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Artificial Intelligence in Preparatory Classes: A Study of Students' Practices and Perspectives at Salman Al Farissi Preparatory Center for Higher Institutions (CPGE)

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Abstract

In the context of rapidly evolving educational technologies, understanding how students in preparatory classes (CPGE) engage with Artificial Intelligence (AI) tools is crucial for anticipating future academic practices. This mixed-method study, hence, investigates students' current AI usage, their attitudes toward its integration in education, and their views on AI's role in shaping the future of education. Data was collected via a researcher-designed questionnaire and qualitative semi-structured interviews. Quantitative data from surveys were statistically analyzed using SPSS software to identify patterns and frequencies of AI usage. Qualitative data from interviews underwent categorization (thematic analysis) to find students' underlying tendencies and perceptions about AI's role. The findings reveal a high rate of AI adoption among CPGE students for various purposes, alongside sharply contrasting perceptions regarding AI's role and potential effect on learning outcomes and academic integrity. This research contributes to the growing discourse on AI's transformative potential in education.

1. INTRODUCTION

The current era is widely described as an era of technology. Technology is so ubiquitous that it has become an inseparable part of modern life. The latest and arguably the most surprising technological invention is artificial intelligence (AI), which has implications in every cognitively relevant sector including education. Artificial intelligence makes intellectual tasks easier and faster. Hence, AI is reshaping the domain of education as it can perform many tasks for both teachers and students.

However, as with any shift in education, AI launched a fierce debate between those who see it as the bridge to the future and solution to most of the problems, and those who warn against its possible risks. The following, thus, is an attempt to define artificial intelligence, identify its implications in education, and synthesize relevant research in Morocco.

2. REVIEW OF THE LITERATURE

2.1. What is Artificial Intelligence?

Artificial intelligence is a tricky concept to define because it relentlessly evolves and develops. It is also adaptive and holds specific forms and applications for each domain. Abbass (2021) confirms that defining artificial intelligence requires admitting its multidisciplinary nature. "each definition may be more appropriate for a special context or even a particular timeframe" (p: 95).

Samoili et al (2020) reviewed a wide range of definitions of Artificial intelligence. They noticed that while researchers perceive Artificial intelligence differently, they meet at some common features that frequently appear in their definitions. These features include: perception of the environment, information processing, decision making, and achievement of specific goals. Zhang and Lu (2021) define artificial intelligence as a multidisciplinary technology that combines cognition, machine learning, emotion recognition, human computer interaction, data storage, and decision making. Unlike mechanical inventions that can do physical tasks as carrying or moving things, artificial intelligence can do cognitive tasks such as learning, analyzing and interacting in spontaneous conversation. McDonald (2024) states that "artificial intelligence is the ability of computers or other machines to exhibit intelligent behavior" (p. 07). AI technology is special because it can learn from stored data by noticing patterns and deducing the best course of action (US department of defense, 2019).

Genadiivna et al (2025) traced the history of artificial intelligence to 1943 when Warren McCulloch and Walter Pitts proposed a model of neurons built on basic physiology and functions of neurons in human brain. In 1959, Arthur Samuel introduced the term machine learning. In 1979, the American association for artificial intelligence (AAAI) was created. Since then, Artificial intelligence has undergone continuous refinement. The remarkable capabilities of AI are the product of the accumulating research that started decades ago. Scientists have always been curious about machines' ability to act independently and imitate human intelligence. Early forms of artificial intelligence appeared in the 1990's when AI excelled at the game of chess.

AI technology covers many domains, enabling it to offer various services. These domains include (a) reasoning which covers knowledge representation, automated reasoning, and common-sense reasoning. (b) Planning, on the other hand, is carried out through planning and scheduling, searching and optimization. Another core domain is (c) learning which is facilitated through machine learning. (d) Communication, however, is possible thanks to natural language processing. (e) Perception is reflected in computer vision and audio processing. Finally, integration and interaction are possible thanks to features as multi-agent systems, robotics and automation, and connected/automated vehicles (Samoili et al, 2020).

2.2. Artificial Intelligence in Education

Artificial intelligence holds the potential to revolutionize education. In fact, artificial intelligence is transforming the way people learn. As Danesi (2024) puts it, "with the arrival of AI and the internet, the situation has changed (or is changing) once again. Knowledge attainment now is guided not only by listening and reading but also by navigating cyberspace with the help of AI" (p. 20). Artificial intelligence is a fundamental skill for students nowadays.

Curriculum developers should integrate teaching about AI into the educational system in order to develop digitally-literate students who can perform well in the job-market (UNESCO, 2024). In fact, using AI in education (AIED) has emerged as an independent research field since 1980s with the publication of the international journal of artificial intelligence in education in 1989 and the formation of the international Artificial intelligence in education society in 1993 (Pinkwart, 2016).

For an effective integration of AI in education, Waite and Garside (2023) developed the SEAME model to guide teachers in teaching about Artificial intelligence. The model has four levels: social and ethical (SE), Application (A), model (M) and engine (E). Accordingly, teachers should raise students' awareness about the possibility of bias and inaccuracy in AI, teach them how to use AI effectively, and explain how AI actually works. Understanding these aspects can help students move from blindly using AI to mastering it as a productive tool.

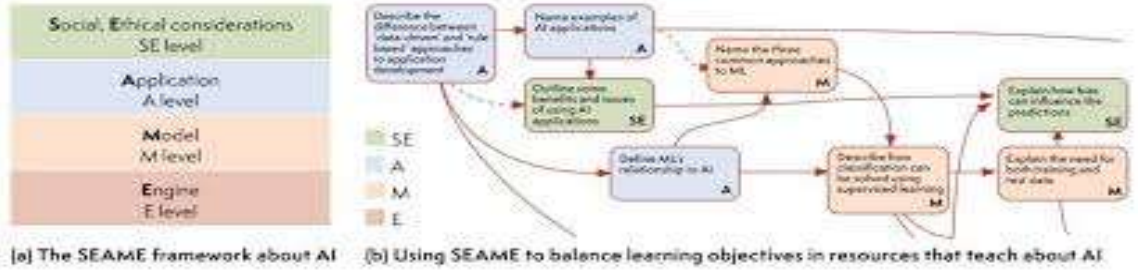

Figure 1: The SEAME Model about AI (Waite et al, 2023)

Mollick and Mollick (2023) suggested a multifaceted framework consisting of seven distinctive roles of artificial intelligence. AI tutor, AI simulator, AI mentor, AI student, AI teammate, AI coach and AI tool. Rather than viewing AI as a problematic tool, this framework helps using AI productively. For instance, AI tutor is the 24/7 accessible assistant that can provide personalized and customized feedback. AI simulator provides immersive environment for practice. AI student acts as the curious learner that pushes students to master the topic by teaching it. AI teammate act as the reliable partner that can help with difficult tasks. AI mentor provides guidance to guarantee learning. AI coach prompts the metacognitive reflection on the learning process. Finally, AI tool acts as an efficient utility helping students to find information easily.

AI is equally important for teachers as well. Indeed, AI is of paramount importance to the teaching process. Teachers always complain about the heavy work-load. They are expected to search for suitable materials, design customized courses and manage classes. AI makes all these tasks just one click away. With the right prompt, AI can provide teaching materials and exams that perfectly match students' level, provide reports about students' progress and in-class behavior, help with classroom management, and provide engaging teaching activities (Higuera & Iyer, 2024). In a study conducted by Roy et al (2024), 42% of teachers use AI to help with the teaching process. AI represents an efficient time-saving tool (Hallahan, 2024). It significantly reduces the temporal requirements for the curation and adaptation of pedagogical resources, transforming labor-intensive processes into immediate tasks (Gupta et al, 2024).

In the language learning classroom, AI offers transformative potential. Chatbots, such as ChatGPT, can carry on dialogues, produce essays and even translate from any language with approximately perfect grammar and style (Danesi, 2024). These tools provide an invaluable

opportunity for learners to practice their language, bridging the historical gap created by limited exposure to authentic language material. Danesi (2024) asserts that "interacting with ChatGPT helps learners improve their listening, speaking, reading and writing skills through the simulation of real-life language-based scenarios" (p. 17). These capabilities align with aforementioned roles of AI as both tutor and classmate (Mollick and Mollick, 2023).

Despite the easily recognizable advantages, the integration of AI in education is accompanied by certain drawbacks. There is a major risk of students developing an over-reliance on AI tools. In fact, many teachers nowadays believe that homework assignments are meaningless because most of them are produced by AI. The ease of generating high-quality content with one click discourages students from investing the necessary time and effort on their assignments. Consequently, students become less cognitively engaged which inevitably affects their learning process. A further significant concern involves the marginalization of the educator's role and the subsequent erosion of meaningful human interaction. The constant interaction between teachers and students creates a social environment that is definitely supportive of learning (Hurst et al, 2013). In fact, direct human interaction helps develop essential personal and communication skills such as self-confidence, socializing, non-verbal communication, critical thinking, etc. Hence, while AI presents transformative opportunities for educational efficiency, it must be held as a supplement rather than a substitute requiring a wise approach that prioritizes human mentorship and preserves the integrity and ethics of the learning process (Ejjami, 2024).

2.3. Artificial Intelligence in Moroccan Education

Artificial intelligence has moved into the Moroccan classroom, becoming an everyday reality for both teachers and students. Indeed, many higher education institutions across Morocco are increasingly launching academic training focused on artificial intelligence, demonstrating that Morocco's policymakers recognize the importance of AI in the job market.

A review of the literature reveals a rich body of research about the growing presence of AI within the Moroccan educational system. Morocco is undergoing a digital transformation intended to use AI as a bridge to the future (Abdelghafour et al, 2025). Douali and Selmaoui (2022) conducted a study on 336 Moroccan individuals from different backgrounds, cities and academic diplomas. They investigated their awareness of AI and attitude toward the integration of AI in education. The data revealed that 39% know about AI but expressed a "cautious optimism" toward using AI in education, especially at early ages. Fakhar et al (2024) found that Moroccan teachers hold a positively cautious perception toward AI. They believe that AI is a valuable asset to education but it should be used wisely and limitedly. Nonetheless, the lack of training presents a major hurdle to the integration of AI in education. While 87% of teachers have had general ICT training, only 15% have received specialized training in AI for education (Abdelghafour et al, 2025). In higher education, Moukhliss et al (2024) report that university teachers are active users of AI in tasks such as detecting plagiarism and creating lesson plans. University students, as well, expressed widespread acceptance and awareness of AI, believing it supports and enhances their academic production. In the same vein, Lahlou and Brigui (2021) found that AI can contribute effectively to the teaching/learning process if it is accompanied by mentorship and training.

AI is not perfect; it has major ethical limitations, such as privacy, data security, algorithm bias and plagiarism (Neo, 2025). Furthermore, research suggests that AI answers can be unreliable which necessitates a critical approach rather than blind trust (Choi et al, 2025).

3. RESEARCH METHODOLOGY

3.1. Participants

This study aims to investigate the way students use AI and their attitudes toward its integration in education. The population considered for this study consists of 116 students at Salman AL Farissi preparatory center for higher schools (CPGE) in Sale. 55 (47.4%) are females and 61 (52.6%) are males. I had the privilege to teach at this center during the school year 2024-2025. Through our discussions, students demonstrated a profound understanding and conceptual mastery of AI. Students repeatedly confirmed that there are better and more sophisticated implications of AI than having a simple conversation about general topics. Their engagement and knowledge about AI served as the primary motivation to conduct this study.

3.2. Data Collection Instruments

In this investigation, questionnaire and interviews are the data collection tools. Data was collected during the first semester in the school year 2025-2026. A pilot study has been conducted before the actual data collection to test the suitability of instruments. The questionnaire addresses the following areas: demographics, the frequency of AI usage, the academic activities that mostly need AI, the frequently used AI tools and attitude toward AI. The scale demonstrated high internal consistency ($\alpha = .83$). Later on, I interviewed 20 students (15 males and 5 females) via Zoom for a deeper understanding of their relationship with AI. The interviewees are members of the research sample who have already filled in the questionnaire. They voluntarily chose to participate in the semi-structured interviews. They were asked open-ended questions about the future of AI in education, the challenges of using AI, and the best way to use AI effectively.

3.3. Sampling Technique

This study utilized convenience sampling technique. The participants and the researcher belong to the same CPGE center. The link of the questionnaire was sent to some students who then shared it in WhatsApp groups of the center. The researcher also visited students in class to urge them to fill in the questionnaire.

4. FINDINGS

Generally speaking, data reflected a wide use of AI. Students may diverge at the frequency of use, or mostly used AI tool but all meet in the belief that AI can be an effective tool to respond to the heavily loaded curriculum and endless academic commitments at CPGE.

4.1. Quantitative Data

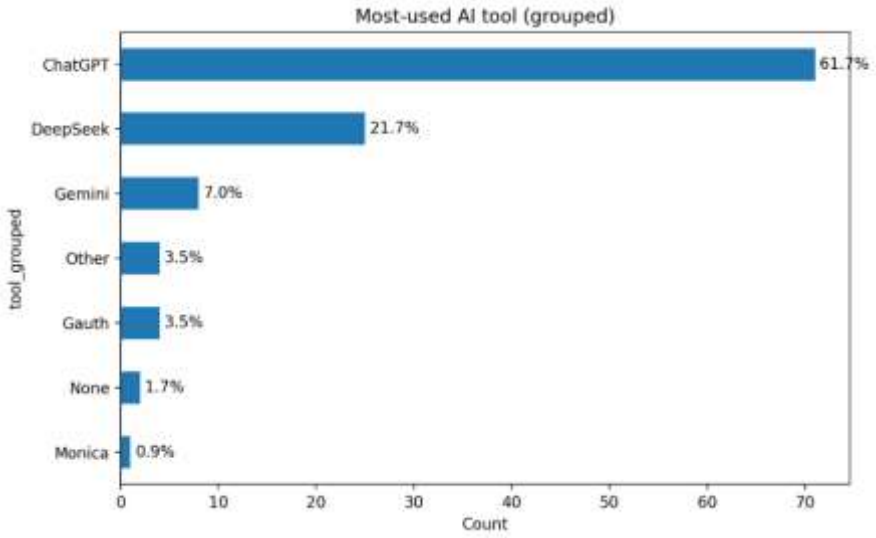

Figure 2: AI Tools Used for Studies

Figure 2 shows that students resort to different academic tools for their studies. Unsurprisingly, ChatGPT is the mostly used AI tool (61.7%) as it is the oldest and most famous. Followed by Deepseek (21.7%), Gemini (7%), Gauth (3.5%), Monica (0.9%), whereas 3.5% reported that they use other AI tools. On the other hand, 1.7% declared that they don't use AI tools for their studies.

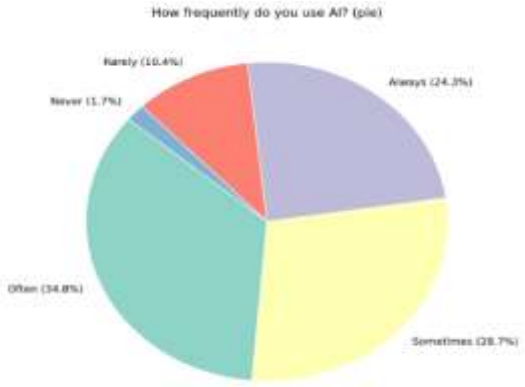

Figure 3: The Frequency of Using AI

Figure 3 reflects the frequency of using AI. Students' responses ranged between Always (24.3%), often (34.8%), sometimes (28.7%), rarely (10.4%) and never (1.7%).

Table 1: Academic Application of AI Tools among Students

Activity	Responses (N)	Valid Percent
Research and information gathering	80	17.6%
Homework and exercises	72	15.8%
Solving problems or calculations	64	14.1%
Studying and revision	60	13.2%
Summarizing texts	48	10.5%

Writing essays or reports	47	10.3%
Preparing for exams	47	10.3%
Generating well-written texts	31	6.8%
Other	6	1.3%
Total	455	100%

Table 1 shows that AI is used for different purposes. 17.6% use it for research and information gathering, followed by homework and exercises (15.8%). Others use AI for solving problems and calculations (14.1%), and studying and revision (13.2%). Interestingly, the lowest score is at the level of generating well-written texts (6.8%) which aligns with their academic stream MPSI (Mathematics, Physics and Science of Engineering) and TSI (Technology and Science of Engineering), because Mathematics and Physics constitute the highest priorities at CPGE centers. In addition, most students have a relatively good mastery of languages.

Table 2: Students' Attitudes toward AI

	N	Min	Max	Mean	Std. Dev.
AI helps me improve my academic performance	115	1	5	3.42	0.991
Using AI reduces my workload	115	1	5	3.32	1.097
Using AI raises ethical concerns in education	115	1	5	3.41	1.050
AI could lead to academic dishonesty	115	1	5	3.64	1.102
AI may badly affect students' intelligence	115	1	5	3.64	1.061
AI makes students lazy	115	1	5	3.71	1.241
AI may generate inaccurate data	115	1	5	3.66	1.139
AI can provide unique perspectives	115	1	5	3.56	1.036
I can become over-reliant on AI tools	115	1	5	3.37	1.127
I feel comfortable using AI in my education	115	1	5	3.53	1.071
Valid N (listwise)	115				

Table 2 shows the attitude of students toward AI. Notably, the analytical sample for this table is n = 115, as one participant is excluded due to incomplete response. On a Likert scale ranging from strongly disagree to strongly agree, the belief that AI makes students lazy got the highest

Mean (M = 3.71), however the Standard deviation (SD = 1.241) shows a high divergence at this level. In contrast, there is a stronger consensus on AI helps improve the academic performance (M = 3.42, SD = 0.991), and AI can provide unique perspectives (M = 3.56, SD = 1.036). Admittedly, students expressed concern about academic dishonesty (M = 3.64, SD = 1.102) and the effect of AI on students' intelligence (M = 3.64, SD = 1.061). Overall, students expressed a relatively reasonable attitude toward AI. While they acknowledged its academic advantages, they highlighted its limitations and drawbacks.

Table 3: Students' Support of Increased Use of AI in Education

	Frequency	Percent	Valid Percent	Cumulative %
Yes	49	42.6	42.6	42.6
No	30	26.1	26.1	68.7
Unsure	36	31.3	31.3	100
Total	115	100	100	

Data presented in Table 3 illustrate students' attitude toward an increased use of AI in education. While 42.6% support increasing the use of AI in education, the cumulative percent shows that 57.4% (26.1 + 31.3) are either against or unsure about the expansion of AI integration in education.

4.2. Qualitative Results

For the purpose of a better understanding of students' input, semi-structured interviews were held with 20 students individually via Zoom. Interviews can provide authentic and genuine data about students' relationship with AI. They are mainly useful in the interpretation of students' tendencies and underlying perceptions of AI. The findings are organized into four themes as presented below.

4.2.1. Strategies for the Effective Use of AI

Students generally warned against blind trust because AI may provide incorrect data. In fact, 88.7% declared that they have already got incorrect answers from AI. Participant 4 stated that "students should not just accept; (instead) verify their sources especially in scientific fields". Participant 11 adds that "AI relies heavily on the stored data which may be incorrect". Additionally, the participants highlighted that students should use AI to help them understand courses and account for every answer rather than seeking ready-made answers. Participant 2 stated that "they (students) should use AI after trying to answer questions by themselves in order to become smarter". Participant 15 highlighted the same idea by saying "Ask it to justify every step in calculations or proofs. Use it to understand a concept that you have already tried to understand on your own". The same idea is reflected in the answer of participant 14 "They should ask for clues when it comes to an exercise instead of demanding the answer".

As already presented, Mollick and Mollick (2023) highlighted the effective uses of AI. It can provide valuable academic support. If used appropriately, AI can enhance students' levels by

serving as 24/7 tutor, examiner, teammate, coach and tool. These roles entail a partnership in which students are active learners who raise questions and seek understanding rather than passive, blind-trusting "followers" of AI.

4.2.2. Challenges of Using AI

Perfection is an impossibility. Every technological invention has limitations and brings different challenges. The participants confirmed that originality and accuracy are sometimes unattainable; AI may generate inaccurate data. Participant 3 stated that "there is a high possibility that AI may generate false or biased information". Participant 6 added that "it can be difficult to get the AI to understand exactly what I am looking for especially when it comes to complex or nuanced topics". Participant 19 noted that using AI presents an ethical dilemma. She stated that she worries about "the ethical implication in (my) studies and the concern that it might be seen as a form of cheating or academic dishonesty". Generally speaking, the participants identified inaccurate data, the ethical ambiguity and the burden of verification as the main challenges they face when using AI.

4.2.3. Benefits of AI for CPGE Students

The interviewees confirmed that AI is a valuable asset for CPGE students. It can help them in many different ways. For example, participant 8 declared that "AI can help students understand complex concepts and theories by providing them with clear and concise explanations". This aligns with the notion of AI as a tutor by Mollick and Mollick (2023). Participant 9 adds that "AI can help students prepare for exams and assessments by providing them with practice questions and mock exams". Additionally, participant 13 explained that AI helps students save time by "automating a lot of time-consuming and repetitive tasks". Participant 20 noted that "It can help students stay up-to-date with the latest research and developments in their field, and it can also provide them with access to a wide range of educational resources". Overall, students reflected a clear understanding of the double-edged nature of AI. They are aware of both its advantages and shortcomings.

4.2.4. Students' Perceptions about the Future of AI in Education

Generally speaking, the interviewees expected that AI will be an integral part of education. AI is a reality that educators should admit and adapt to. Participant 10 declared that "AI will be part of education in the future, with AI tools becoming common in classrooms and at home". Participant 16 adds that AI will change the roles of teachers, "it will change the roles of teachers who will need to adapt to new technological inventions". Conversely, some interviewees expressed a pessimistic view about the future of AI in education. Participant 11 stated that "AI will make studies lazier" because they will only copy and paste from AI tools. Participant 5 added that "the cognitive competencies of students will deteriorate"; they will become passive dependent on AI. Along the same vein, Participant 2 mentioned that "success will be determined by the mastery of AI tools rather than hardwork and intelligence". Indeed, AI can be a demotivating factor for students because it automates much of the essential processes for learning such as problem-solving. This inevitably badly affects students' level and academic progress.

5. DISCUSSION AND IMPLICATIONS

The findings reveal a relatively advanced use of AI among CPGE students. 24.3% of the participants use AI daily for different purposes as research and information gathering (70.2%). This corroborates the findings of Moukhliss et al (2024) that university students are active users of AI. These students represent a digitally fluent generation. They have an innate tendency toward technology-relevant matters. Moreover, students warned against the negative influence of AI. The one-click nature of AI tools makes every task easy. Hence, it demotivates students to work hard or invest any cognitive effort or energy in their studies. Consequently, AI progress will be at the cost of students' academic and cognitive growth because they may develop "AI addiction". AI, also, enforces academic dishonesty and cheating. Students can simply copy-and-paste AI responses pretending they are personal productions.

Interestingly, the findings show a discrepancy between students' use of AI and their attitude toward an advanced integration of AI in education. While students are already active users of AI, they are skeptical about the integration of AI in education. This can be accounted for by the absence of any legislations that regulate the use of AI by students. Artificial intelligence is beneficial to students but there are no guidelines of legal AI use, so students consider it a form of cheating. Also, respondents have had the first-hand experience of AI, it is extremely helpful but addictive. Students easily become over-reliant on AI in their studies. Another explanation is the fear of the unknown, AI is a new technological invention. It may be currently effective but it may have serious repercussions for students' academic level by fostering laziness and diminishing critical thinking and independent problem solving due to AI addiction.

Clearly enough, AI is a reality that is expanding at unprecedented rate. It requires a fundamental pedagogical shift to adapt/adopt it. As mentioned earlier, AI is a double-edged sword, it can be a precious asset as well as a serious problem to the teaching/learning process. The following are some pedagogical implications for an effective integration of AI in education.

Firstly, awareness is the key. Students and teachers should discuss the advantages and limitations of AI. Students need to be aware that AI can serve or impede their learning process depending on the way they use it. It must be highlighted that over-reliance on AI will definitely lead to a decline in critical thinking skills and make students consumers of AI-generated content. Secondly, professional development is the cornerstone of successful AI adoption in education. Abdelghafour et al (2025) found that 87% of teachers had an ICT training but only 15% received an AI relevant training. As AI continues to evolve and develop, educators must receive ongoing training to stay updated. Thirdly, homework and assignments should target deep understanding rather than the mere correct short answers. Students should always be asked to account for their answers. They may use AI as a supporting tool but not as a substitute.

LIMITATIONS OF THE STUDY

A primary limitation of this study is the focus on one CPGE center. The single-site design and the resort to convenience sampling may affect the representativeness of data. Hence, it cannot be generalized over all the CPGE students in Morocco. In addition, self-reported data are always vulnerable to over-reporting or under-reporting because participants may falsify their original input to attain a socially desirable status or avoid any possible judgement. Finally, the rapidly changing nature of AI renders these findings very limited to the status-quo. New AI applications or AI relevant legislations may appear and change students' attitudes and practices radically.

CONCLUSION

This study investigated the way CPGE students at Salman al Farissi center-Sale use AI. The findings confirmed that students have integrated AI into their daily routine at a high rate, 24.3% of students always use AI. However, students expressed awareness of the possible bad effect of AI on their academic growth. Over-reliance on AI will develop students' laziness and passivity. Unsurprisingly, 57.4% of respondents are either unsure or against an increased use of AI in education.

Accordingly, integrating AI into the curriculum necessitates a fundamental pedagogical transformation. The priority should shift from "correct answers" to deep understanding. Students should be asked to justify every answer to demonstrate conceptual mastery and analytical depth. Also, teachers should receive ongoing training on AI. Today's teachers need new skills to manage the latest technological inventions.

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