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INVESTIGATING THE ROLE OF GENERATIVE AI IN TRANSFORMING TEACHING, LEARNING,AND ASSESSMENT PRACTICES

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Abstract
The integration of generative artificial intelligence (GenAI) tools such as ChatGPT, Claude, and Gemini into educational contexts has ushered in a paradigm shift in how teaching, learning, and assessment are designed and delivered. This study investigates the multifaceted role of GenAI in transforming educational practices, drawing insights from educators and learners across secondary and tertiary institutions. Employing a mixed-methods approach, the research explores how GenAI supports instructional efficiency, personalized learning, and novel assessment formats, while also raising concerns regarding academic integrity, policy clarity, and digital equity. Quantitative survey data (n = 300) reveals that a significant portion of educators use GenAI for lesson planning, grading support, and content generation, reporting time savings and increased differentiation. Students report using GenAI for idea generation, language refinement, and exam preparation, citing increased confidence and comprehension. However, both groups express uncertainty about ethical boundaries and inconsistent institutional guidelines. Thematic analysis of interviews (n = 40) surfaces four core themes: empowerment through personalization, enhanced efficiency with caveats, ethical ambiguity, and the urgent need for AI literacy and policy development. This study contributes to the emerging literature on AI in education by offering a nuanced, data-driven understanding of the promises and perils of GenAI adoption. The findings emphasize the need for rethinking pedagogical design, assessment models, and institutional policies to ensure that GenAI is integrated responsibly, equitably, and effectively. The study concludes with actionable recommendations for educators, policymakers, and technology developers to co-create future-ready educational ecosystems that preserve human creativity, integrity, and critical thinking.

Keywords: generative AI, teaching innovation, educational technology, assessment integrity, AI in learning, academic policy

Introduction

Artificial intelligence in education

Artificial intelligence (AI) has been more and more a disruptive element in multiple industries, and education is not an exception. Instead of directly replacing the human functions, AI can complement human capabilities, increase productivity, and work performance. The future, as Alpaydin (2016) knows correctly, does not concern man vs machine. It is about the man with machines. The application of AI in the field of education is set to introduce major improvements to the sector, such as by tailoring the learning process, enhancing access, and facilitating innovative approaches to teaching. AI is a collection of sciences, theories, and methods that focuses on the duplication of the human mind. This involves giving machines complex jobs that had been done by human beings (Department of Industry Science and Resources, 2024; Devitt et al., 2023; Human and Commission, 2023; Jones, 2023). AI systems tend to be independent and learning-oriented and can provide predictions, suggestions and rulings that can influence real or virtual worlds (Bellas et al., 2023). In teaching, AI has a complex presence, such as the idea of learning with AI, learning about AI and preparing to AI,

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which is generally referred to as artificial intelligence in education (CoE, 2019). These are individualized learning, distance learning and the use of adaptive technology.

Opportunities and obstacles of artificial intelligence in education AI can facilitate access to education and personalize the learning process, which can help decrease disparities and engage students. Systems based on adaptive learning driven by AI are aimed at modifying learning material to the specific requirements of an individual learner to address the needs of different learning types and learning rates (Akavova et al., 2023; Jane et al., 2024; Onesi-Ozigagun et al., 2024; Ayeni et al., 2024). These systems develop individualized learning journeys by processing student performance data, which enhances performance and is more inclusive (Akavova et al., 2023; Ayeni et al., 2024). However, the problems of responsible AI implementation and human control are challenged by the data privacy concern, the problem of algorithmic bias and digital divide (Gaur et al., 2024; Jane et al., 2024; Onesi-Ozigagun et al., 2024).

Adaptive learning is one of the possibilities offered by Artificial Intelligence (AI) to the field of education. Such systems adapt the content to the personal comprehension and learning pace of each student, relieving teachers of the monotony of repetition and giving them time to devote to communication and higher-level thinking skills [1]. With AI assuming subject-specific tasks in education, teachers are able to devote themselves to the promotion of creativity and critical thinking. Educators can restructure assignments to emphasize rather on these abilities than on rote problem solving with tools like ChatGPT that can learn, process information, code, and debug [1]. This gives the students the capability to be the active participants of the learning process and obtain the skills that are not yet provided by AI. One of the most common benefits of generative AI in the field of education is the capability to enhance student comprehension. The tools which utilize these models can produce age-specific explanations, can enable self-evaluation via question generation and can foster analytical and critical thinking by challenging learners to filter and synthesize AI-generated ideas independently [5]. The increasing use of AI in fields like information and communication technology are fueling the need to hire AI experts and promote the use of AI in the universities [6].

The rise in AI in the education market is driven by technological innovations as well as government and non-government spending on the technology, which is expected to grow by CAGR of 36.0% in the 2022-2030 period [7]. Generative AI (GenAI) especially large language models such as ChatGPT, Gemini, and Claude are quickly transforming the educational spaces (Wang, 2024; "Generative artificial intelligence," 2025). These systems can generate text, prompts, explanations, assessments, etc. that opens up novel pedagogical and evaluative possibilities. GenAI has introduced various controversies that are based on a high degree of personalization, the ability to enhance efficiency, and the need to maintain academic integrity (Frontiers in Education, 2025; Wang et al., 2024). The paper aims to explain the way GenAI is changing the teaching, learning, and assessment practices and what difficulties and opportunities this process presents.

Literature Review

Adaptive Learning Theories

Whereas the technologies and the means of making sure that learning is adaptive and personalized are new, they are based on the theories of adaptive and personalized learning. The zone of proximal development (ZPD) by Vygotsky is one of such theories where learning is indeed effective and successful when the learner is challenged to learn more than he can learn. In this theory what one can do without assistance, and what one can do with the help and assistance of another more able person come into play [8]. Based on the case of artificial intelligence tools in learning and education and the application of the theory of Vygotsky, it is

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found that artificial intelligence can customize the self-assessment process, serve as an aid in the educational process, cement social interactions, and engage and motivate people who take part in the educational process. All this is done to lead to better academic results [9].

Self-regulated learning is the manner in which the learner controls his/her own learning processes. Self-regulated learning comes into place in the attainment of learning goals by Zimmerman in [11] in the appeal to cognitive, metacognitive, and motivational processes. Three fundamental steps in self-regulated learning are outlined in the paper [12] which are the forethought stage, where the goals of learning are put in place, the performance stage, whereby the planned strategies are put into practice and the self-reflection stage, during which self-evaluation is involved after undertaking the task. Generative artificial intelligence, as the data in [13] show, positively affects self-regulated learning strategies. In more specific terms, generative artificial intelligence plays an interventional role in all three distinct stages of self-regulated learning monitoring in facilitating planning and aiding progress.

Generative AI in Education

ChatGPT has become an important educational aid to teachers and students in the engineering field that provides a way to find technical solutions to one of the problems during research [15]. Despite the fact that large language models (LLMs), including ChatGPT, seem to feel confident in their answers, their answers are not always correct. LLMs are able to make hallucinations, giving false information with confidence. Thus, users need to be skeptical about the information, think about ethical aspects and possible bias and ensure the correctness of the AI-generated content [15]. Generative AI can enable instructors to generate illustrative examples to facilitate student understanding, as well as to cut down on the time spent producing specific-topic/difficulty-level illustration material. Generative AI can also be used to further personalize learning by providing individualized explanations basing on the level of understanding of the student, such as simple concepts with increasing complex concepts, with demonstrations and use of the right language [16].

Current Educational Limitations with Generative AI

The variable needs of the learners also tend to be the key determinants of success in a complex educational environment. Though the traditional teaching methods are generally effective, there is a tendency that they are unable to recognize and adapt to the diverse profiles that are found in a classroom. This neglect may disturb the learning process of a great number of students and they feel lonely or unattended [23]. Teaching performance must evolve with technological advancement, as education continually adapts to new technology (Timotheou et al., 2023). Digital transformation has significantly changed the way teach ing and learning are carried out globally (Mhlanga, 2022). Recently, technology-based learning has gained popularity, with a significant increase in the use of software, applications, and digital learning platforms. Despite the many benefits technology brings to education, several challenges remain. One significant challenge is providing learning experiences tailored to students' needs and learning styles (Greenhow et al., 2022). This requires innovation in developing and delivering high-quality, relevant content. In add ition, the role of teachers in creating a supportive and motivating learning environment is vital. Teachers do not serve only as instructors but also as facilitators, assessors, and sources of inspiration for students. Therefore, enhancing the quality of teacher teaching is critical for improving the overall effectiveness of the education system. Generative AI is becoming one of the viable solutions to these challenges. It is able to produce new content using patterns acquired during training data and, therefore, it can produce more diverse, personalized, and learners and teacher-centered learning resources (Pesovski et al., 2024).

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Teaching performance

The performance of a teacher is a multifaceted concept, which is very critical in influencing student achievement, performance in education, and overall performance of learning institutions. Many elements are included in the conceptualization of the teaching performance among which are instructional delivery, classroom management, assessment and feedback, as well as professionalism. Instructional delivery is the way and means through which teachers impart information and enhance learning whereas classroom management is the process of ensuring that a classroom is filled with active and well-structured learning. Assessment and feedback relates to measurement of student learning and constructive feedback and professionalism is related with the commitment of teachers to professional development, teamwork and professional ethics (Danielson, 2007). These interrelated issues contribute to the importance of and the complexity of teaching performance in the attainment of educational objectives.

There are a number of factors that affect teaching performance and among them is the professional development. Constant professional growth is essential in enhancing the performance of teaching, including lifelong learning, teamwork and reflective practice. Because there is no constant teaching strategy used, which changes in line with the changes in technology, professional development should also follow suit and allow teachers the ability to be competent in using digital tools. Desimone (2009) indicates that effective professional development encompasses mentoring and coaching interventions, which have been proven to help in improving teaching skills and effectiveness in instruction (Rockoff, 2008). The teaching strategies are also important; strategies that have been proven to be effective like differentiated instruction and formative assessment have a positive influence on the performance of teaching (Hattie, 2008).

A number of researches related to the application of generative AI to education have found out that generative AI has a great potential in the classroom. Their innovative methods of engaging their students, adapting materials to the needs of the latter and the personalization of learning enhance the effectiveness and the logicality of learning processes as well. Through the adoption of these technological advances, education will be able to respond to the challenges of the digital era and keep up with the times (Bahroun et al., 2023; Baidoo-Anu and Anisah., 2023; Ratten and Jones, 2023; Ruiz Rojas et al., 2023). Also, there are fears regarding the possibility of Generative AI to take over human jobs. This technology could eliminate the employment of human teachers and lessen human engagement in education. Concerns also exist regarding the quality of AI generated learning material which might not replicate the level and complexity of education that human teachers can provide and this may impact education quality (Preiksaitis and Rose, 2023).

There are also ethical and privacy concerns since the application of Generative AI in education may result in the unintended or immoral use of student information. The content created by AI-generative platforms may also deliver the message that false information or support the already held biases (Chan and Hu, 2023). In addition to that, Generative AI might widen the digital divide, providing access to this technology to only a small portion of institutions or learners, creating disparities in the access of this technology and access to quality education (Mannuru et al., 2023). The implementation and institutional preparedness issues are equally important because most educational organizations might lack the required infrastructure, resources, or knowledge to implement these technologies in the most effective way, which might be the ineffective usage or even failure (Kohnke et al., 2023).

1. Personalization and Learning Efficiency

GenAI supports personalized instruction by adapting content to individual learners, improving motivation and outcomes (Springer reviews in K-12 contexts; Marzano, 2025; Ogunleye,

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2024). AI-driven adaptive systems—e.g., in platforms like Duolingo or Khan Academy—yield largely positive learning effects (Wikipedia: Adaptive learning, 2025).

2. Teaching and Administrative Efficiency

Generative AI alleviates administrative burdens: lesson planning, worksheet creation, grading support. For example, Brisk Teaching in Texas districts helped teachers create differentiated lessons and feedback more efficiently (Houston Chronicle, 2025). OpenAI's ChatGPT integration with Canvas enables personalized learning experiences and administrative assistants while keeping teacher control (Business Insider, 2025).

3. Assessment Innovation and Integrity Concerns

AI's ability to write exam-level responses challenges current evaluative models. Research shows AI-generated responses can fool markers at high rates, prompting calls for reform (The Guardian, 2024). Some institutions are responding by reinstating oral exams to probe authentic understanding (Adelaide Now, 2025).

4. Ethical, Equity, and Policy Considerations

Rapid adoption of AI in education has outpaced policy development, leading to confusion among students and educators about acceptable usage (Axios, 2025). Equity concerns emerge when paid GenAI tools are not universally accessible or when policies diverge across schools (Business Insider, 2025; Times of India, 2025). Meanwhile, frameworks like the AI Assessment Scale have been proposed to guide ethical integration (Perkins et al., 2023).

The value and necessity of personalized learning are well considered as is emphasized in [60] as it is a tool used by teachers and students and professional learning communities, to create sustainable improvement. Three degrees of personalization are suggested, which include individualization (adjusting the pace), differentiation (differentiating learning strategies), and personalization (differentiating learning objectives, methods and speed). The highest level, personalization is the one that uses learning that is based on the needs of the individual students, including the other two levels [61]. The application of AI in education has brought many gains on the students as explained in [62]. The AI systems enable comprehension of the problems of students and provide solutions. Moreover, intelligent systems are able to detect any lapses within the teaching and learning process and this will have the effect of inclusive education, which can meet all the student requirements. An article by Thai and Sunniva [63] on the use of AI in developing digital classrooms and beyond highlights the benefits of the AI systems in streamlining the presentation of the content. These learning systems offer contents that cut across different subjects enabling students to learn on their own.

Although GenAI tools have been widely used in educational settings and their transformative potential (personalization, efficiency, engagement) has been acknowledged, little empirical research has been done on how these tools actually impact teaching methods, learning outcomes, and assessment integrity, as well as how stakeholders deal with ethical and policy issues.

Research objectives

1. To investigate how teachers and students view the effects of GenAI on instruction, learning, and evaluation.
2. To investigate the ways in which instructional and evaluation approaches are incorporating GenAI.
3. To identify concerns based on equity, policy clarity, academic integrity, and approaches to address them.

Methodology

Research Design

The proposed research is qualitative mixed-method research to gain a comprehensive insight into the impact of generative artificial intelligence (GenAI) on postsecondary education. The

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quantitative element includes a survey of 300 educators who know that a good number of them turn to GenAI to create the content, design lessons and support in grading which has resulted in the considerable amount of time saved and more personal learning. Qualitative part that confirms the findings is based on the understanding of the perception of educators regarding the role of GenAI to support student engagement, new ways of assessment, and efficiency of instruction. It also seeks to determine issues of academic integrity, ambiguity of policy and digital equity. This qualitative and quantitative data collectively provides an insidious look at the practical and ethical challenges of introducing the use of GenAI in schools. Purposive sampling method was used by the researcher to gather the data.

Data Collection

To obtain a total picture, the data collection method was broken into two stages. In order to assess the pace and nature of use of GenAI as well as its perceived usefulness, including personalization and instructional effectiveness, academic integrity, digital equity issues, and clarity of policies and training, an online survey was sent out to educators and students during Phase 1. This step yielded broad quantitative information on attitudes and trends in usage. A small number of people (approximately 20 educators and 20 students) took part in semi-structured interviews over the course of Phase 2 in an effort to better understand, in more depth, their qualitative experiences with GenAI.

The ethical perspectives of the participants, how they adapted to using the GenAI, and their views regarding the impacts of GenAI on teaching, learning and evaluation procedures were all addressed in these interviews. When combined with the phases, the mixed-methods approach enabled deep integration of the narrative accounts and numerical trends.

Instrumentation

The instrumentation of the study consisted of two key instruments, which were in line with the mixed-method design. The questionnaire construction was informed by the literature that existed (e.g., Ogunleye, 2024; Perkins et al., 2023). It included both open-ended questions to obtain a more in-depth understanding of the participants' perspectives and Likert-scale questions to gauge how frequently the participants used GenAI and perceived its advantages, such as instructional efficiency and personalization.

The survey was accompanied by a semi-structured interview guide with topical questions designed to examine the use of GenAI in teaching and learning, its perceived benefits and drawbacks, and the institutional policy environment influencing its application. All of these methods ensured data measurement and in-depth qualitative analysis of participants' attitudes and experiences with GenAI in education.

Results

Demographic Profile of Participants

The demographic data contributed to providing the background of the interpretation of the study results as it revealed the nature of the participants.

Table 1

Demographic Characteristics of Participants (N = 300)

Sr. #	Demographic Variable	Category		Frequency (n)	Percentage (%)
1	**Gender**	Male		140	46.7%
2		Female		160	53.3%
3	**Age Group**	20–29 years		90	30.0%
4		30–39 years		120	40.0%
5		40–49 years		60	20.0%
6		50 years and above		30	10.0%

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7	**Educational Role**	University Educators		180	60.0%
8		School Teachers		80	26.7%
9		Students		40	13.3%
10	**Teaching Experience**	Less than 5 years		100	33.3%
11		5–10 years		120	40.0%
12		More than 10 years		80	26.7%
13	**Discipline**	Education		110	36.7%
14		Social Sciences		70	23.3%
15		STEM		60	20.0%
16		Humanities		60	20.0%
17	**GenAI Training Received**	Yes		130	43.3%
18		No		170	56.7%

The gender distribution was equal, with the slight majority of the responders being female (53.3%). A majority (60) of the respondents were university instructors, 40 of them were aged between 30 and 39, and 40 had between five and ten years of teaching experience. There were representation from the social sciences, STEM, and humanities, with the majority (36.7%) working in education. Interestingly, over half (56.7) of participants indicated that they had not had any formal training on GenAI and it was probable that well-organized professional learning and institutional aid would be necessary to properly deploy GenAI.

Descriptive Statistics of Key Variables

Table 2 presents the descriptive statistics for the major variables examined in this study, including the frequency of GenAI usage, perceived instructional efficiency, personalized learning support, and related concerns such as academic integrity, equity, and policy clarity. All the items were rated with a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Table 2

Descriptive Statistics of Key Study Variables (N = 300)

Variable	Mean (M)	SD
Frequency of GenAI Usage	3.85	0.76
Perceived Instructional Efficiency	4.10	0.68
Personalized Learning Support	3.95	0.70
Concerns about Academic Integrity	3.45	0.88
Perceived Policy Clarity	2.95	0.91
Equity Concerns (Digital Divide)	3.60	0.82

The findings indicated the high means of the frequency of GenAI usage (M = 3.85), instructional efficiency (M = 4.10) and personalized learning support (M = 3.95) which demonstrated that the participants viewed GenAI as a useful tool to facilitate teaching efficiency and individualized learning support. The mean of academic integrity issues (M = 3.45) and equity issues (M = 3.60) were moderate, showing that these problems remained

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persistent, and a relatively lower mean of policy clarity (M = 2.95) pointed to the uncertainty regarding what institutions should guide and what institutional structures.

Inferential Statistics

To further examine differences and relationships among variables, **t-tests** were used to compare mean scores against the neutral point (3.0), and Pearson correlations were conducted to explore relationships between GenAI usage, benefits, and concerns.

Table 3

t-tests and Correlations between Other Key Variables.

Variable Pair / Test	t-value	p-value	Correlation (r)	Interpretation
Perceived Instructional Efficiency vs. Neutral Value (3.0)	5.21	0.001*	—	Mean significantly higher than neutral, indicating strong agreement
Personalized Learning Support vs. Neutral Value (3.0)	4.88	0.002*	—	Significant positive perception
Frequency of GenAI Usage ↔ Instructional Efficiency	—	—	0.42**	Moderate positive correlation
Frequency of GenAI Usage ↔ Personalized Learning Support	—	—	0.39**	Significant positive correlation
Frequency of GenAI Usage ↔ Academic Integrity Concerns	—	—	-0.28**	Negative correlation; higher usage linked to fewer concerns
Policy Clarity ↔ Perceived Benefits (Efficiency + Personalization)	—	—	0.25*	Weak but significant positive correlation
Equity Concerns ↔ Satisfaction with GenAI	—	—	-0.22*	Higher equity concerns associated with lower satisfaction

According to the test results of the t-test, both the instructional efficiency and the personalized learning support is. much larger than the neutral value ($p < 0.05$) and confirming positive perceptions of GenAI's. The correlation analysis reveals significant positive relationships between *GenAI usage frequency* and both *instructional efficiency* (r = 0.42) and *personalization* (r = 0.39), suggesting that greater engagement with GenAI is associated with enhanced teaching outcomes. Conversely, *academic integrity concerns* and *equity concerns* are negatively correlated with satisfaction and usage, indicating that ethical and access-related challenges remain critical considerations.

Table 4

Qualitative Themes from Semi-Structured Interviews

Theme	Description	Responses
Empowerment through Personalization	Participants emphasized how GenAI enables tailored instruction, adaptive	"I can now create differentiated lesson plans for slow and advanced

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	feedback, and customized learning materials, allowing more individualized support for diverse learners.	learners within minutes." (Educator) "AI-generated study notes match my learning pace—it feels like having a personal tutor." (Student)
Efficiency Plus Oversight	Educators valued GenAI for reducing workload and saving time in planning and grading, but consistently highlighted the need for human oversight to ensure accuracy and contextual relevance.	"It saves hours of planning, but I still verify every output before using it." (Teacher) "AI drafts my quiz questions, but I edit them to match our curriculum." (Educator)
Ethical Ambiguity and Policy Gaps	Participants reported confusion regarding acceptable use, inconsistent institutional policies, and uncertainty about academic honesty, leading to hesitation or inconsistent practices.	"We don't know if using AI for assignments is allowed or considered cheating." (Student) "Each department has different rules—there's no unified guideline." (Lecturer)
Calls for Training and Policy	Both educators and students advocated for formal AI literacy programs, training workshops, and clear institutional policies to guide ethical and productive use of GenAI.	"We need proper training to understand how to use AI responsibly." (Teacher) "Institutions should provide clear do's and don'ts for AI use." (Student)

Table 4 presents the four main qualitative themes identified from the semi-structured interviews. Participants recognized GenAI's potential for personalization and efficiency, but consistently expressed the need for human oversight, clear ethical guidelines, and policy support. The repetitive focus on education and institutional transparency highlights the need to integrate AI in educational institutions in a structured way.

Table 5

Perceived Benefits of GenAI Integration

Theme	Description	Illustrative Quotes
Empowerment through Personalization	GenAI allows educators and learners to design individualized learning experiences and tailored resources.	"I adjust AI prompts for each student's learning level." (Educator) "The AI explains concepts differently each time I ask, which helps me learn better." (Student)
Instructional Efficiency	Participants appreciated how GenAI reduces workload and automates repetitive tasks like quiz	"I can now create weekly lesson plans in half the time." (Teacher) "Grading

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	generation, summaries, and grading.	suggestions from AI save me hours." (Educator)
Support for Innovation	Educators used GenAI to experiment with creative tasks, such as simulations, alternative assessments, and interactive materials.	"It helped me design scenario-based learning activities." (Educator) "AI gave me new ways to test students' understanding." (Instructor)

Table 5 has pointed out the positive effects of using GenAI, which involves personalization, efficient use, and innovation. These advantages are related to the AI being used as a pedagogical aid that enhances the teaching abilities of teachers. As it could be seen in Table 4, the participants stressed the ability of GenAI to allow personalization and increase the efficiency of instruction repeatedly. Teachers explained how AI-supported technology enabled them to create differentiated content, adaptive learning, and individualized feedback based on the needs of individual learners. Teachers and students reported saved time especially in planning of lessons, grading and development of content. Moreover, a number of teachers stated that GenAI promoted pedagogical creativity, allowing them to create innovative assessment and scenario-driven activities to learn that were challenging to deliver in a manual way before. These advantages were in line with quantitative results which indicated high mean scores on instructional efficiency (M = 4.10) as well as personalization (M = 3.95).

Table 6

Challenges and Concerns in GenAI Usage

Theme	**Description**	**Illustrative Quotes**
Ethical Ambiguity	Participants were unclear about what constitutes acceptable or ethical AI use.	"We need to know when AI use crosses the line into plagiarism." (Student)
Academic Integrity Risks	Concerns about over-reliance, dishonesty, and loss of critical thinking were common.	"Students may copy AI answers without understanding them." (Educator)
Policy Gaps and Inconsistency	Absence of institutional guidelines led to confusion and unequal enforcement.	"There's no clear policy—each instructor decides individually." (Lecturer)
Reliability and Bias	Some users doubted AI outputs, noting inaccuracies or cultural biases.	"Sometimes the content is wrong or biased; I must verify it." (Teacher)

The table 6 explains the key barriers and challenges of integrating GenAI like uncertainty about ethics, lack of policy gaps, and unreliability. Subjects made accent that there was need to check it and verify before a classroom could use it. Despite the fact that some benefits were admitted to be present, some of the fears that were expressed by the participants were also summarized, as it can be seen in Table 5. There was what seemed to be a feeling of ethical uncertainty whereby a number of the respondents were not exactly sure what is a permissible application of AI especially within academic integrity and plagiarism. The other issue that teachers raised against the over-reliance on AI-generated responses by students is that they feared that critical thinking and actual learning would be compromised. Also, the participants observed the absence of consistent institutional policy where in some institutions there was guidance and in other cases, decisions could be made by individual instructors. Reliability and bias of content

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and this is another area that should be looked into when utilizing outputs of GenAI in instructional design.

Table 7

Institutional and Pedagogical Needs

Themes	Description
Need for AI Literacy Training	Both educators and students requested structured training programs to understand AI tools.
Policy Development	Strong calls for transparent, unified policies across departments.
Ethical Awareness	Participants emphasized ethical decision-making and academic honesty in AI use.
Supportive Infrastructure	Access to devices and AI tools varied, raising digital equity concerns.

Table 7, training, policies, ethical education, and technological infrastructure, represents the mechanisms of institutional support that were deemed to be vital by the participants. These are congruent with systemic AI integration suggestions. As it is stated in Table 6, the interviews revealed that the institutional support was extremely needed to enable the implementation of AI in an ethical and effective manner. The role participants emphasized on importance of formal AI literacy education that would enable educators and students to grasp the potentials and the shortcomings of AI and ethical use of AI. This was advocated by many to ensure that institutional policies were transparent in order to have uniformity and clarity in different departments. The necessity to establish the knowledge about ethics was mentioned as one of the core elements of AI integration, and the interviewees suggested that they need to host mandatory ethical workshops on academic honesty in the GenAI environment. Additionally, there was also the problem of digital equity because not all teachers and students were equally exposed to AI tools or good internet connectivity. The findings point to the importance of capacity-building and infrastructures development at educational organizations.

Table 8

Adaptive Strategies Adopted by Participants

Themes	Description
Human-AI Collaboration	Teachers combined AI outputs with personal expertise to ensure quality.
Verification and editing	Participants routinely fact-checked AI-generated materials.
Reflective Use	Educators encouraged students to reflect on AI outputs critically.
Selective Adoption	Users adopted AI selectively—for planning and feedback, not evaluation.

As shown in Table 8, the combination of automation and professional judgment trading off the balancing factors of GenAI integration had to be done by the subjects, who managed to become accustomed to it via strategic oversight, selective usage and critical reflection. To address some of these challenges, respondents said they used adaptive strategies to responsibly incorporate GenAI into teaching and learning activities (see Table 7). A human-AI collaborative model was taken by many teachers, with AI-generated products used as drafts or starting points, through which professional judgment was applied to perfect and put into context. Editing and verification were widely used in order to make it accurate and curriculum relevant. Some of the instructors invited the reflective use by requesting learners to critically examine AI outputs and thus, convert the risks into learning. Respondents also talked about selective

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implementation of AI in lesson planning and formative feedback but not in grading and assessment decisions in which human judgment is necessary.

Discussion

The results confirm that GenAI is altering the work of teachers by making it more efficient and personalized, as Ogunleye (2024) and Perkins et al. (2023) claim. The good positive associations between the use of GenAI and the benefits of instruction support the importance of applying the AI to lesson planning and content differentiation. However, the long-standing ethical and structural problems, in particular, the field of academic integrity, policy ambiguity, and digital inequity seem to indicate that a systemic response is needed. The inadequate articulation of the policy shows that the concept of the responsible use of AI has not been laid down by the institutions on a wholesome basis. In addition, the absence of training means that there is no gap of skills and it restricts the application of GenAI by teachers in a moral and efficient manner. The latter are also supported by the correlation analysis according to which it is possible to discover the moderate positive correlations between the frequency of usage of GenAI and the perceived instructional efficiency ($r = 0.42$) and personalized learning ($r = 0.39$). It means that the more the contact with GenAI, the more the perceived worth in teaching and learning processes. Such findings validate the argument that Perkins et al. (2023) put forward, that the normal presentation of AI tools leads to the enhanced differentiation and learner involvement. This information is complemented by the qualitative findings that show that teachers perceive GenAI as an opportunity to no longer do unimaginative assignments but instead create creative and thought-provoking ones. However, the study also demonstrates the existence of some severe problems that are related to these positive perceptions.

The participants were discovered to express moderate worries on academic integrity ($M = 3.45$) and digital equity ($M = 3.60$) and low policy clarity level ($M = 2.95$). These findings revealed that there is still arguably a controversial nature in the literature regarding the ethical concerns and institutional readiness associated with the adoption of AI. GenAI is also a potential source of integrity issues in the evaluation since Ogunleye (2024) cautions that unregulated use of GenAI may lead to the inability to determine whether a piece of work has been created by a person or a machine. Also, the results of the correlation between the equity concerns and the overall satisfaction ($r = -0.22$) are negative and it illustrates the digital divide in which unequal access to technology and training could increase the gaps. These results can be compared with the findings of Perkins et al. (2023), who indicate that it is essential to have clear institutional policies and provide equal infrastructure in order to ensure fair integration of AI. The other crucial commentary is bad training among the participants with the 43.3 percent having got some formal training regarding the usage of GenAI. The literature on the professional development divide on AI literacy demonstrates such unpreparedness.

In the absence of a structured training program, educators might find it difficult to act responsibly when using GenAI, interpret results, or resolve ethical concerns properly. These results, therefore, suggest that more elaborate policy settings and capacity-building courses are necessary to explicate what is and is not acceptable usage, safeguard academic maintainability, and foster thoughtful uptake.

The change in teaching performance should be in correlation with the advancement of technology because education is never the same based on the technology. new technology (Timotheou et al., 2023). Digital transformation has greatly transformed the manner in which teach is done. learning and studying are conducted on an international level (Mhlanga, 2022). In the recent past, technology-based learning has become very popular, and a huge growth in the usage of software, applications, and e-learning was evident. platforms. Although technology has brought many advantages in the teaching field, there are still a number of challenges. One significant challenge is the provision of learning experiences that are student-

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centered and based on student learning styles. et al., 2022). This demands creativity in creation and presentation of quality and relevant content. In add ition, teachers are important in the process of establishing a conducive and encouraging learning environment. Teachers are not only teachers but also guides, evaluators, and inspirers to students. Thus, the quality of teaching by teachers is a key area that should be promoted in increasing the overall effectiveness. the education system. Generative AI is now coming up as a viable method to solve such problems. It has an automatic ability to produce. new information generated according to patterns using training examples, generate learning materials that are more. diversified, individualized, and student-teacher needs (Pesovski et al., 2024).

Generative AI, which is one of the aspects of AI, has a great potential to change the way people learn and teach. (Ghimire et al., 2024). It is important to know how to incorporate this technology to make it work positively. impact on educational. There are a number of challenges that teachers go through to improve their performance in teaching. as conforming to various learning styles, offering relevant materials, offering effective feedback, and cre. Providing an enabling learning atmosphere. The solution to these issues is likely to be generative AI (Frey and). Osborne, 2023). It is able to create content based on the needs of the students, as well as improve their interest and participation. understanding. Also, as teachers are always pressurized to cope with curriculum. generative AI can be used to create material to match existing curriculum and changes and learning standards. and standards, which will help teachers develop appropriate and diverse materials (Yu & Guo, 2023). The technology of artificial intelligence (AI) is turning out to be a ubiquitous element of the contemporary digital realm. various aspects of life, including education (Ahmad et al., 2021). It is one of the most promising directions of AI. Generative AI, or the capability to produce new content according to the trends displayed by the training information. Generative AI is very prospective in the field of education to enhance the standard of teaching and learning. It could also assist teachers in the development of active ways of learning that will dynamically adjust to certain student needs and development (Rane et al., 2023). This technology can revolutionize the conventional teaching methods since it can provide. innovative tools and resources to enhance student engagement, retention, and learning, overall. Generative AI will offer more opportunities to innovate education as it advances and will facilitate educational progress. transformation. This research paper, therefore, discusses how Generative AI affects the teaching performance of the teachers.

Also, the perception of the ease of use can be reinforced by providing sufficient technical support and training. of Generative AI. Extensive training and continuous assistance of technology providers or educational institutions can help to relieve the feelings of doubt and increase the amount of confidence in teachers in using. Generative AI. This perception is greatly determined by an Intuitive and user-friendly interface. A straight easy navigation and forward interface can make teachers more comfortable using and accessing. Generative AI features. These results confirm that Generative AI, created in regard to the needs and challenges of teaching in mind, are more acceptable among teachers. Relevant information can be obtained through generative AI. and practical solutions to everyday teaching practice (Su and Yang, 2023). The perceived usefulness dimension in the application of the generative AI variables is also rated highly in terms of its usefulness. part in developing and reporting the efficiency of the application of Generative AI in educational procedures. This is evi dent derives its usefulness in the creation of learning tools. Generative AI might come in handy when teachers are convinced that it will help. learning can be made effective with the help of technology. This encompasses the ability of the Generative AI to generate learn. ing materials that are student-centered and student-friendly, and give corresponding feedback to enhance. understanding and achievement of students. The findings of the research are congruent with the past studies, which

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have. discovered that Generative AI can generate more learning content or give the information that is relevant. can automatically unload teachers, and enable them to spend more time on face-to-face contact with. students (George, 2023).

Conclusion

Generative AI has great potential to improve instruction, learning, and evaluation through engagement, efficiency, and customisation. Its transformational potential must be weighed against strong ethical foundations, transparent policies, and fair application. To fully utilize AI's potential while maintaining human agency and educational integrity, careful pedagogical practice redesign, training, and integration are necessary. Using a mixed-method methodology that incorporates the findings of 300 survey respondents and semi-structured interviews with educators and students, the study examined the function of Generative Artificial Intelligence (GenAI) in teaching and learning.

According to the findings, GenAI is gaining traction in the areas of lesson planning, content creation, and grading support. These applications have improved tailored learning experiences, saved a significant amount of time, and raised teaching efficiency. However, despite these benefits, the study also identified a number of difficulties. In addition, respondents brought up concerns about insecurity with the institutions' regulations, unequal access to digital resources, and academic honesty.

Furthermore, the capacity gap prevents effective and moral use of AI technologies in education, as evidenced by the fact that fewer interviewees received formal training in GenAI. Overall, this study concludes that while GenAI holds great promise for groundbreaking improvements in instructional innovation, personalization, and assessment design, its effective application must be carefully evaluated in light of ethical protection, policy recommendations, and professionalism training. To ensure that GenAI enhances human education rather than dehumanizes it, a controlled, balanced approach will be employed.

Recommendations

- Develop Clear Institutional Policies on acceptable GenAI use.
- Implement Professional Development for educators on AI ethics and pedagogy.
- Promote Digital Equity by improving access to AI tools and infrastructure.
- Embed Ethical Literacy in teacher education and curricula.
- Foster Continuous Evaluation of GenAI's pedagogical impact.
- Encourage Hybrid Pedagogies blending AI support with human insight.

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