how AI tools perform in real classroom environments. This feedback can improve the accuracy and reliability of AI-driven assessments, rendering them more effective in measuring student learning and progress. Additionally, teachers can suggest features that would make AI tools more user-friendly and supportive of their teaching practices, such as intuitive interfaces, customizable settings, and integration with existing educational technologies.

Similarly, prioritizing teachers' perspectives alongside evaluations of AI in pedagogical research has the potential to foster greater human-AI collaboration in education. As AI takes a more central role in education, it is essential that teachers learn to foster a collaborative relationship with AI systems. Research that explores teachers' perspectives can shed light on how AI may best complement human instruction, enhancing rather than replacing the role of teachers. For example, AI could be used to handle routine tasks, such as grading standardized tests, allowing

teachers to focus instead on the more creative and complex aspects of teaching that demand human judgment and empathy. Understanding how teachers perceive the balance between human and AI roles in education can help in designing AI systems that support and empower educators rather than undermine their professional expertise (Miao & Holmes, 2023).

Finally, obtaining teachers' insights on the challenges of integrating AI into assessment better enables researchers and educators alike to address issues of plagiarism and to ensure authenticity in this context. One of the significant roles AI can play in education is in the detection of plagiarism and ensuring the authenticity of student work. Teachers' perspectives on and experiences of this aspect are crucial, as they can provide practical examples of how plagiarism occurs and of the limitations of current detection methods. By involving teachers in the future creation and training of AI-driven plagiarism detection software, these systems can be made more robust and in alignment with academic integrity standards. Teachers can also help to facilitate the development of AI tools that go beyond simply detecting plagiarism, and can even help to prevent it in the first place by promoting original thinking and proper citation practices among students.

In conclusion, conducting research that gathers teachers' views on the roles potentially played by AI in assessment and testing is essential for several reasons. It allows for the creation and training of AI tools that are practically viable, ethically rigorous, and supportive of teachers' professional roles. Such research can facilitate the development of AI systems that enhance educational outcomes by working in harmony with teachers, thereby ensuring that the integration of AI into education is both effective and responsible. In valuing and incorporating teachers' insights, the educational community can better navigate the complex interplay between technology and pedagogy, ultimately benefiting learners and teachers alike.

3. Aims and Objectives

The present study aims to identify the importance of AI technology in tests and assessments, and to highlight the challenges of using it in assessment from the perspectives of school teachers in the educational system of Jeddah in Saudi Arabia. Furthermore, this research also explores the effect of several variables (gender, experience, school type, school level) on teachers' perceptions of AI in education. The study adopts a descriptive approach based on a sample of 219 teachers (114 male and 105 female) based in Jeddah. The data were collected through a questionnaire made up of three sections and comprising 19 questions in total.

The core goals of this study can thus be summarized as follows:

- To identify the importance of AI technology in assessment from the perspectives of school teachers in Jeddah.
- To reveal the challenges facing the use of AI technology in assessment from the perspectives of school teachers in Jeddah.

To understand the relationship between selected variables (gender, experience, school type, school level) and the perspectives of school teachers in Jeddah on AI technology in assessment.

To the best of the researcher's knowledge, this is one of the first studies to address the role and significance of AI in assessment in this geographical context.

4. Methodology

This study is primarily descriptive in nature, owing to the suitability of this lens to achieving the objectives outlined above. This particular approach facilitates an effective description of the phenomenon that is the subject of study, alongside an analysis of its data and an exploration of the relationships and differences between its variables, the opinions raised about it, and the effects that it produces.

As a basis for this investigation, the current researcher proposes the Educators' Perspectives on Artificial Intelligence in Testing and Assessment Scale (EPAITAS) to explore teachers' views on using AI in tests and educational assessment. The EPAITAS is a specialized instrument designed to be flexible, clear for educators with limited knowledge of new AI technologies, and adaptable across a wide range of disciplines and contexts. For the present research, this scale is operationalized in the form of a survey made up of 19 four-point Likert-style questions, which are compartmentalized into three distinct thematic factors:

- Factor 1: Awareness. This factor comprises three items that gauge teachers' knowledge and understanding of AI applications in assessment.
- Factor 2: Importance. This factor comprises nine items that examine the perceived significance of using AI technology in improving assessment.
- F3: Challenges. This factor comprises seven items that identify potential practical and ethical barriers and difficulties faced by teachers when incorporating AI technology into assessment.

Through these dimensions, the EPAITAS provides a comprehensive view of teachers' readiness, attitudes, and concerns regarding the use of AI in educational assessments. This scale helps educators and researchers gain insights into the potential and limitations of AI in the educational field. By understanding these perspectives, stakeholders can better support the integration of AI technologies into teaching and learning practices.

The EPAITAS demonstrates a high level of internal consistency, with a reliability coefficient (Cronbach's alpha) of 0.925 for its 19 items (see Table 1). This indicates that the scale as operationalized in the present study is highly reliable, meaning that the items consistently measure the intended constructs across different respondents. A reliability score above 0.90 is generally considered excellent, suggesting that the

EPAITAS is a dependable instrument for assessing teachers' perspectives on the use of AI in testing and assessments. This high reliability reinforces the scale's usefulness in educational research, and its potential for yielding consistent and accurate results across various settings.

Table (1): EPAITAS reliability statistics

Cronbach's Alpha	Cronbach's Alpha based on standardized items	Number of items
.925	.925	19

The sample population for the present research consists of 114 male and 105 female randomly selected school teachers in the Jeddah educational system, who were asked to rate their level of agreement with a series of statements relating to the use of AI in assessment.

5. Results and Discussion

5.1. Quantitative Results:

The study aimed to gauge teachers' perspectives on the importance of AI in assessment and testing within Jeddah's educational landscape. The analysis of responses on a 4-point Likert scale ('1 = strongly disagree' to '4 = strongly agree') revealed mean scores between 2.5 and 3.2 across 19 items, indicating varied opinions among teachers regarding the integration of AI into assessments.

The following results describe the perspectives of teachers in Jeddah education on the role of AI in tests and assessment:

Table (2): Survey results

	N	Minimum	Maximum	Mean	Standard deviation	Variance
Factor 1: Awareness of AI in assessment						
1. I have knowledge of the uses of AI applications in assessment and testing.	219	1.00	4.00	2.6073	.86265	.744
2. I have knowledge of using assessment tools and tests based on AI.	219	1.00	4.00	2.5479	.86800	.753
3. I have knowledge of the technical requirements for using AI in assessment and testing.	219	1.00	4.00	2.5023	.80920	.655
Factor 2: The importance of AI technology in assessment						
4. I have knowledge of the role of AI in assessment and testing.	219	1.00	4.00	2.6256	.84402	.712
5. Assessments using AI are more accurate than traditional assessments.	219	1.00	4.00	2.7169	.90475	.819
6. AI technology helps in adapting the assessment according to the level of each student.	219	1.00	4.00	2.8082	.78385	.614
7. AI assessments provide quick feedback to teachers.	219	1.00	4.00	2.9954	.76325	.583
8. AI assessments provide quick feedback to students.	219	1.00	4.00	2.9087	.80757	.652
9. AI technology helps in building high-quality tests.	219	1.00	4.00	2.8950	.77986	.608
10. AI technology increases the reliability of the assessment process.	219	1.00	4.00	2.8356	.81297	.661
11. AI technology increases the fairness of the assessment process.	219	1.00	4.00	2.9817	.82930	.688
12. AI assessments will become an essential part of the future assessment system.	219	1.00	4.00	3.1872	.79368	.630

Factor 3: Challenges facing the use of AI technology in assessment						
13. There is a scarcity of training programs for using AI in assessment and testing.	219	1.00	4.00	2.9772	.72595	.527
14. Using AI in assessment and testing is accompanied by many technical problems.	219	1.00	4.00	2.8447	.79771	.636
15. There is a greater ease of using traditional assessment methods compared to using AI in assessment and testing.	219	1.00	4.00	3.2329	.76962	.592
16. There is a lack of specialists and experts in the field of AI in assessment and testing.	219	1.00	4.00	2.9635	.74719	.558
17. There is a high cost of implementing AI technology in assessment and testing.	219	1.00	4.00	3.1370	.70999	.504
18. The likelihood of hacking assessments and tests increases when using AI.	219	1.00	4.00	2.9635	.74719	.558
19. There is a lack of a clear strategy for using AI in assessment and testing.	219	1.00	4.00	3.1370	.70999	.504
Total Scale Statements	219	19.00	76.00	54.8676	9.85751	97.170
F1. Awareness of AI in assessment and testing	219	3.00	12.00	7.6575	2.30009	5.290
F2. The importance of AI technology in assessment and testing	219	9.00	36.00	25.9543	5.92365	35.090
F3. Challenges facing the use of AI technology in the assessment process	219	7.00	28.00	21.2557	4.03521	16.283

Table (3): Results of Frequencies and percents of Likert 4-points categories

	Extremely agree	Agree	Disagree	Extremely disagree	N
	Frequency (Percent)				
1. I have knowledge of the uses of AI applications in assessment and testing.	32 (14.6%)	92(42%)	72 (32.9%)	23 (10.5%)	219
2. I have knowledge of using assessment tools and tests based on AI.	31 (14.2%)	82(37.4%)	82(37.4%)	24 (11.0 %)	219
3. I have knowledge of the technical requirements for using AI in assessment and testing.	23 (10.5%)	85(38.8%)	90(41.1%)	21 (9.6 %)	219
4. I have knowledge of the role of AI in assessment and testing.	31 (14.2%)	96(43.8%)	71(32.4%)	21 (9.6 %)	219
5. Assessments using AI are more accurate than traditional assessments.	44 (20.1%)	92(42.0%)	60(27.4%)	23 (10.5 %)	219
6. AI technology helps in adapting the assessment according to the level of each student.	37 (16.9%)	116(53.9%)	53(.42.2 %)	13 (5.9 %)	219
7. AI assessments provide quick feedback to teachers.	54 (24.7%)	119(54.3%)	37(16.9%)	9 (4.1 %)	219
8. AI assessments provide quick feedback to students.	51 (23.3%)	108(49.3%)	49(22.4%)	11 (5.0 %)	219
9. AI technology helps in building high-quality tests.	47 (21.5%)	111(50.7%)	52(23.7%)	9 (4.1 %)	219
10. AI technology increases the reliability of the assessment process.	45 (20.5%)	105(47.9%)	57(26.0%)	12 (5.5 %)	219
11. AI technology increases the fairness of the assessment process.	61 (27.9%)	105(47.9%)	41(18.7%)	12 (5.5 %)	219
12. AI assessments will become an essential part of the future assessment system.	85 (38.8%)	98(44.7%)	28(12.8%)	8 (3.7 %)	219
13. There is a scarcity of training programs for using AI in assessment and testing.	48 (21.9%)	125(57.1%)	39(17.8%)	7 (3.2 %)	219
14. Using AI in assessment and testing is accompanied by many technical problems.	8 (3.7%)	65(29.7%)	99(45.2%)	47 (21.5%)	219

15. There is a greater ease of using traditional assessment methods compared to using AI in assessment and testing.	6 (2.7%)	27(12.3%)	96(43.8%)	90 (41.1 %)	219
16. There is a lack of specialists and experts in the field of AI in assessment and testing.	9 (4.1%)	38(17.4%)	124(56.6%)	48 (21.9 %)	219
17. There is a high cost of implementing AI technology in assessment and testing.	5 (2.3%)	27(12.3%)	120(54.8%)	67 (30.6 %)	219
18. The likelihood of hacking assessments and tests increases when using AI.	9 (4.1%)	38(17.4%)	124(56.6%)	48 (21.9 %)	219
19. There is a lack of a clear strategy for using AI in assessment and testing.	5 (2.3%)	27(12.3%)	120(54.8%)	67 (30.6 %)	219

5.2. Key Findings:

In the present section, key statistics from Table 2 are expanded upon in the context of the study's three core research questions. These will then be discussed in more detail in Section 6.

5.2.1. On the Importance of AI Technology in Assessment from the Perspectives of Teachers in Jeddah:

There is general agreement (mean scores of around 2.6-3.2 for Factor 2) on the importance of AI technology in assessment, particularly in relation to practical benefits and streamlined processes. Teachers demonstrated a mild agreement on AI's ability to improve efficiency in grading and administrative tasks. For instance, items related to AI's ability to quickly analyze multiple-choice responses received higher mean scores, reflecting a positive perception of AI as a time-saving tool. The potential for AI to handle large volumes of assessments suggests that teachers view it as a means to enhance productivity, particularly in settings where administrative burdens can detract from instructional time (Zawacki-Richter et al., 2019).

There is moderate awareness (mean scores of around 2.5-2.6 for Factor 1) of the use of AI applications in assessment and testing, and concerns (mean scores of around 2.8-3.2 for Factor 3) relating to issues such as privacy and ethical implications. This reflects a growing recognition of the need for ethical guidelines in educational technology (Floridi et al., 2018).

5.2.2. On the Challenges Facing the Use of AI Technology in Assessment from the Perspectives of Teachers in Jeddah:

The study examined the challenges associated with using AI in assessment from the perspectives of teachers in Jeddah's educational sector, with teachers quantitatively rating their agreement with various statements concerning AI integration. The mean responses for the identified challenges ranged between 2.8 and 3.2 (for Q13-19), reflecting moderate to high levels of concern.

For example, the majority of teachers expressed concerns over insufficient training related to the use of AI in assessments (mean score of 3 for Q13). This may reflect teachers' limited exposure to AI technologies, and a general unpreparedness to incorporate them effectively into teaching practices. Similarly, a considerable number of teachers indicated that financial and resource constraints were major barriers (mean score of 3.1 for Q17). The lack of infrastructure, such as up-to-date technology and access to AI software, could be seen as preventing the adoption of AI in many schools. Teachers also noted their concerns regarding technical issues and the reliability of AI systems (mean score of 2.8 for Q14), likely relating to the potential for system failures, inaccuracies in automated grading, and the absence of immediate technical support to lead to unreliable student evaluations. Finally, teachers demonstrated moderate concern about the ethical challenges related to AI (mean score of 3.0 for Factor 3), as mentioned above. All of the above factors ultimately manifested in a general

resistance to moving away from traditional methods towards AI-based assessments (reflected in a high mean score of 3.2 for Q15).

The findings reveal several key challenges that are preventing the effective integration of AI in assessments and testing within Jeddah's educational system. The mean scores of teachers' perceptions highlight that most of the concerns fall within the moderate to high range, suggesting that while teachers recognize the potential of AI, significant obstacles remain.

5.2.3. On the Impact of Selected Variables (Gender, Experience, School Type, School Level) on the Perspectives of Teachers in Jeddah on the Use of AI Technology in Assessment:

The study also aimed to explore differences in perceptions of the importance of using AI technology in assessment, based on variables such as gender, experience, school type, and school level. This aspect of the analysis involved comparing the respective means of the study sample to identify significant and non-significant differences across these variables.

Firstly, it was found that gender was a non-significant difference. That is to say, the results showed no statistically significant difference in the perceived importance of AI in assessment based on gender. Both male and female teachers reported similar attitudes toward the role of AI, with no meaningful variance in their mean scores.

Similarly, school level as a factor revealed a non-significant difference. When comparing teachers from different school levels (primary, intermediate, and secondary), the analysis revealed no significant differences in their views on the importance of AI in evaluation and testing. Teachers across all levels rated the importance of AI similarly.

In addition, individual educators' level of teaching experience was also found to be non-significant in this regard. No significant variation was found between teachers with varying years of teaching experience. Whether novice (less than five years) or experienced (more than ten years), teachers generally agreed on the importance of AI in assessment.

However, school type was shown to be a significant variable. Indeed, one of the most notable findings in this study is the significant difference in perceptions based on school type, with public-school teachers rating the importance of AI in assessment higher than private-school teachers. This result may be explained by several factors, which are discussed in the subsequent section.

5.3. Discussion:

In the present section, the key findings as presented above are discussed in greater detail in relation to the study's three core questions and to the wider discourse from existing literature.

5.3.1. On the Importance of AI Technology in Assessment from the Perspectives of Teachers in Jeddah:

The results presented in section 5.2.1. Underscore a balanced perspective among teachers in Jeddah regarding AI's role in assessments, characterized by cautious optimism and some significant concerns.

Several implications arise from these findings, such as the recognized potential for AI in improving efficiency and standardization. The favorable view of the importance of AI technology in assessment and tests (based on means closer to 3.2) suggests that teachers recognize AI as a valuable tool for tests and assessments. AI's capacity to automate grading and to streamline administrative processes can allow educators to focus on instructional improvement and individualized student support. As the education sector increasingly embraces

technology, integrating AI could transform assessment practices, making them more data-driven and responsive to student needs.

However, the data presented above reflect the need for ethical and privacy concerns to be addressed. The moderate concerns regarding ethical implications suggest that for AI to gain wider acceptance in educational assessment, clear ethical guidelines must be established. These should address potential biases, data protection measures, and the accountability of AI systems in educational contexts. Ensuring transparency and fairness in AI applications can foster trust among educators, students, and parents, which is critical for the successful implementation of AI technologies in schools (Cukurova et al., 2020).

The findings also highlight the necessity for targeted professional development programs aimed at equipping teachers with the skills and knowledge to integrate AI effectively. Training should cover both the technical aspects of AI and its ethical implications, helping teachers to navigate the complexities of using AI in their assessments. By empowering teachers with the necessary tools and understanding, educational institutions can facilitate a smoother transition to AI-enhanced assessment practices, ultimately benefiting students and educators alike.

5.3.2. On the Impact of Selected Variables (Gender, Experience, School Type, School Level) on the Perspectives of Teachers in Jeddah on the Use of AI Technology in Assessment:

As described in section 5.2.3., the only significant variable impacting the perspectives of teachers in Jeddah on the use of AI technology in assessment is school type. The notable finding here is that public-school teachers are more positively disposed towards rating the importance of AI in assessment than private-school teachers, which leads to several key implications.

Firstly, there appears to be a perceived need for innovation in public schools in Jeddah. Public school teachers may perceive AI as a means to address the specific challenges faced in their teaching context, such as large class sizes, limited resources, and the need for more efficient assessment tools. Public schools often face resource constraints that could well be alleviated by AI's potential to automate grading and to enhance personalized learning experiences. In contrast, private schools, which may already have access to more advanced resources and smaller class sizes, may not feel the same urgency to adopt AI solutions (Alenezi, 2020).

On a related note, there is the question of professional development gaps between teachers in both settings. Teachers in public schools may see AI as a valuable tool for professional growth, as it could help to address gaps in traditional assessment methods. Public school educators may view AI as a way to improve teaching outcomes and to meet educational goals, particularly in contexts where teacher training and professional development in modern assessment techniques are limited (Holmes et al., 2021).

Finally, there are increasing innovation pressures in the public education sector. In some regions, public schools are under mounting pressure from educational authorities to innovate and adopt new technologies as part of broader educational reform strategies. This may explain why public-school teachers show greater enthusiasm for AI in assessment compared to their private school peers, who may have more flexibility in adopting or rejecting new technological tools (Alenezi, 2020).

In the following and final section, the findings and key discussion points outlined above are summarized, with suggestions for the direction of future research and practice in the area of AI in assessment.

6. Conclusion

In conclusion, the perspectives of teachers in Jeddah reveal a nuanced view of AI in educational assessments. While there is recognition of the importance of AI technology in assessment, significant concerns persist regarding ethical implications, subjective assessment, and the need for human judgment. Addressing these concerns through clear policies, ethical frameworks, and comprehensive training will be vital for incorporating AI into educational practices successfully. The study found no significant differences in teachers' perceptions of AI's importance in assessment based on gender, school level, or experience. However, public-school teachers demonstrated significantly higher mean scores compared to private-school teachers, indicating a stronger belief in AI's potential to enhance assessment practices. These findings suggest that public-school teachers view AI as a crucial tool for addressing assessment challenges, while private-school teachers may be less reliant on or enthusiastic about AI integration. Further research and support should focus on helping both sectors to maximize the benefits of AI in education.

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