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Generative AI in Saudi High Schools as Perceived by Teachers

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Generative artificial intelligence (GenAI) is an emerging yet promising tool in education, and its use in classrooms is still at an early stage. Therefore, the present study explores Saudi high school teachers' awareness and existing practices as well as perceived challenges of GenAI in education. Data were collected using an online survey from 104 high school teachers and quantitatively analyzed. The analysis results reveal that most teachers reported being familiar with the use of GenAI in education (66%), but fewer indicated that they regularly use it in their teaching practices (43%). Generating presentations emerged as the most common use case, while *ChatGPT* is the most used tool. Moreover, nearly half of the participants indicated awareness of the possibility that GenAI produces biased or incorrect content. The findings point to several challenges hindering GenAI adoption in this context, among the most reported are a shortage of technological resources (84%), limited access to training programs (79%), and the absence of specialized support staff (78%). There were also concerns that GenAI tools might reduce opportunities for collaboration and knowledge sharing, and critical thinking skills. Additionally, among the shared concerns are maintaining privacy as well as academic integrity. Hence, the study provides a timely look at how this technology is being received in the context of Saudi high schools and emphasizes the need for training and infrastructure support to enable the effective integration into the educational system.

Keywords: generative artificial intelligence, educational technology, teaching practices, teacher perceptions, technology adoption.

Introduction

Over the past few years, there has been a noticeable shift in how content is created and a rise in tools capable of generating original content by learning from patterns found in

large datasets. These tools, often referred to under the general term of generative artificial intelligence (GenAI), can generate content from written text and images to computer code depending on how they are trained and the prompts they receive [Feuerriegel *et al.*, 2024; Sætra, 2023]. They have gained wide adoption in a short time due to their capability to produce content that is human-like [Wu *et al.*, 2023; Imran, Almusharraf, 2024]. However, regardless of their many benefits, especially in terms of convenience, efficiency, and streamlined tasks, they also raise new and at times complicated challenges.

In education, these tools can support teachers in lesson planning and in tailoring instructional materials to suit the diverse needs of their students as well as reimagining traditional teaching methods [Kasneci *et al.*, 2023; Pahi *et al.*, 2024]. They are shifting and transforming the way teachers, students, and technology interact within the classroom. Research also indicates that these tools have the potential to serve as active partners in the learning process and can foster more dynamic and engaging educational experiences [Tang *et al.*, 2024]. In addition, they can be especially helpful in the classroom by encouraging open discussion, supporting group work, and offering quick feedback that helps students think more critically and stay engaged with the subject. Beyond that, they can assist teachers with the practical side of their work, like putting together lesson plans, creating tests, or organizing class materials. This kind of support becomes even more valuable in larger classrooms where managing daily tasks can be overwhelming. By easing that load, teachers are better able to focus on connecting with their students and helping them learn more effectively.

However, and despite the aforementioned benefits, its use in education also brings several challenges. A key concern is its ability to produce correct responses, which students may misuse to complete assignments. This brings attention to issues related to academic honesty and the risk of AI-enabled misconduct [Mah *et al.*, 2024; Trust *et al.*, 2023]. When some students use these tools inappropriately, it creates an unfair advantage over those who choose to complete their work independently, which can be deeply discouraging for students who value integrity. Another concern is the impact on assessment. When students rely heavily on these tools, it can become difficult for teachers to accurately evaluate their students' actual understanding and progress. Importantly, as these technologies become more present in educational spaces, schools must find a way to embrace their benefits without compromising fairness or the authenticity of student learning. Addressing this challenge calls for clear guidelines that promote responsible and purposeful use in the classroom [Chiu, 2023; Kasneci *et al.*, 2023]. It also requires that teachers develop a deeper understanding of the capabilities and limitations of these tools in order to use them effectively and ethically.

Given this context, this study aims to investigate GenAI with a particular focus on its adoption by Saudi high school teachers, their level of awareness, their current practices, and the challenges that hinder its effective use. Our interest in GenAI research in the Saudi Arabian context is an extension of the research contributions that made the country one of the top ten contributors to GenAI research in education [Bahroun *et al.*, 2023]. This is due to GenAI's influence. For instance, within two months of its release in November 2022, *ChatGPT* had one hundred million users, making it the fastest-growing user application ever [Lo, 2023]. This extensive adoption makes it necessary to study its integration into high school education, especially given the lack of research in this particular area. Through this study, we seek to contribute to the ongoing discourse on how GenAI is shaping the future of education. The results are expected to offer insight, therefore contributing to shaping effective strategies and practical recommendations that support the thoughtful integration of GenAI into secondary education.

Research questions

The present study is guided by three research questions, as follows:

1. What is the level of awareness among high school teachers about using GenAI?
2. What are the current practices of high school teachers in using GenAI?
3. What are the main perceived challenges high school teachers face in using GenAI?

Following, Section 2 presents a general background. Section 3 presents related work. Section 4 presents the research methods, including participants, instruments used and procedures followed. Section 5 presents the results of the analysis. Section 6 discusses the results in light of relevant studies. Finally, Section 7 concludes the paper with directions for future research.

General Background

In its relatively short existence, GenAI is revolutionizing many industries. It is a type of artificial intelligence (AI) designed to generate new content by identifying and learning from patterns in a large amount of training data [Sætra, 2023]. This includes text, images, video, and audio. The advancements in deep learning have indeed driven this technology into mainstream applications. While traditional AI models focus on classification, prediction, or decision-making, GenAI moves further by producing original outputs based on probabilistic models [Banh, Strobel, 2024]. Deep learning architectures such as transformer-based models (e. g., GPTs and GANs) are at the core of GenAI. These models analyse big amounts of data and generate content that can hardly be distinguished from human-created work. For instance, GPT-4 and other language models can generate human-like text, while diffusion models such as Stable Diffusion create realistic images from textual descriptions.

One key characteristic of GenAI is its ability to generate probabilistically varied outputs, and as such, its models can yield different outputs for the same input prompt, unlike traditional AI, which produces deterministic results [Banh, Strobel, 2024]. This characteristic makes it powerful for creative applications where variability is desirable. Moreover, it operates at three levels: model, system, and application [Feuerriegel et al., 2024]. Spatialized algorithms at the model level generate new content by recognizing patterns within large training datasets and imitating them. At the system level, infrastructure components come into play and manage the flow of data and facilitate seamless interaction between users and the system. Lastly, at the application level, it is applied to real-world scenarios and supports tasks such as automated content creation, personalized recommendations, and creative design solutions.

This technology has many applications across industries and is widely used for content generation and creative writing [Hiet et al., 2024]. Many organizations have started leveraging it to automate content production, reduce costs, and enhance personalization. For instance, these models generate need-tailored content, social media captions, video scripts, and marketing copies tailored to different audiences. They can also create articles, advertisements, product descriptions, and even fictional stories. Furthermore, they excel in generating and modifying visual content [Bansal et al., 2024]. For instance, models such as *DALL·E* and *Midjourney* create original artwork and images based on text descriptions. This capability makes them valuable for design, branding, education, and entertainment industries. Moreover, AI-generated videos and animations can enhance storytelling and streamline production processes. Additionally, these tools can assist in

video editing, deepfake creation, and special effects generation. In software development, it is revolutionizing the industry through AI-assisted coding tools such as *GitHub Copilot*, powered by *OpenAI Codex*. They help developers write code faster by generating suggestions, debugging, and automating repetitive coding tasks [Bandi et al., 2023; Idrisov, Schlippe, 2024]. They can improve efficiency and reduce errors. Thus, making software development more accessible to learners and non-experts. As it advances, this technology holds immense potential for innovation and collaboration between humans and intelligent systems. It is transforming industries by enabling automation, enhancing creativity, and supporting informed decision-making. Its applications include content creation, image and video generation, personalized education, and more.

In light of the rapid progress in AI, traditional education can no longer withstand these advancements [Oliveira, De Souza, 2022]. Educators and academic institutions must stay abreast of emerging technologies and the latest trends. Furthermore, curricula, teaching strategies, and assessment methods must evolve to align with the technological revolution, specifically in the AI field. AI has introduced profound changes in education through its analytical and predictive capabilities [Tahiru, 2021]. Within AI, GenAI provides highly advanced applications that simulate human conversations and intelligently interact with natural language. With its many features, students use GenAI as a study partner [Burger et al., 2023]. Teachers are also embracing GenAI for professional development [Alammari, 2024]. GenAI has significant opportunities and contributions in education to improve teaching and learning processes.

The presence of GenAI in students' education has many advantages that the traditional education system lacks. It offers a high-level learning environment that supports students in many aspects, helping to enhance their performance and develop their skills. GenAI can help create a personalized environment that generates learning resources and content based on the student's level of knowledge. In other words, it can provide personalized recommendations that suit students' strengths and weaknesses. In addition, it can automatically modify course difficulty and learning materials based on the student's performance [Raj, Renumol, 2022]. Many educational applications integrate GenAI technology to provide students with a personalized learning experience [Yu, Guo, 2023]. For instance, *Duolingo* is an application for language learning that offers customized study plans and personalized feedback to enhance students' learning outcomes. Additionally, *Squirrel AI* is an intelligent learning platform that tailors personalized plans and content based on students' progress.

For enhancing student learning, collaborative learning is a key element where students work together and share knowledge to solve problems; this helps students gain useful skills like leadership, problem-solving, and communication [Qureshi et al., 2023]. GenAI helps students brainstorm to come up with ideas and topics for discussions. Additionally, it is used to summarize group discussions to highlight the most important points. It could be used in research collaborations with students and gamified exercises that increase students' sense of engagement and belonging. GenAI can be integrated within a core curriculum or as learning activities for students [Zhou, Schofield, 2024].

It is undeniable that the student learning process is central to the entire educational landscape. The primary goal of educational curricula, activities, strategies, and systems is student learning. The presence of GenAI in the educational landscape creates a supportive environment for the student's educational process. This, in turn, is reflected in students' learning outcomes and skills. *ChatGPT* and other tools like *GitHub Copilot* help students understand and write code [Idrisov, Schlippe, 2024]. Moreover, GenAI tools enhance

students' writing skills, especially in correcting grammatical errors and sentence structure [Maphoto et al., 2024]. Chan and Hu [Chan, Hu, 2023] argued that GenAI plays a pivotal role as a virtual tutor that tailors educational assistance and promptly addresses students' inquiries. In addition, they serve as valuable research instruments for idea generation, information synthesis, and the summarization of extensive text data to assist researchers in data collection and analysis.

GenAI technologies are quality enhancement instruments for educators. GenAI can markedly diminish educators' workloads, enabling them to focus better on instruction and student interaction. GenAI offers enormous potential to generate diverse educational resources. The possibilities are immense, from creating tests, assignments, and videos to creating educational clips, games, and virtual reality for students' in-depth learning. Mittal et al. [Mittal et al., 2024] demonstrated various tools that can support teachers in providing diverse learning materials to enrich the experience of teaching and learning. For example, *Craiyon* AI tool generates images by converting the description entered as text into images. *Synthesia Studio* generates videos through models that generate numerous pictures concurrently and then combine them to create a movie. *AudioPaLM* is an extensive language model designed for voice comprehension and generation. *GameSynth* develops games by generating diverse critical elements of games, such as characters, objects, environments, sounds, and music.

GenAI tools reduce the burden on the teacher by automating repetitive tasks. They help in preparing the lesson plan, including all the processes and steps related to that, for instance, setting learning outcomes, writing the content, designing learning activities and teaching strategies, and creating a realistic timeline and assessment [van den Berg, du Plessis, 2023]. In addition, GenAI software can help educators with student assessments. It can automatically create diverse assignments and a variety of test questions, including multiple-choice, true or false, and short essay questions. In addition, it can create grading rubrics and grade handwritten assignments [Khlaif et al., 2024]. GenAI applications are witnessing rapid development, offering advanced capabilities that have changed many aspects of daily, professional, social, and academic life. Education has benefited greatly from integrating this technology into learning and teaching practices, as it has provided facilities and support to students during their educational journey and has offered assistance services to teachers in multiple forms. This can be reflected positively in the quality of educational outcomes.

Related Work

This section has two parts. The first part presents studies' findings on teachers' perceptions of GenAI integration into education and its major functions and benefits. The second part addresses the challenges from the teachers' perspective.

Teachers' perceptions of generative AI

One of the essential elements in exploring GenAI's role in education is examining teachers' perceptions of its integration in education. Kaplan-Rakowski et al. [Kaplan-Rakowski et al., 2023] studied teachers' perceptions and found that they had positive perceptions about GenAI, as 75.51% of teachers see this technology as enhancing professional development. In addition, Kong et al. [Kong et al., 2024] identified the key factors influencing teachers'

acceptance of GenAI in education, including self-efficacy (SE), perceived usefulness (PU), and attitude towards technology (ATT). However, subjective norms (SN) and perceived ease of use (PEU) show weaker influence.

Further studies explored GenAI's roles in teaching routines, on top of them are lesson preparation, assessment, and administrative tasks. For lesson preparation, GenAI helps teachers explore new teaching methods and strategies and provides feedback on performance [Chiu, 2023]. Most participating teachers were willing to adapt their teaching methods because they were aware they needed to keep up with advanced *technology*. Since that will affect students' readiness to integrate this technology into the workplace [Bower *et al.*, 2024]. On the other hand, Cooper [Cooper, 2023] stressed the role of teachers in examining all AI-generated content, as it can yield incorrect or misleading results. In addition, Tang *et al.* [Tang *et al.*, 2024] stated that the best way to utilize GenAI in teaching is by using it as a discussion and interactive partner rather than a reliable source of knowledge. Interestingly, Cheah *et al.* [Cheah *et al.*, 2025] and Beege *et al.* [Beege *et al.*, 2024] found that GenAI is rarely used within classroom activities.

For assessment tasks, Mena Octavio *et al.* [Mena Octavio *et al.*, 2024] pointed out some GenAI capabilities, such as automated grading that can attain unbiased grading, insightful writing feedback, and generate assignments tailored to each student's level. Chiu [Chiu, 2023] stated that usual homework should be reduced, and students should be given critical thinking tasks and oral evaluations. The emphasis on oral and face-to-face assessments is also recommended by [Bower *et al.*, 2024]. The necessity to adapt assessments is clearly noticeable, as different studies recommend different methods. For instance, Hadi Mogavi *et al.* [Hadi Mogavi *et al.*, 2024] suggested self- and peer-assessment and project-based tasks.

Regarding administrative tasks, teachers believe in GenAI's efficiency in automating these routine tasks. Thus, it would save teachers time for more productivity [Ng *et al.*, 2025]. However, the studies indicate that only a few teachers benefit from these advantages of GenAI, as shown in [Cheah *et al.*, 2025].

Teachers' challenges in using generative AI

Just as studies have presented the benefits and advantages of integrating GenAI tools in education, they have also highlighted the challenges that may hinder optimal use. The challenges are related to a lack of experience and training, technical and financial obstacles, administrative workloads, and differing levels of awareness among teachers. One of the major barriers to GenAI adoption is the lack of expertise and training among educators. Many teachers are unfamiliar with the GenAI tools and lack the proficiency necessary to integrate them effectively into their lesson plans [Kong *et al.*, 2024]. While some institutions offer short-term training workshops, these programs are often insufficient and fail to provide the practical skills required for a classroom application. As Aldawsary [Aldawsary, 2024] highlighted, the lack of training is one of the most significant challenges facing the use of GenAI in education. It is increasingly clear that there were few specialized training courses and programs designed to strengthen and augment teachers' use of GenAI as an effective tool in their classrooms. Moreover, few teachers continue to keep pace with the rapid developments of this technology. To address these challenges, structured training programs and standardized AI certification courses should be developed to help teachers feel confident in using GenAI educational tools [Aldawsary, 2024; Cheah *et al.*, 2025]. Overcoming these obstacles is crucial for the successful adoption of GenAI in schools.

Thus, establishing teacher training programs would increase the probability of successfully integrating GenAI into teaching without compromising the quality of education.

Furthermore, schools frequently struggle with outdated facilities that hinder effective GenAI adoption. Few classrooms possess the necessary computing power, internet bandwidth, or capabilities of cloud storage to facilitate the deployment of AI systems [Wardat et al., 2024; Petrucco et al., 2025]. This leads to a digital divide, where richer educational institutions benefit from GenAI while poorer institutions lag behind [Han et al., 2024]. In addition, the compatibility issue arises when AI-based tools fail to seamlessly fit into existing learning management systems (LMS) and learning applications [Cheah et al., 2025]. Educators also suffer from the reliability of content produced by GenAI, particularly in fields requiring precise accuracy, such as math and physics [Ng et al., 2025]. The possibility of AI-generated content being biased and misleading can also make these issues more complicated, requiring teachers to review and verify information before presenting it to students. Further, most teachers do not have technical support while teaching, which significantly leads to unsolved GenAI-related problems [Kong et al., 2024]. A study conducted by Wardat et al [Wardat et al., 2024] indicates that GenAI systems and techniques used by teachers are difficult and impractical to implement since they require technical skills and expertise, and most of the teachers are not technically trained. Therefore, facing such systems becomes difficult for them in the absence of technical support.

The cost of implementing GenAI in education remains a significant obstacle, too. Many schools, particularly those in low-income regions, cannot afford expensive GenAI tools, software subscriptions, and hardware upgrades [Petrucco et al., 2025]. Also, the free versions of GenAI tools often come with limited functionality, making it difficult for teachers to fully integrate these tools into their curriculum [Ng et al., 2025]. Additionally, financial constraints prevent institutions from investing in teacher training and professional development [Kong et al., 2024]. Government or private funding and developing cost-effective GenAI solutions are necessary to bridge the financial gap. Unfortunately, most educational institutions have limited budgets, restricting them from providing the required facilities [Aldawsari, 2024]. This can widen the gap in the use of GenAI, as some educational institutions suffer financial constraints.

The lack of clear policies and administrative support also limits GenAI adoption in schools. Many educational institutions have not established formal guidelines on the usage of GenAI. Thus, leaving teachers uncertain about ethical considerations, student data privacy, and the role of GenAI in assessments [Cheah et al., 2025; Wardat et al., 2024]. Furthermore, administrative resistance to technological change prevents the successful implementation of AI-driven solutions. Some decision-makers fear that GenAI could replace traditional teaching methods rather than integrate with them. To foster GenAI integration, policymakers must develop regulatory frameworks, provide administrative support, and create GenAI ethical policies that address concerns about bias and transparency [Han et al., 2024].

Many studies show differences in teachers' awareness of GenAI's educational possibilities [Bower et al., 2023]. While some educators view this technology as enhancing the quality of teaching and customizing content as per students' needs, others express concern over its impact on academic integrity and human interaction in classrooms. According to Lee and Song [Lee, Song, 2024], some teachers are worried that AI will reduce the need for teachers. Kong et al. [Kong et al., 2024] found that it is difficult for teachers to create customized educational content for each student in the class due to the lack of appropriate, affordable tools, lack of training, and the cost barrier. Therefore, the actual use remains limited.

In summary, the studies reviewed outlined several challenges teachers face in integrating GenAI into education. These are the lack of expertise and training, technological barriers, financial constraints, administrative hurdles, and varying levels of awareness among teachers. In addition, the absence of well-defined regulatory frameworks and ethical guidelines hinders the effective adoption of GenAI within teaching curriculum. While GenAI could improve teaching quality and tailor learning journeys, many questions arise regarding academic integrity and the role of the human teacher going forward. It is necessary that policymakers, educational institutions, and technology developers collaborate to come up with GenAI-powered education systems that benefit teachers and students alike.

Table 1 summarizes the key findings of the reviewed empirical studies on teachers' perceptions regarding the benefits and challenges of GenAI in education.

Table 1. Key findings from reviewed empirical studies

Reference	Method	Key Findings
<i>Cheah et al., 2025</i>	Mixed methods, 89 U.S. teachers	GenAI mostly used outside the classroom. Challenges: privacy, ethics, limited policies
<i>Beege et al., 2024</i>	Quantitative, 102 German STEM teachers	Limited in-class GenAI use. Challenges: plagiarism detection, legal risks.
<i>Kaplan-Rakowski et al., 2023</i>	Mixed methods, 147 teachers	GenAI aids professional growth. Challenges: privacy, limited readiness
<i>Kong et al., 2024</i>	Quantitative, 367 teachers in Hong Kong	Acceptance driven by SE, PU, ATT. Challenges: costs, bias, equity, adaptability
<i>Chiu, 2023</i>	Qualitative survey and focus groups, 88 teachers	GenAI supports innovation. Challenges: lack of K-12 integration strategy
<i>Bower et al., 2024</i>	Mixed methods, 318 teachers	Supports new teaching methods. Challenges: integrity risks, unequal access
<i>Cooper, 2023</i>	Exploratory self-study	Caution needed with GenAI content use
<i>Mena Octavio et al., 2024</i>	Qualitative case study, 1 teacher	GenAI enables personalised feedback and grading
<i>Hadi Mogavi et al., 2024</i>	Qualitative social media analysis	GenAI encourages self/peer and project-based assessments
<i>Ng et al., 2025</i>	Qualitative, 76 Canadian teachers	Used for admin tasks. Challenges: readiness, competence, literacy
<i>Tang et al., 2024</i>	Action research, 4 teachers, Australia	Best used interactively, not as authoritative source
<i>Aldawsari, 2024</i>	Quantitative, 390 U.S. school teachers	GenAI enhances outcomes. Challenges: funding, training gaps
<i>Al Darayseh, 2023</i>	Survey, 83 science teachers	GenAI acceptance based on SE, stress, and perceived ease
<i>Lee, Song, 2024</i>	Clustering, 162 teacher/GPT responses	Need ethical standards. Concerns over GenAI replacing teachers
<i>Petrucchio et al., 2025</i>	Survey, 1,223 Italian teachers	Mixed views on GenAI. Challenges: confidence, experience
<i>Elstad, Eriksen, 2024</i>	SEM, 5 Oslo high schools	Self-efficacy links to GenAI utility. Challenges: poor guidance, privacy concerns
<i>Wardat et al., 2024</i>	Survey, Abu Dhabi math teachers	Integration depends on training and workload. Challenges: lack of experts

The literature review highlights significant gaps in research on GenAI in high school education, particularly in the Saudi context. While existing studies examined teachers' perceptions, readiness, and challenges related to GenAI integration in Western and Asian education systems, there is limited research focusing on Saudi high schools. Existing studies emphasize concerns such as technology affordability, ethical issues, lack of policies, and teachers' limited AI literacy, yet none directly address the unique educational landscape of Saudi Arabia. Furthermore, most research explores GenAI's role in STEM education or administrative tasks, leaving a gap in understanding its broader pedagogical applications and identifying which available tools and current practices are most widely adopted by teachers. Given Saudi Arabia's increasing focus on digital transformation in education, a study exploring teachers' perspectives on GenAI in Saudi high schools is crucial. It can inform policy decisions, teacher training programs, and AI implementation strategies, ensuring that GenAI adoption aligns with national educational goals and addresses local challenges effectively.

Research Method

Research participants

In this study, a quantitative method was used to collect data. The main objective was to explore and investigate the current practices of GenAI among Saudi high school teachers, and the benefits it provides, and the challenges and barriers that affect its effective use. Data were collected using a questionnaire of 34 items. The sample consisted of 104 teachers from different disciplines and working in various regions across Saudi Arabia. These participants shared their current use of GenAI, the benefits they gain from it, and the challenges and barriers that limit its integration in education. Table 2 shows the demographic data of participants.

Instrument

The present study used a survey to collect data from participants, as its approach was quantitative [Takona, 2024]. The questionnaire consists of 34 items. A total of 26 items based on a 3-point Likert scale and two items based on multiple-choice boxes, while six multiple-choice items related to demographic data. A 3-point Likert scale is commonly used in questionnaires to measure perceptions [Taherdoost, 2019]. It provides respondents with three options: disagree (1), neutral (2), and agree (3). This simplified format is useful in educational contexts where clarity and ease of completion are priorities. The questionnaire consists of five parts. Demographic data in the first section explores participants' profiles, including their gender, educational background, area of expertise, type of school they work in, years of experience, and region of work. This section seeks to provide essential information about participants' backgrounds. In the second section, teachers share their views on awareness of the use of GenAI in education. It focuses on their familiarity with this technology, their regular use of it, and their understanding that it may generate incorrect results. In the third section, teachers describe their current practices with GenAI and the tools they use. Teachers can select from the displayed options and also write their own responses. The fourth section describes the key challenges associated with integrating GenAI into education. It is divided into five subsections: Expertise and training, technology barriers, financial constraints, administrative constraints, and lastly, concerns. Each of

Table 2. Demographic data

Characteristics	Items	Number	Percentage
Gender	Male	28	26.9%
	Female	76	73.1%
Educational qualification	Diploma	1	1%
	Bachelor's degree	88	84.6%
	Master's degree	12	11.5%
	PhD	3	2.9%
Area of expertise	Science	39	28.8%
	Mathematics	8	7.7%
	Computing and Information Technology	14	13.5%
	Arabic language	9	8.7%
	English language	9	8.7%
	Social Sciences	11	10.6%
	Islamic studies	15	14.4%
	Business Administration	4	3.8%
	Art Education	1	1%
	Physical Education	1	1%
	Life Skills	1	1%
	Fitness and Physical Health	1	1%
Type of school	Public	82	78.8%
	Private	21	20.2%
	International	1	1%
Years of teaching experience	Less than one year	2	1.9%
	1 to 4 years	4	3.8%
	More than 4 years to 10 years	14	13.5%
	More than 10 years	84	80.8%
Region of work	Central Region	7	6.7%
	Western Region	90	86.5%
	Eastern Region	1	1%
	Southern Region	5	4.8%
	Northern Region	1	1%

them addresses a specific dimension of the barriers hindering the use and integration of this technology among high school teachers.

Procedure

The survey instrument was developed using Google Forms. It went through an expert review to ensure the clarity and relevance to the research questions. As a result, minor revisions were made, and the final version was then distributed through different online platforms used by high school teachers in Saudi Arabia. These include educational forums, *WhatsApp* groups, Telegram channels, and high schools' social media accounts. The data collection process took place over a period of four weeks. Participation was voluntary, and informed consent was obtained from all participants at the start of the survey. Participants were informed of the study's purpose. They were also assured of data confidentiality and anonymity. The data collected was then compiled into a secure *Excel* sheet for analysis.

Results

This section presents the analysis results of the collected data. The first subsection presents the analysis of teachers' current practices and how they are engaging with GenAI tools in their teaching. The second subsection presents the results of awareness and challenges teachers face with the use of GenAI. The challenges are categorised into expertise and training, technology barriers, financial constraints, administrative constraints, and lastly concerns.

Teachers' current practices of GenAI in education

In this section, teachers were asked two main questions about their practices and their GenAI tools. The results of the first question (What is your current use of GenAI?) indicated that the three most selected practices for teachers are generating presentations (55.8%), research (46.2%), and designing and preparing lessons (40.4%). Other popular applications include assisting in writing (30.8%), generating images (29.8%), and generating videos (26.9%). Less frequent uses involve grading (16.3%), developing assessments (e. g., homework and exams) (13.5%), ITQAN classes (12.5%), which are one of the developments of secondary education programs that aim to provide students with specific job skills that align with the needs of the labor market (Ministry of Education, Saudi Arabia), and administrative work (e. g., admissions and scheduling) (9.6%). Overall, the results suggested a strong trend toward using GenAI for content creation and search support, with limited use for administrative and assessment-related tasks. The minimal usage was for school radio (1%). Figure 1 shows how educators currently use GenAI in education based on 104 responses.

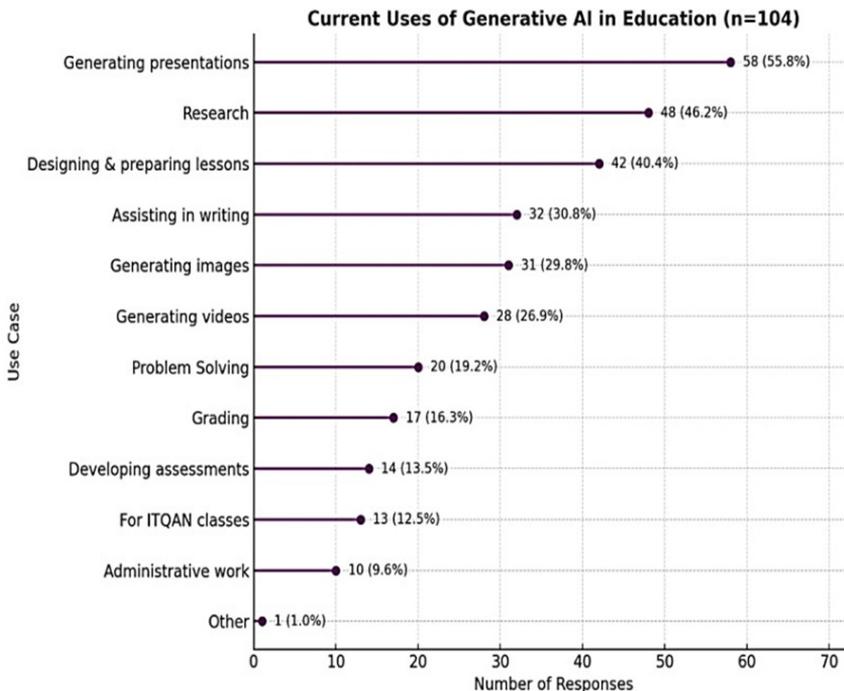


Fig. 1. Teachers' practices of GenAI

The results of the second question (Which GenAI tools have you used?) indicate that the three most common GenAI tools for teachers are *ChatGPT* (82.7%), *Canva* (56.7%), and *Google Gemini* (27.9%). A smaller percentage used presentation and media generation tools such as *SlidesAi.io*, *LimeWire*, and *Animated Drawings* (each at 4.8%). Tools like *Animaker* (3.8%) and *NapKin* (2.9%) had more limited use. Only 1% of respondents selected “Other,” which included *Grok*. These findings suggest that the most commonly integrated GenAI tools into educational practice are language-based tools, such as *ChatGPT*, and visually oriented tools, such as *Canva*. Figure 2 illustrates the tools of GenAI most commonly used by the participating high school teachers.

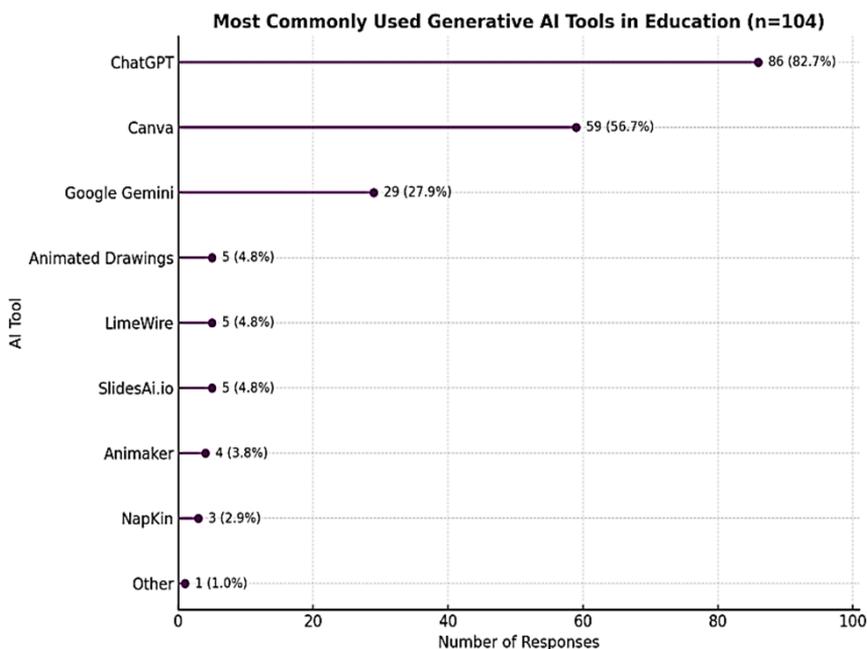


Fig. 2. Common GenAI tools used by teachers

Awareness and perceived challenges

In the two main dimensions, teacher awareness about the use of GenAI in education and the challenges facing its use, the frequency, percentage, mean, and standard deviation were used to analyze teachers’ opinions according to agreement, disagreement, or neutrality levels. The mean helps to understand the general opinion or perception of the respondents. On a 3 point Likert scale, a mean close to 3 suggests a high level of agreement. The standard deviation indicates the spread or variability of responses around the mean. Table 3 presents the results.

Table 3. Awareness and challenges

Survey Item	Disagree (1)	Neutral (2)	Agree (3)	Mean	SD
Teacher awareness about use of GenAI in Education					
1. I am familiar with the use of GenAI in education	14 (13%)	21 (20%)	69 (66%)	2.52	0.71

Continuation of the table 3

Survey Item	Disagree (1)	Neutral (2)	Agree (3)	Mean	SD
2. I regularly use GenAI tools in education	20 (19%)	39 (38%)	45 (43%)	2.24	0.75
3. I am aware that the use of GenAI may generate incorrect results	17 (16%)	31 (30%)	56 (54%)	2.37	0.74
4. I am aware that GenAI may generate biased or unfair results	9 (9%)	46 (44%)	49 (47%)	2.38	0.64
5. I follow the latest developments in the use of GenAI in education	20 (19%)	28 (27%)	56 (54%)	2.34	0.78
Challenges Facing the Use of GenAI in Education					
a. Expertise and Training					
6. There is a lack of specialists and experts in GenAI to consult when needed	3 (3%)	20 (19%)	81 (78%)	2.75	0.50
7. There is a lack of training programs to enhance the use of GenAI in education	8 (8%)	14 (13%)	82 (79%)	2.71	0.60
8. There is a lack of awareness among teachers about the importance of using GenAI	7 (7%)	22 (21%)	75 (72%)	2.65	0.60
b. Technology Barriers					
9. Using GenAI requires more effort compared to traditional teaching methods	41 (39%)	19 (18%)	44 (42%)	2.03	0.91
10. Using GenAI requires technology resources such as (Internet connection, Pc devices, computer lab, etc.) which may not be available	4 (4%)	13 (13%)	87 (84%)	2.80	0.49
11. Using GenAI requires English language	28 (27%)	28 (27%)	48 (46%)	2.19	0.84
12. There is some difficulty in learning about various types of GenAI	17 (16%)	32 (31%)	55 (53%)	2.37	0.75
c. Financial Constraints					
13. The high financial costs associated with using and updating GenAI create a barrier	19 (18%)	39 (38%)	46 (44%)	2.26	.75
d. Administrative Constraints					
14. The school administration does not prioritize the use of GenAI in the educational process	42 (40%)	25 (24%)	37 (36%)	1.95	0.87
15. The workload placed on teachers hinders their ability to use GenAI	15 (14%)	21 (20%)	68 (65%)	2.51	0.74
16. The number of students in the classroom makes it difficult to use GenAI effectively in education	29 (28%)	18 (17%)	57 (55%)	2.27	0.87
e. Concerns					
17. Using GenAI will limit opportunities to interact with colleagues to exchange knowledge and expertise	24 (23%)	30 (29%)	50 (48%)	2.25	0.81
18. Using GenAI will hinder the development of common or transferable skills, such as teamwork, problem-solving, and leadership skills	32 (31%)	23 (22%)	49 (47%)	2.16	0.87

End of the table 3

Survey Item	Disagree (1)	Neutral (2)	Agree (3)	Mean	SD
19. Using GenAI will diminish critical thinking, leading to over-reliance on it	11 (11%)	31 (30%)	62 (60%)	2.49	0.68
20. Using GenAI in education increases the risk of creating incorrect or fabricated content	11 (11%)	31 (30%)	62 (60%)	2.49	0.68
21. Using GenAI in education may compromise user privacy and security	11 (11%)	39 (38%)	54 (52%)	2.41	0.67
22. Using GenAI for grading can be incorrect compared to human grading in terms of fairness and accuracy	11 (11%)	41 (39%)	52 (50%)	2.39	0.67
23. Using GenAI tools may lead to parity of academic assessment among students in a way that does not reflect their actual levels	12 (12%)	37 (36%)	55 (53%)	2.41	0.69
24. Using GenAI makes students more independent, potentially reducing their appreciation for the expertise of teachers	19 (18%)	31 (30%)	54 (52%)	2.34	0.77
25. Using GenAI makes it difficult for teachers to evaluate how students arrived at their answers	18 (17%)	30 (29%)	56 (54%)	2.37	0.76
26. Using GenAI increases plagiarism and cheating	11 (11%)	29 (28%)	64 (62%)	2.51	0.68

Teacher awareness about use of GenAI in education

This analysis presents the results of five items that explore teachers' awareness of the use of GenAI in education. In response to the first statement, "I am familiar with the use of GenAI in education," 66.35% of respondents agreed, while 13.46% disagreed ($M = 2.5$, $SD = 0.7$) which therefore suggests that most teachers are aware of GenAI in educational contexts. The 13.46%, however who disagreed give the indication that there are still teachers who are not familiar with GenAI. As a result, highlighting the need for further awareness initiatives. In response to the second statement, "I regularly use GenAI tools in education," 43% of teachers reported that they regularly use such tools ($M = 2.24$, $SD = 0.75$). On the other hand, a relatively high percentage (38%) responded neutrally, which may suggest that these teachers have only recently begun using GenAI tools or may not yet fully understand their practical applications in education. Additionally, 19% of teachers indicated that they do not use these tools at all. For the third item, "I am aware that the use of GenAI may generate incorrect results," more than half of the teachers (54%) agreed, indicating that they understand these tools can produce incorrect results ($M = 2.4$, $SD = 0.74$). However, 30% of teachers responded neutrally, which may suggest that they are not fully aware or may not realize that GenAI tools can sometimes generate incorrect outputs. In response to statement 4, "I am aware that GenAI may generate biased or unfair results," the responses showed a lower standard deviation ($M = 2.38$, $SD = 0.64$), indicating stronger consistency among participants. The percentage of teachers who were aware of the potential bias in GenAI was 47%, which is relatively lower compared to their awareness of the risk of incorrect results. Additionally, 44% of teachers responded neutrally, suggesting that some may not fully understand the concept of bias in GenAI outputs. In response to statement 5, "I follow

the latest developments in the use of GenAI in education,” the results showed ($M = 2.35$, $SD = 0.78$), a total of 54% of teachers reported that they stay informed about the latest developments in GenAI. However, nearly half of the teachers were either neutral (27%) or disagreed (19%), indicating that while some teachers are proactive and stay updated, others are not yet engaged in following recent advancements.

Perceived challenges

The results related to perceived challenges are organized into five dimensions, as follows:

Expertise and Training

The analysis of the questionnaire revealed varying levels of agreement among respondents regarding the perceptions of GenAI challenges in education. The results of the expertise and training analysis indicated a strong perception among participants regarding the insufficiency of support and preparedness for using GenAI in education. The statement “There is a lack of specialists and experts in GenAI to consult when needed” received a high level of agreement ($M = 2.75$, $SD = 0.50$). This analysis shows that there is limited expert consultation. The item “There is a lack of training programs to enhance the use of GenAI in education” also showed notable agreement ($M = 2.71$, $SD = 0.60$). It emphasizes the shared concern of teachers about the availability of professional development programs. The last item “There is a lack of awareness among teachers about the importance of using GenAI” had a lower mean ($M = 2.65$, $SD = 0.60$). However, it still indicates an awareness issue. The low standard deviations of all items suggest that responses were consistent.

Technology barriers

This part highlights perceived technology-related challenges in teachers’ experiences with GenAI. The item “Using GenAI requires more effort compared to traditional teaching methods” received a relatively low mean score ($M = 2.03$, $SD = 0.91$), indicating moderate disagreement and notable variation in responses. This implies that, although some teachers find GenAI challenging, others may not perceive it as a significant barrier. On the other hand, the item “Using GenAI requires technology resources such as Internet connection, PC devices, computer lab, etc., which may not be available” showed the highest level of agreement in this section ($M = 2.80$, $SD = 0.49$). This reflects a strong concern about infrastructural limitations. Moreover, the items “Using GenAI requires English language” ($M = 2.19$, $SD = 0.84$) and “There is some difficulty in learning about various types of GenAI” ($M = 2.37$, $SD = 0.75$) revealed moderate levels of agreement. That indicates that language proficiency and tool complexity present challenges for some teachers. The responses generally varied regarding technological infrastructure, language requirements, and the perceived effort required in using GenAI.

Financial constraints

The survey results suggest that financial barriers play a moderate role in limiting the adoption of GenAI in education. More precisely, for the statement “The high financial costs associated with using and updating GenAI create a barrier” ($M = 2.26$, $SD = 0.75$), although 44% of respondents agreed, 38% remained neutral, and 18% disagreed. This distribution indicates that while cost is recognized as a barrier by many, it is not universally perceived as a major barrier. The presence of a substantial number of neutral responses suggests that financial limitations may be more significant in some schools than others, possibly influenced by budget allocations, access to funding, or differing stages of GenAI integration.

Administrative constraints

For administrative-related challenges, responses were more varied. The statement asserting that school administrations do not prioritize the use of GenAI had the lowest mean score across the survey and a relatively high standard deviation ($M = 1.95$, $SD = 0.87$). A considerable number of respondents (40%) disagreed with this claim, indicating that in many cases, school leaders may indeed be supportive of GenAI integration. However, the variability in responses points to contextual differences across schools. In contrast, the workload placed on teachers was viewed as a significant barrier to GenAI use, receiving a higher mean score of 2.51. With 65% of respondents agreeing, this issue emerged as one of the most widely acknowledged challenges, suggesting that even when administrative support exists, practical burdens on teachers may still hinder effective integration. The size of classrooms was also affirmed as a barrier ($M = 2.27$, $SD = 0.87$), with agreement from 55% of respondents, emphasizing that logistical constraints can further complicate GenAI adoption in educational settings.

Concerns

Several concerns about the broader adoption of GenAI were affirmed by participants. Many high school teachers agreed that GenAI may hinder essential educational outcomes and ethical standards. For instance, two statements, “Using GenAI will diminish critical thinking and lead to overreliance” and “Using GenAI in education increases the risk of creating incorrect or fabricated content,” each received a high mean score of 2.49, with 60% of respondents agreeing with both. These concerns reflect deep apprehensions about the intellectual quality of learning experiences shaped by GenAI tools. Similarly, issues such as plagiarism and cheating ($M = 2.51$, $SD = 0.68$), as well as challenges in fairly grading students ($M = 2.39$, $SD = 0.67$), were strongly endorsed, underscoring fears that GenAI could disrupt academic integrity. Other concerns, including privacy risks ($M = 2.41$, $SD = 0.67$), reduced opportunities for peer interaction ($M = 2.25$, $SD = 0.81$), and difficulties in assessing how students arrive at their answers ($M = 2.37$, $SD = 0.76$), were also acknowledged. While some items, such as the effect on transferable skill development, received slightly lower mean scores (e. g., $M = 2.16$), the overall pattern points to a prevalent unease about how GenAI may affect the depth, fairness, and relational aspects of the learning process.

Discussion

In this section, we discuss the study’s results through which we address the research questions. The questions were about the level of high school teachers’ awareness of using GenAI, their current practices, and the challenges they encounter while using it. The following subsections discuss the study results for each question.

Teachers’ awareness of GenAI (RQ1)

To address the first research question (What is the level of awareness among high school teachers about using GenAI?), we used five core indicators: familiarity, regular use, inaccurate and biased results awareness, and follow-up with the latest developments in its application in education. According to the study’s findings, the percentage of teachers reporting familiarity with GenAI use in education is higher than that of those who regularly use it. This indicates a gap between GenAI familiarity and its implementation. This aligns with

one of the most frequent conclusions drawn from numerous global studies: teachers' use of GenAI is limited, as shown in [Beege et al., 2024; Ng et al., 2025]. Moreover, the results showed modest agreement with GenAI's potential to produce inaccurate or biased results. Therefore, the lack of awareness of these important issues inevitably confirms the necessity of enhancing teachers' AI literacy. Lastly, regarding whether teachers follow the most recent advancements in using GenAI in education, the results show differing degrees of interest among teachers. This finding is corroborated by Cheah et al. [Cheah et al., 2025]. Overall, the study's findings suggest that the Saudi high school teachers were generally familiar with GenAI. However, they employed GenAI less frequently in their work practices. This indicates the importance of promoting teachers' AI literacy and establishing ethical and instructional guidelines.

Teachers' current practices of GenAI (RQ2)

The study findings also answer the second research question (What are the current practices of high school teachers in using GenAI?). The study showed that applying GenAI for content generation received significant attention and good usage by Saudi high school teachers. This indicates two key points: First, multimedia is appropriately utilized by teachers, which enhances the teaching and learning process [Salinas-Navarro et al., 2024]. Second, teachers tend to engage more with direct and familiar uses of GenAI, such as content generation, rather than indirect or support-oriented tasks, like handling administrative work (scheduling and planning, data entry, and summarizing meeting notes). Similarly, several studies showed the lack of GenAI usage in facilitating administrative work [Cheah et al., 2025; Kong et al., 2024]. The results also show a variation in the number of teachers benefiting from GenAI in their most important practices: two-fifths reported using GenAI to design and prepare lessons. At the same time, fewer teachers have applied these tools to develop assessments or perform grading. These findings align with [Cheah et al., 2025]. This consistency underscores a common trend among teachers to prioritize content preparation over evaluative tasks when adopting GenAI. In addition to these basic practices, the results showed that teachers have adopted GenAI to assist in several academic tasks and student support. By way of illustration, GenAI was employed for research, problem solving, and writing assistance. Furthermore, fewer teachers incorporated GenAI into ITQAN classes, showing some teachers' awareness of the role of GenAI in personalized and skill-focused education. All these uses illustrate a new trend of employing GenAI for cognitive engagement and student development.

Regarding the most commonly used tools among teachers, the results revealed four distinct tiers of tool usage, aligning closely with their reported practices. At the top tier, *ChatGPT* stands out as the most widely used tool, likely due to its popularity, ease of use, and multifunctionality. In the second tier, *Canva* was used by more than half of the participants, reflecting its strong presence as a tool for creating presentations. The third tier includes *Google Gemini*, which was used by just over a quarter of the participating teachers. *Gemini* and *ChatGPT* work on natural language processing and generating helpful and precise text. However, *Gemini* seemed less popular among Saudi teachers. These top three tools reflect the predominant ways teachers engage with GenAI, primarily for content creation and research. Lastly, the fourth tier includes *Animated Drawings*, *LimeWire*, *SlidesAI.io*, *Animaker*, and *NapKin*, each reported by only a few teachers. Despite their specialized functions, the limited interest in these tools may stem from teachers' unfamiliarity or the challenges associated with their use, which may necessitate training or guidance.

Our findings indicate that teachers leverage GenAI primarily focusing on content generation, research, and instructional support, specifically lesson preparation. Also, the results related to the most commonly used tools confirmed the nature of teachers' practices with GenAI.

Challenges in GenAI use (RQ3)

The findings of this study provide clear insights into the main challenges that high school teachers in Saudi Arabia perceive when integrating GenAI tools into their teaching practices. These findings are directly tied to the third research question (What are the main perceived challenges high school teachers face in using GenAI?). Five primary areas of concern emerged: lack of expertise and training, technological barriers, financial constraints, administrative challenges, and ethical concerns. These results align with previous research on GenAI adoption in educational contexts.

The most noticeable challenge identified was the lack of sufficient training and the absence of expert support. These results reveal that teachers strongly recognize the need for structured, in-depth training and professional development programs customized to their practical needs. Previous research has highlighted the importance of training and support. According to Al Darayseh [Al Darayseh, 2023], training is essential to enable science teachers to integrate GenAI tools to boost learning outcomes. Similarly, Wardat et al. [Wardat et al., 2024] emphasized that mathematics teachers require well-prepared training on how to integrate GenAI tools into their curricula effectively. In addition, Cheah et al. [Cheah et al., 2025] have also previously pointed out that most current workshops are short and inadequate to support meaningful classroom integration.

Technological challenges were also reported as a major obstacle to GenAI adoption. The majority of respondents showed that GenAI requires adequate infrastructure, such as internet access, PCs, and other computing devices. Although GenAI may help to automate aspects of the teaching process, challenges associated with language abilities and the complex nature of GenAI tools still occur for some teachers. These results are in line with previous studies. For instance, Wardat et al. [Wardat et al., 2024] emphasize collaborating with technology companies to obtain adequate technology infrastructure and GenAI-enhanced educational resources.

Financial constraints were also considered as an obstacle, even to a slightly lesser extent. Teachers expressed concerns about affordability in respect to GenAI tools and updates, suggesting that full integration of such technologies would at least be delayed by these costs. This is particularly problematic where access to full versions is restricted (free tools generally provide only minimal capabilities). In addition, financial limitations can limit investment in schools' infrastructure and teacher development [Ng et al., 2025]. Such economic differences may lead to uneven availability of AI resources, especially across public schools [Han et al., 2024].

The administrative impediments findings provide an important insight: the lowest mean score in the entire dataset is in the items' perceptions or beliefs related to the support and crucial part that school administration plays in the successful implementation of GenAI tools within the classroom. In addition, the relatively large standard deviation and range of responses demonstrate variability across diverse school contexts; some teachers work in supportive environments, and others do not.

This disparity demonstrates the significance of the school's leadership in the development of perceptions towards educational innovation. In our work, the Saudi context indi-

cates a positive administrative attitude towards embracing GenAI tools in the curriculum. This result is different from previous worldwide studies such as: [Al Darayseh, 2023; Aldawsari, 2024; Chiu, 2023; Elstad, Eriksen, 2024; Kong et al., 2024; Wardat et al., 2024; Cheah et al., 2025], where less support for GenAI integration was received from the administration.

Moreover, teacher workload and large class sizes hinder the practical implementation of GenAI. Although some teachers may incorporate GenAI tools into everyday teaching responsibilities (e. g., lesson planning, grading, assessment, etc.) as supported and prioritized by school leadership, they are still burdened by other responsibilities. Without a supportive administrative framework, even highly motivated teachers may struggle to effectively integrate GenAI into their daily teaching [Cheah et al., 2025; Wardat et al., 2024]. Beyond classroom conditions and infrastructural barriers, the study revealed substantial concerns about including the GenAI tool in education. Participants were most concerned that the GenAI could lead to increased plagiarism and cheating, reduced critical thinking, overreliance on technology, and the development of false or misleading content. There were also fears over potential privacy risks to students and whether AI-assisted grading was accurate and fair. These ethical and pedagogical concerns are present in many other GenAI studies. Which emphasizes the importance of human supervision and the responsible use of GenAI tools in education [Bower et al., 2023; Lee, Song, 2024].

In general, despite a high inclination to the use of GenAI tools by high school teachers in Saudi Arabia, there are also a few obstacles in the way of that happening. Lack of training and expert assistance, as well as financial issues. These are considered the most important obstacles that reduce the utilization of these technologies.

Conclusion

This study sought to explore Saudi high school teachers' awareness of GenAI, their current practices, and perceived challenges in using it in education. Participants showed a considerable level of awareness and there is as well a growing interest among them in following GenAI latest developments and trends. In addition, the findings of the study revealed that the common current uses among teachers were generating presentations, research, and designing lessons. However, despite increased awareness and interest in this technology among teachers, they shared many challenges and concerns. Most teachers reported that there is a lack of technological infrastructure. In addition, there is a clear consensus on the need for expert guidance and professional development programs to enhance GenAI use. The finding suggested that economic factors are not the key impediment for Saudi teachers. The results of the administrative constraints indicated that teaching workloads limit teachers' ability to adopt GenAI tools in their practice. There are numerous reported concerns regarding the use of GenAI. The most significant is the potential for increased cheating and plagiarism. Other frequent concerns were the decrease in critical analysis skills as well as the creation of incorrect content. To enhance the GenAI experience for Saudi teachers in high schools, it is essential to provide targeted professional development, access to expert guidance, and improved technological infrastructure within the educational environment. Our study has some limitations that need to be clarified. First, the findings were based only on the quantitative analysis of the collected data from the questionnaire. Second, the study focused on the high school teacher's perspective, without involving other perspectives, for instance, from students and leaders. Third, the study was conducted using a cross-sectional approach.

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Применение генеративного искусственного интеллекта в высшей школе Саудовской Аравии глазами преподавателей

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Генеративный искусственный интеллект (GenAI) — это только возникающий в сфере образования, хоть и многообещающий инструмент, и его использование в классах все еще находится на ранней стадии развития. Следовательно, предлагаемая работа исследует осведомленность преподавателей высшей школы Саудовской Аравии и существующие практики,

а также предполагаемые проблемы использования GenAI в сфере образования. Данные были собраны с использованием онлайн-опроса 104 преподавателей высшей школы, а затем количественно проанализированы. Результаты анализа показали, что преподаватели в большинстве своем знакомы с использованием GenAI в образовании (66%), но регулярно используют его в преподавательской деятельности меньше (43%). Создание презентаций оказалось самым всепопулярным случаем использования, а *ChatGPT* — самым используемым инструментом. Более того, половина участников продемонстрировала осведомленность о том, что GenAI может создать пристрастный или некорректный контент. Полученные результаты указывают на несколько проблем, препятствующих принятию GenAI в этой сфере; среди наиболее известных — нехватка технологических ресурсов (84%), ограниченный доступ к учебным программам (79%) и отсутствие специализированного вспомогательного персонала (78%). Звучали также опасения, что инструменты GenAI могут сократить возможности для сотрудничества и расширения знаний, а также навыков критического мышления. К общим проблемам также относится сохранение конфиденциальности, а также академическая честность. Следовательно, исследование дает своевременный взгляд на то, как новая технология проникает в высшую школу Саудовской Аравии, и подчеркивает необходимость обучения и поддержки инфраструктуры для обеспечения эффективной интеграции этой технологии в систему образования.

Ключевые слова: генеративный искусственный интеллект, образовательные технологии, педагогические практики, преподавательское восприятие, внедрение технологий.