

Generative AI and Authentic Assessment in Higher Education: Evidence from Ghanaian Universities

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ABSTRACT

This research aims to examine the impact of the use of generative artificial intelligence on authentic assessment and academic integrity in the selected universities in Ghana. It reflects on how students are utilizing GPTs to enhance course content comprehension, information processing and academic tasks, as well as issues of plagiarism, dependency on technology, equity in evaluation and critical thinking. The study is a mixed method study which involves the use of questionnaires, interviews, open-ended responses and analysis of assessment practices. The results indicate that generative AI can be helpful in the learning process, such as explaining abstract concepts, providing feedback to students, and aiding them to think through their ideas and learn at their own speed. Yet, when it is used recklessly, students' thinking capacity is lowered and it becomes hard for lecturers to distinguish between knowledge and ability learnt by students and that learnt through plagiarism. The study presents evidence that authentic assessment should deal with the application of knowledge, problem solving, thinking about learning, collaborative work, and the processes by which students develop their work, as well as the presentation of ideas and the results. It also calls for the creation of guidelines for the responsible use of generative artificial intelligence (GAI), to enhance the awareness of artificial intelligence (AI) by students and lecturers in Universities in Ghana, and to keep human oversight. Ultimately, students should be provided opportunities to express their thinking, their work, and their mastery of applying knowledge in the real world.

1. Introduction

Generative Ai has rapidly become a part of the higher education environment. Generative A.I. differs from traditional ones, which focus primarily on analysing data or detecting patterns, by creating new text, images, code, and content. The capacity to answer questions, describe things, give summaries, formulate ideas and help with written assignments has presented new opportunities for teaching and learning. Meanwhile, the technology has posed questions about how to assess students' knowledge and skills, their originality, and their efforts. Despite the potential of generative AI as a learning tool, recent studies have also raised issues of academic integrity, the validity of assessment, critical thinking, equity and the responsible use of technology in the university (Francis et al., 2025; Xia et al., 2024).

Generative AI is increasingly significant in assessment due to the fact that many of the traditional assessment practices carried out at a university rely on written assignments outside of the classroom. Tasks that already have some evidence

of students' individual understanding that can be generated, reorganized, or improved by artificial intelligence tools may no longer be considered effective evidence of individual understanding. Generative AI has been found to taint the validity of written assessment and poses complex issues around plagiarism, authorship, attribution, and academic responsibility (Chan & Hu, 2023). These concerns are not just limited to the cheating issue. An overreliance on automated systems may result in a lack of opportunities for students to practise their writing, analysis, creativity, problem-solving, and critical reflection skills. The key question is not just if students are using generative artificial intelligence, but can assessment practices remain effective in a context where students and instructors are increasingly interacting with increasingly sophisticated automated tools that provide meaningful learning.

The return to authentic assessment has thus become a focus of interest in higher education. It tends to be more of a process of applying knowledge and skills to real-life, context-based or work-related tasks, or scenarios, than it is about reproducing information. They can be case analysis, projects, demonstrations, oral presentations, practical tasks, reflective accounts, collaborative tasks and tasks which ask students to explain how they arrived at a conclusion. These can be used to support better evidence of student's thinking and use of ideas. But the latest research is raising concerns about the promise of authentic assessment as a panacea for the problems generative AI has brought. Experimental studies in two universities showed that markers could not differentiate between assessments which were fed by generative artificial intelligence and those which were not. The study also found that having content that was authentic alone was not enough to detect the use of artificial intelligence or ensure academic integrity, meaning that a greater focus should be placed on learning processes, social interaction, workplace relevance, and synchronous performance in assessments (Kofinas et al., 2025).

The question also applies to HE systems in Africa, which are grappling with the challenges of both the acceleration of technological changes and ongoing problems of access to digital resources, institutional capacity, quality of education, and policy formulation. Studies in African university settings have revealed the potential advantages and disadvantages of using generative AI, such as personalised learning, automated evaluation, access to learning materials, language support, concerns about privacy, misinformation, access inequities, infrastructure challenges, and threats to academic integrity (Zlotnikova & Hlomani, 2024). The findings also reveal that students in Ghana's Upper East Region might have better understanding of the material covered in their courses when using generative AI but are also concerned about academic integrity and excessive dependence on the tool (Wiredu et al., 2024). This evidence is valuable, but it is context-specific and insufficiently captures the understanding of how students and lecturers in southern Ghana think about the link between generative AI and authentic assessment in Universities. Given the various institutional, cultural, technological, and disciplinary settings of universities, the issue needs to be explored beyond the single site to avoid extrapolating results from one location to the rest of the country.

The present study seeks to fill that void by exploring generative artificial intelligence and authentic assessment in some selected Universities in the south of Ghana. It reflects on the potential of the applications of generative AI for learning, the threat it poses to academic integrity and the validity of assessment and the extent to which authentic assessment can offer a more compelling evidence of student learning. The study also pays attention to the perspectives and experiences of students and lecturers, as it is essential to the successful development of assessment reform to have the voice of the teacher and the student. It adds to this in two ways: firstly, it offers contextual evidence from southern Ghana, and secondly it explores the concept of 'authentic assessment' not as a direct substitute for traditional assessment but as part of a wider, more complex response that includes assessment redesign, artificial intelligence literacy, clear institutional guidance, and human oversight.

Therefore, the study wants to explore the interplay of generative artificial intelligence and authentic assessment in higher education, its opportunities and challenges for students using generative artificial intelligence, concerns about academic integrity and the validity of assessment, and possible assessment practices that can better assess students' reasoning, knowledge application, engagement, and learning processes. The study will focus on universities in the south of Ghana, aiming to guide informed conversations on the role of higher education institutions in addressing generative AI and maintaining the learning purpose and trustworthiness of assessment.

2. Literature Review

The impact of generative AI on knowledge production, demonstration and assessment in higher education is accelerating. These tools can help students learn and do their work, but they can also make it harder to determine authorship, originality and student understanding. Authentic assessment has therefore become an important topic again due to the focus on the application, reflection, problem-solving and demonstrating personal understanding. The

review explores opportunities and threats associated with the use of generative AI, the implications for assessment validity and academic integrity and institutional policies and the necessary AI literacy needed for responsible use in Ghanaian higher education.

The use of generative AI in higher education is a subject of intense debate. The implementation of generative AI in higher education is in a state of controversy.

Generative artificial intelligence is a subset of AI that deals with generating new content instead of analyzing or comprehending existing information. Generative artificial intelligence can generate written answers, summaries, explanations, ideas, and more based on queries in higher-education contexts. Generative pre-trained transformers are a type of generative AI that employs deep-learning models to create natural-language text. (Chan, 2023).

Their use has opened new avenues for teaching, learning, research and assessment. AI tools, like ChatGPT and other generative AI tools, can be used by students to explain complex concepts, to summarise academic content, to generate ideas, to refine language and to get feedback. Generative AI could offer customized feedback and guidance, allowing students to recognize their weaknesses and enhance their abilities, Chan and Hu say. Personalised learning experiences and materials that adapt to the unique needs of students can be enabled by Generative AI. The educational benefits of the technology, however, rely on the way in which the technology is used. (Kanont et al., 2024) It can be helpful to learning if it helps students understand, reflect, and revise when appropriate. If it creates the focus of an assignment that is not accompanied by any meaningful interaction by the student, it can substitute for the mental effort used to assess the assignment.

This has led to new opportunities and challenges for universities as a result of generative AI. It also affects the teaching and learning, student support and assessment processes in higher education, prompting institutions to rethink these processes and their organisation and support. Some potential benefits in African higher education are content creation, personalised learning, automation in assessment, accessibility support, language barrier assistance, and efficiency in operations. Meanwhile, issues of academic honesty, privacy, security, misinformation or fabricated information, inequity, infrastructure limitations, unaffordability of tools, reliance on external service providers, and limited adaptation to local contexts have been raised. Connectivity issues, power outages, limited access to devices, technical skill deficits, and a lack of regulations pose a specific threat to equitable access to generative AI tools in African higher education. These issues call for generative AI as a key research area for university teaching, learning and assessment. Further, research from the Global South found that generative AI's impact on adoption is also influenced by issues of infrastructure, human capital, policy, ethics, and context. (Nguyen & Perkins, 2026).

2.1 Authentic Assessment in Higher Education

Authentic assessment is used to measure students' knowledge and skill in applying them to real-life, meaningful, or professional contexts. It can involve case studies, projects, practical activities, portfolios, simulations, oral presentations, reflective accounts, group activities and workplace-related tasks. Authentic tasks are tasks that ask students to interpret information, solve problems, communicate ideas, make decisions, and justify. Unlike tasks that ask students to memorize or to reproduce information. (Vlachopoulos & Makri, 2024).

Authentic assessment not only focuses on the products students create, but it also addresses their use of knowledge. According to Peters and Angelov, authentic tasks are complex, connect with real-world or work-based tasks and prompt students to evaluate and reflect on what they learn. Furthermore, they are aware that oral assessment activities can be seen as "relevant to employability" and "promoting academic integrity". Authenticity is thus more than just giving students a realistic topic to handle (Peters & Angelov, 2025). It also necessitates the engagement, application, reflection, interaction, and proof of individual thinking. Similarly, Ajjawi et al. suggest that authenticity should not only be defined as mimicking work activities but also as being psychological, ontological, and as creating a space for learning and interacting with knowledge and work situations. (Ajjawi et al., 2023).

In the age of generative AI, there is a special significance for authentic assessment as it may involve pupils producing knowledge in a way that cannot be boiled down to a standard written answer. Content may involve analyzing a local case, demonstrating a skill in practice, supporting an analysis orally, commenting on a project's development or how

feedback was used to improve a project. These activities can offer a wider range of evidence of learning than a written product. Xia et al. point out that creative responses and performances in the form of oral presentations, examinations, projects, and laboratory work are all required for some exams. (Xia et al., 2024) Likewise, Chiu suggests that there is a need for more in-class and hands-on learning, especially for students to be ready to enter a society that is being increasingly shaped by generative artificial intelligence. (Chiu, 2023).

But, real assessment does not equate to academic honesty. A task can seem achievable but still enable a student to create content largely through an artificial intelligence system. Assessment processes, therefore, need to be used that make students' reasoning, participation, reflection, and development of the work visible for the purpose of achieving authenticity. In an AI-mediated learning environment, Kickbusch et al. suggest that authenticity should be fostered by making the learning process transparent, engaging in critical reflection on the outputs of the AI tools, producing artefacts of reflection, and conducting oral examinations that bring the learner's thought processes into view and allow them to justify their decisions. (Kickbusch et al., 2025)

2.2 The Diversity of Assessment Functions and Forms

Assessment validity relates to how well an assessment reflects the knowledge, skills or competencies that are being assessed. Where a student submits content generated or substantially changed by a system of generative AI, this could compromise the validity of the assessment, especially if the assessment is designed to evaluate independent writing, analysis, reasoning, or subject knowledge. With Generative AI in the classroom, the nature of assessment needs to shift towards creativity, integrity and student knowledge building, as noted by Peters and Angelov. (Peters & Angelov, 2025).

Generative artificial intelligence has introduced issues about plagiarism, attribution, copyright, author, and unethical academic writing, Chan and Hu explain. They also voice worries about the reliability of assessment practices, particularly with regard to written assignments. Furthermore, in their discussion, they link the general acceptance of generative AI with questions of the cultivation of creativity and critical thinking. Whether a student has copied text is not the only problem. Their work submitted may no longer fully reflect their understanding, judgment and ability to communicate independently. In an AI mediated education world, Assessment needs to be reconfigured to become transparent, verifiable, and visible not just in the final written product, but in the actual contributions made by the student," writes Kickbusch and colleagues. (Kickbusch et al., 2025).

This has been exacerbated by the quality of responses coming out of artificial intelligence. Generative artificial intelligence can generate compelling answers in multiple academic areas and some can earn high scores, Xia et al. report. They also found that generative artificial intelligence (GAI) was starting to impact how teachers grade their students, and was pushing for more diversity and innovation in assessment approaches. The results indicate that it would be more likely that the generative essay questions, take-home written assignments, and predictable assignments could be produced by AI. Lee et al. also argue that teachers feel that traditional assessments are becoming less and less effective in measuring learning in the age of generative AI, and that they need to develop new assessment tasks to be used to test more complex thinking skills than AI tools can easily produce. (Lee et al., 2024).

The use of generative artificial intelligence does not necessarily mean that learning has not taken place. Students can use the technology for brainstorming, language development, language translation, feedback, or language clarification. The critical questions are: Is there permission to use it? Is there disclosure of it? Is there verification of the information? Is the student still responsible for what s/he has presented in terms of ideas, evidence, reasoning, and final decisions? Universities must have explicit policies that differentiate fair help from the substitution of student work. Chiu suggests that institutions of higher education have clearer and more structured policies to direct the ethical and responsible use of generative AI in their courses and assessment to ensure that academic credentials retain their significance. Policies like these are most effective when designed in response to a larger policy framework that extends beyond pedagogy to governance and operational support for assessment in the AI era. (Chiu, 2023)

The use of generative artificial intelligence for academic dishonesty presents a new challenge that must be addressed in the context of academic integrity.

Academic honesty is defined as honesty, responsibility, fairness, trust, and respect for intellectual work. The principles are complicated by the use of generative AI to produce academic content, with the student as the named author. This raises questions regarding authorship, attribution, originality and how much of the work submitted is the

student's own work which has led to a shift from the detection of plagiarism to redesign of assessment. (Kickbusch et al., 2025).

Students understand the potential benefits and dangers of generative AI. Cena et al. identified that students employed the technology to summarise content, clarify complex ideas and to assist in the writing process. They appreciated its ease of use and time-saving aspects, but also noted issues with plagiarism, a lack of critical thinking, blurring of ethical lines, and varying institutional direction. This is in line with the broader academic literature where academic honesty is recognized as the most common concern raised in empirical studies of generative AI in higher education. Combined with other findings, this indicates that academic integrity does not only rely on disciplinary measures. (Xia et al., 2024) Practical advice on acceptable use, and acknowledgement, verification and responsible decision making is also needed by students.

A similar conflict between learning support and academic-integrity concerns is found in Ghana's evidence. Wiredu et al. examined the use of generative AI in some of the universities in the Upper East Region of Ghana. According to the study, 72% of students said that generative AI aided their ability to understand course material and 75% said that academic honesty was primary concern. It also found a weak-to-moderate positive correlation between students' use of artificial intelligence and their improvement in grades ($r = 0.45$). Qualitative results highlighted the potential risks of relying too much on AI and its impact on critical thinking. This illustrates the pattern observed in African classrooms, where there are challenges associated with inadequate infrastructure, preparation of teachers, relevance, and integrity governance of the use of generative AI. While specific to the Upper East Region, this evidence highlights the need to explore the nature of these issues in other regions of Ghana.

However, there are challenges in using artificial intelligence detection systems. Kofinas et al. discovered that, in the majority of cases, no markers could identify whether an assessment was generative AI-based or not. Their results also showed that the degree of authenticity of an assessment was not sufficient as an indicator of the presence of artificial intelligence or as a safeguard of academic integrity. This aligns with studies revealing that educators often feel unprepared to integrate AI assessments into their courses and unsure about assessing AI-generated work. It further strengthens the need to shift the focus of institutional action beyond detection to creating unified policy frameworks for integrity, evaluator practice, and student expectations that are coordinated in one overall structure. (Lee et al., 2024) This does raise a concern about the results of the detection being definitive evidence of misconduct. (Chan, 2023) More meaningful evidence may be obtained from human judgment, examination of draft, discussion with students and assessment activity in which students must explain their work. A holistic approach to institutional support, lecturer training, and clarity on appropriate uses of generative AI in education and assessment is required for this level of integrity-driven redesign.

The second part of this workshop focuses on educational benefits of GenAI. Part 2 of this workshop is dedicated to educational benefits of GenAI.

Gaining the right to share in the learning process is a place where artificial intelligence can assist, provided that it is not taken as a shortcut to students' inputs. It can give explanations, give examples, give alternative views, help the development of ideas and give answers to questions immediately. Chan and Hu find this promising as personalised feedback and learning support are perceived as potential benefits, as the technology can enable students to gain awareness of their weaknesses and enhance their skills. Student experiences also show that generative AI can be used to support personalised learning, writing support and brainstorming, and research and analysis tasks. (Chan & Hu, 2023)

The advantages rely on students' capacity to assess the value of the artificial intelligence created reactions. The advantages rely on students' capacity to assess the quality of the artificial intelligence created reactions. AI can generate false, incomplete, biased or misleading information. Students will therefore have to draw comparisons of the responses they generate with both scholarly literature and course materials, with professional expectations and with other evidence that is reliable. Evaluating and editing AI-generated content is therefore a crucial aspect of responsible AI usage. Another recent systematic review of the use of generative AI in higher education highlights the

potential for the enhancement of learning as a major opportunity but also points out that pedagogical frameworks, ethical considerations, and institutional guidance are required to ensure its effective use. (Batista et al., 2024)

When students are asked to critically respond to the output of generative AI, it can also help with authentic assessment. For instance, pupils can be directed to use AI technology to create an answer, critique its strengths and weaknesses, check it for accuracy, compare it to academic research and come up with a new answer, supported by an explanation. This assessment is not based on students' writing ability to produce fluent text. They are judged on questioning information, making judgments, giving evidence and explaining decisions made in the process of creating the final piece. This aligns with future-oriented learning outcomes such as AI literacy, interdisciplinary learning, and hands-on activities, which are recommended for the use of GenAI. (Chiu, 2023)

The authors of the article, Salinas-Navarro and others, contend that generative artificial intelligence can be integrated into experiential learning and genuine assessment beyond the use of tools such as writing and question-answering. The study suggests that generative artificial intelligence could be a tool to support human-centred learning experiences and the building of higher-order knowledge and skills. This approach involves making students' interactions with the technology visible through the use of the assessment tasks, and assessing the quality of their reasoning and judgement. Likewise, studies of generative AI for academic writing suggest that students might benefit from generative AI in the writing process, writing performance, and affective learning domains when the technology acts as a writing assistant, virtual tutor, and/or a digital peer. (Kim et al., 2024)

When used in conjunction with teacher feedback and reflection from the student, generative AI may also play a role in feedback-based learning. Findings from a longitudinal study with English language learners revealed no evidence of differences in student learning between the feedback provided by a human tutor and feedback provided by an AI system but did suggest benefits of both types of feedback. The researchers therefore suggested that there should be a hybrid approach, which is a combination of both the strengths of the artificial intelligence generated and the human feedback. The potential benefits of generative artificial intelligence—such as its role in enhancing student engagement, support, and efficiency—must be carefully understood alongside the concerns of academic integrity, equity, bias, and authenticity of student work, however, and institutions must put in place ethical guidelines that manage these considerations. (Escalante et al., 2023) (Francis et al., 2025)

Overreliance on Generative Artificial Intelligence (GAI) poses risks. Overreliance on Generative Artificial Intelligence (GAI) has risks.

Generative artificial intelligence can diminish the benefits when students use the technology without engaging in critical thinking. AI systems are capable of generating misleading or fabricated content in a confident manner. Students copying such information without checking can perpetuate errors and poor information-evaluation skills. Over-reliance can also limit opportunities to practice writing and problem-solving, creativity, reasoning, and independent decision-making.

The danger of overreliance is especially significant with authentic assessment as authentic tasks are designed to build and assess judgement in complex situations. When students let an AI system perform the reasoning process, the output can be impressive but they may not have actually contributed to the reasoning. Wiredu et al. (2024) identified concerns raised by participants in the Ghanaian context as being overreliance on artificial intelligence and potential impacts on critical-thinking skills.

However, generative AI has the potential to exacerbate inequality in classrooms. Students and institutions might not have access to reliable devices, stable internet connections, paid artificial intelligence services, and opportunities for artificial intelligence literacy. They cite infrastructure, affordability, access, and limited local adaptation as key issues that will likely be challenges for African universities (Zlotnikova & Hlomani, 2024). Therefore, universities should take equity into account when formulating policies and assessment practice. A policy which presumes a level playing field for the use of artificial intelligence technologies could be harmful for students who do not have the financial or technological means to access the same technologies. In the era of Generative Artificial Intelligence, assessment redesign is crucial. Assessment redesign is essential in the age of Generative Artificial Intelligence.

There is a movement in the literature away from assessment practices that largely only look at the final product, to inclusion of the process. It does not imply that universities should do away with written assignments. In place of the written work, however, students might be asked to engage in activities that show their argument development, evidence selection, feedback integration, and application of knowledge. The following is a list of potential assessment

strategies: staged assignments, research proposals, annotated drafts, reflective commentaries, learning portfolios, oral defences, presentations, case-based tasks, practical demonstrations, supervised activities, peer collaboration, and viva voce examinations. This can give opportunities for lecturers to request that students explain and defend their work. They also can inspire students to be responsible and transparent users of generative artificial intelligence. Kofinas et al. suggest that more focus should be paid to the design of assessments and that rather than the assessment of only final products, the focus needs to be on the process. Their findings validate the use of social, experiential, performative, synchronous and workplace relevant activities as opposed to solely relying on the asynchronous written assessments (Kofinas et al., 2025). Peters and Angelov also propose that oral and interactive assessments could be potential authentic assessment measures that would allow for the responsible use of generative artificial intelligence and enhance assessment integrity (Peters & Angelov, 2025). Another option is allowing specific types of artificial intelligence usage to be disclosed. Students might be required to write the prompts given, mark the parts affected by AI, check the facts produced, and outline the edits made to the results. These activities can evaluate AI literacy, source evaluation, critical reflection and ethical decision making. They also understand that graduates will be exposed to the use of AI in the workplace and that they will need to understand how to use it responsibly.

2.3 Institutional Policies and Artificial Intelligence Literacy

Institutional policies need to be clearly communicated and consistent to implement assessment reform. Vague rules can raise anxiety in students and lead to varying expectations in courses and from lecturers. Students should be familiar with the acceptable uses of generative artificial intelligence, the limited uses, how to give credit to the use, and what evidence they might need to show. Lecturers also require support with assessment design, privacy, understanding of AI-generated assessments, and dealing with misconduct.

Jin et al. analysed generative AI policies of 40 universities in six regions around the world. They found that universities are creating ethical-use guidelines, revamping assessments to minimize misuse, and training staff and students. The study also highlights ongoing challenges with data privacy and equitable access (Jin et al., 2024). The results are pertinent to the Ghanaian universities because institutional policy should not only tackle academic dishonesty issues but also issues of access, data protection, capacity building, training, and the purpose of academic work with artificial intelligence must also be addressed.

Student and lecturer should be made literate in artificial intelligence. Pupils should be aware of the potential of generative AI and its limitations, appreciate the results of using it, safeguard personal data, recognise it when they are being used and take decisions responsibly. Lecturers must create assessment tasks that involve higher-order thinking and measure students' thinking processes, not solely on automatic recalibration. Professional development, effective communication, and policy adherence needs to be monitored by University administrators.

Assessment is not purely an automated process as it requires educational and ethical judgement, which must be made by humans. Francis et al. highlight the need to explore the potential of generative artificial intelligence while keeping in mind the ethical responsibilities and accountability of human users (Francis et al., 2025). Authentic Assessment is thus not supposed to be the answer to a technological question. It is reliant on the judgement of the lecturer, engagement with students, good feedback, and the assessment tasks being aligned to the learning outcomes.

2.4 Theoretical Perspective

The social constructivism and competency-based learning theories are used as guides in this study. In social constructivism, learning is an active process that children construct knowledge through interactions, interpretations, collaboration, feedback and participation with meaningful situations. As viewed from this perspective, generative AI can be a tool for learning alongside a variety of other tools, but it cannot substitute for the process of learning by engaging and interacting with others and ideas.

Competency-based learning reinforces this view by emphasizing students' skills to demonstrate knowledge, skills, judgment and professional responsibility in the real world. This is a good way to assess authentic performance, as authentic tasks involve students using their knowledge in academic, workplace, community, or authentic settings. In

the context of generative artificial intelligence (AI) in higher education, Francis et al. (2025) cite social constructivism and competency-based learning as pedagogical viewpoints that are pertinent.

The theoretical support for this study is that the use of generative artificial intelligence must not replace students' learning but must complement it and lecturers' professional judgment. Assessment that gives convincing evidence of students' understanding, application, analysis, evaluation, creation, communication, and reflection is deemed to be authentic. This process might include the use of generative artificial intelligence, but there should be an awareness of, and a clear purpose for, using such tools and it should be consistent with the learning outcomes. The study thus brings together four key concepts: Use of Generative Artificial Intelligence, Authentic assessment, Academic integrity and Student learning. Artificial intelligence literacy, institutional policy, assessment design, access to technology, and oversight may be factors that impact their relationship. Generative AI can complement learning and assessment innovation as long as students and lecturers have the necessary knowledge and institutions have the necessary guidance. If it is not being used appropriately or if final written products continue to be the only endpoint of assessment, the technology can potentially affect the validity of the assessment and academic integrity.

2.5 Empirical Gap

Current studies show the potential for generative Artificial Intelligence in education and its potentially dangerous applications in higher education. Student perceptions, academic integrity, the validity of assessment, institutional policies, artificial intelligence literacy and the use of authentic assessment as a response to technological change have been explored in previous studies. But the argument that only authentic assessment can solve the problems with generative AI cannot be justified with the evidence. Process oriented, interactive, oral, practical, and reflective activities can offer better evidence of learning than some of the authentic assessments that are typically assessed with a final written product (Kofinas et al., 2025).

Moreover, there is a lack of attention to the Ghanaian university context. Previous research in Ghana has been conducted in specific institutions in the Upper East Region and has found that there has been some improvement in the understanding of academic integrity issues, yet there have been significant concerns on excessive use of artificial intelligence (Wiredu et al., 2024). While these findings are significant, they may not necessarily be extrapolated to universities in the southern part of Ghana. Variations in institutional culture, the mix of students, programmes of study, facilities, technology and manner in which it is used might affect the perceptions of students and lecturers of artificial intelligence.

In this study, the gap is filled by exploring the use of Generative AI and authentic assessment in selected universities in southern Ghana. It emphasizes how generative artificial intelligence (GAI) can be applied to enhance learning outcomes and the potential for its misuse, as well as how it can affect academic integrity and the validity of assessments, and what assessment practices can offer better evidence of students' knowledge, reasoning, application, and engagement. The authors of the literature suggest that just banning artificial intelligence or using detection software isn't enough for an effective institutional response. Clear policies, AI-literacy, equitable access, lecturer development, constructively designed assessment tasks and continuing human supervision are needed.

3. Methodology

This study adopted a mixed-methods research design in investigating the linkages between generative artificial intelligence (AI) and authentic assessment practices in higher education institutions on the evidence of selected universities in Ghana. The mixed methods approach was suitable as it integrated quantitative data on the generative AI usage with qualitative data on the experiences and perceptions of the students and lecturers using authentic assessment. By combining both types of data, a holistic picture emerged of the impact of generative AI on assessment practices, academic integrity and learning outcomes in Ghanaian universities.

3.1 Research Design

The convergent mixed methods design was used. The collection of quantitative and qualitative data took place at the same time, in different forms of analysis and were then combined in the interpretation phase. The quantitative data analyzed the trends in how people use generative AI in assessment-related tasks, and the qualitative data analyzed participants' perceptions of assessment authenticity, academic integrity, and institutional responses to AI-assisted learning.

3.2 Study Context

Selected public and private universities in Ghana were used for the research. The institutions were selected for being increasingly using digital learning technologies and the increasing use of generative AI tools like ChatGPT and Gemini by students and lecturers. To explore the potential and challenges of AI-assisted learning and assessment, the Ghanaian higher education system is a vital context to consider.

3.3 Population and Sampling

The target population included undergraduate and postgraduate students, staff members and students administrators from the University of the West Indies. A multistage sampling procedure was used. Qualitative sampling was used to select universities with a 60% representation of public and private sector universities. Faculties were classified into the following broad disciplines: Social sciences, humanities, education, business, engineering and health sciences. The students were sampled using stratified random sampling and lecturers and administrators were sampled purposively because of their first-hand experiences in assessment design and implementation.

This survey targeted students who used or interacted with generative AI to complete academic tasks. The interview part focused on lecturers who play a role in the assessment of the courses, programme coordinators, quality assurance personnel and educational technology officers.

3.4 Data Collection

Structured questionnaires and semi-structured interviews were used to obtain the data. The questionnaire collected data on the following areas: demographical data, awareness of generative AI, how often do students use AI to assist with academic tasks, perceptions of authentic assessment, concerns about assessment integrity and responses from the institution when students use AI to assist with assessment. The majority of the questions in the questionnaire were rated on a five-point Likert scale (strongly disagree to strongly agree).

The interviews examined the experiences of the participants with the use of AI for assessment, new approaches to the design of assessment, challenges associated with assessing AI-generated work, concerns regarding originality, and approaches to fostering authentic assessment. Interviews were done either face-to-face or online on secure platforms and were tape-recorded with the interviewee's consent, after which they were transcribed for analysis.

3.5 Measurement of Variables

Five primary variables were explored: Generative AI use, Authentic assessment practices, Assessment integrity, Student learning engagement and Institutional AI preparedness. The multiple indicators were used to measure these variables considering the Ghanaian higher education context. Indicators of authentic assessment focused on problem-solving, project, reflective activities, collaborative learning and application to real-world problems.

3.6 Reliability and Validity

The questionnaire was pre-tested with a small number of students and lecturers of a university that was not involved in the study. An instrument was improved after the pilot exercise for clarity and structure based on feedback received. Content and construct validity were enhanced by expert consultation, pilot testing and factor analysis, and internal consistency was evaluated by Cronbach's alpha. In the qualitative part of the study, member checking, comparing responses by participant groups, and documenting the research process was used to strengthen the credibility.

3.7 Data Analysis

The data collected were analysed quantitatively in SPSS version 29. Descriptive statistics were used to summarise the patterns of AI use, and perceptions of authentic assessment, such as frequencies, percentages, means, and standard deviations. Relationships between the study variables were examined using inferential statistics such as independent sample t-test, one-way analysis of variance, correlation and multiple regression. A 5% level of statistical significance was considered.

The regression model given was:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon \quad (1)$$

where Y represents the effectiveness of authentic assessment, X_1 is the use of generative AI, X_2 is the quality of assessment design, X_3 is the preparedness of the institution using AI, X_4 is the student's level of learning engagement, β_0 is the intercept, β_1 – β_4 are regression coefficients, and ε is the error term.

Thematic analysis was used to analyse qualitative data. The transcripts of the interviews were coded, categorized and arranged into themes based on the assessment authenticity, AI-assisted learning, academic integrity and institutional adaptation. The quantitative and qualitative results were then combined to determine where the results were similar or different among the subject groups.

3.8 Ethical Considerations

Appropriate institutional ethics committee was granted ethical approval. The study was done on a voluntary basis, and informed consent was obtained from all the participants before data collection. All participants were given confidentiality and anonymity, and the right to withdraw from the study at any time without consequences. All data were kept confidential and only for academic research purposes.

4. Results and Discussion

The findings from these empirical studies on the relationship between generative Artificial Intelligence and authentic assessment practices in HEIs in Ghana are presented and discussed. The analysis is based on four aspects: patterns of generative AI use, attitudes towards using AI for learning, concerns about the use of AI within conventional assessment systems, and opportunities for using authentic assessment approaches. The results suggest that the use of generative AI is becoming more common in university settings, and it has the potential to enhance educational practices and experiences; however, it also poses a risk of compromising the credibility of assessments. Implications of the findings for assessment transformation, institutional governance and the future direction of higher education in Ghana are discussed.

The demographic characteristics of the respondents and the institutional context are examined in this section. This section explores the respondents' demographic characteristics and the institutional context.

It's important to note that the characteristics of the respondents give context to their perceptions and expected experiences with generative AI usage. The participants in the study were students and lecturers of Ghanaian universities who had varying degrees of involvement in teaching, learning and assessment practices.

The distribution of the respondents in terms of gender, age group, academic status and disciplinary background is presented in Table 1.

Table 1. Demographic Characteristics of Respondents (N = 350)

Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	192	54.9
	Female	158	45.1
Age group	18–25 years	146	41.7
	26–35 years	128	36.6
	Above 35 years	76	21.7
Academic status	Undergraduate students	210	60.0
	Postgraduate students	72	20.6
	Lecturers	68	19.4
Academic discipline	Humanities and Social Sciences	124	35.4
	Business-related programme	96	27.4
	Science and Technology	84	24.0
	Health and Applied Sciences	46	13.2

Source: Field data

The number of respondents in the study is summarized in Table 1. The male respondents were 54.9% and the female respondents were 45.1%. Concerning age, the greatest population was that of respondents who were 18–25 years old (41.7%). The next group was those 26–35 years old, accounting for 36.6%, and finally those over 35 years old, accounting for 21.7%.

Academic status-wise, the distribution shows that 60.0% of the respondents were undergraduate students. There were 20.6% post graduate students and 19.4% lecturers. It is critical that both groups are included as students and lecturers are using generative AI in different roles within the higher education ecosystem. Students have the potential to come across generative AI tools in the learning process, in preparing assignments, in research, and other academic pursuits; lectures are directly engaged in teaching, designing assessments, providing feedback and evaluating students' work.

The distribution of disciplines reveals that respondents had been drawn from four general fields in the academic world. The highest proportion of students was in the Humanities and Social Sciences (35.4%), followed by Business-related programmes (27.4%), Science and Technology (24.0%) and Health and Applied Sciences (13.2%). The following disciplinary representation serves as a general institutional setting to explore the use of generative AI and authentic assessment practices within various disciplines of higher education.

It is important to note that the findings should be considered in light of the respondent profile, as that may have an impact on experiences and perceptions of generative AI, depending on age, academic status, and disciplinary background. For instance, the learning potential of generative AI might be different for students than for lecturers, and so could be the assessment dangers. Similarly, there could be variations in the use of AI in the context of written assignments, research, problem-solving, practical work, and other assessments.

Overall, the respondents had a diversity of academic and disciplinary backgrounds, which is suitable for analysing the use of generative AI and authentic assessment in Ghanaian HEIs.

4.2 Student and Faculty Attitudes and Usage of Generative AI

The research covered respondents' knowledge and application of generative artificial intelligence applications in academic life. Based on the findings outlined in Table 2, it is seen that the use of generative AI is gaining traction and is becoming more familiar in the academic environment in Ghana. 238 of the 350 respondents (68.0%) had a high awareness of generative AI tools, and 92 (26.3%) had moderate awareness. Twenty (5.7%) respondents reported low awareness. This distribution indicates that the students and teachers studied are aware of generative AI.

Table 2. Awareness and Academic Use of Generative AI Tools among Respondents (N = 350)

Indicator	Category	Frequency (N)	Percentage (%)
Awareness of generative AI tools	High awareness	238	68.0
	Moderate awareness	92	26.3
	Low awareness	20	5.7
Frequency of use	Daily	96	27.4
	Several times a week	132	37.7
	Occasionally	98	28.0
	Never	24	6.9
Main purpose of use Generating ideas	Generating ideas	218	62.3
	Improving academic writing	196	56.0
	Research assistance	172	49.1
	Explaining difficult concepts	154	44.0
	Completing assignments directly	82	23.4

Source: Field data.

The results from the frequency of use also showed that the respondents were not just being aware of generative AI, but were also using it in their learning activities. Overall, 96 (27.4%) respondents said they use generative AI tools on a daily basis and 132 (37.7%) used generative AI tools several times a week. Additionally, 98 (28.0%) participants said they used them occasionally. Fewer than a quarter (6.9%) said they had not used any generative AI tools. The results suggest that there was a fairly high degree of engagement with generative AI among the surveyed group, with varying degrees of usage.

The applications of generative AI as reported provide additional context of how it's being used. The most common reason cited was to generate ideas with 218 participants (62.3%). This was followed by improving academic writing reported by 196 respondents (56.0%). Among the respondents, 172 (49.1%) identified research assistance and 154 (44.0%) explained difficult concepts using a generative AI. 82 respondents (23.4%) indicated they used generative AI to finish assignments directly. There is no requirement to sum the numbers reported in the categories in this part of the table; the categories are reported uses.

In general, the results indicate that the respondents primarily employed generative AI as an academic aid. Its main uses were to generate ideas, improve written communication, assist in research, and clarify concepts that were difficult. The uses suggest that educators and students, as a whole, were increasingly using generative AI in their existing learning and teaching approaches, but not as a substitute for academic work. Additionally, the relatively smaller percentage of respondents who reported using generative AI to complete assignments outright indicates a lower level of substitution of personal academic work with AI, compared to assistive uses.

The results, however, evoke significant issues related to the connection between the use of generative AI tools and genuine evaluation in higher education. While generative AI can offer users timely support, boost efficiency, and help them interact with complex academic texts, overreliance or overuse of these tools could hinder and diminish opportunities for independent thinking, creativity, analytical skills, and the ability to demonstrate knowledge acquired by the user. Specifically, it becomes harder for lecturers to gauge whether submitted work is an accurate reflection of students' understanding and skills when there is a possibility of using AI to complete assignments.

The results thus highlight the need for AI literacy among students and teachers. Awareness and access to generative AI tools is not enough to guarantee the meaningful or ethical use of these tools for academic purposes. Users will also need to assess the accuracy and relevance of AI-generated information, understand the limitations of AI-generated information, respect academic integrity, and appropriately cite AI in their work. Especially faculty members need the ability to create assessments that allow for reflection, application, critical thinking, and performance within context. These can help to ensure generative AI works as an enabling learning technology, without compromising the integrity and authenticity of academic evaluations.

The findings of this study help to identify adoption patterns that guide institutional practice towards responsible use of generative AI. Universities may need to have clear policies, training, orientation and assessment procedures that differentiate between acceptable assistance and inappropriate substitution of student work. The respondents' evidence suggests that generative AI is already being integrated into academic engagement within the context of higher education in Ghana; the issue is how it can be used to enhance learning, encourage correct academic practice and ensure that authentic evidence of academic competence is not compromised.

4.3 Perceptions of Generative AI and Its Influence on Teaching and Learning

Students' attitudes towards Generative Artificial Intelligence (GenAI) and its impact on learning and teaching. Student attitude towards Generative Artificial Intelligence (GenAI) and its uses in learning and teaching. The research also explored the respondents' views on the impact of generative AI on higher education teaching and learning. Perceived benefits and potential risks of generative AI were rated on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). These are reported in Table 3.

Table 3. Respondents' Perceptions of Generative AI in Higher Education

Statement	Mean	Standard Deviation
Generative AI improves access to learning resources	4.21	0.86
Generative AI supports independent learning	4.05	0.91
Generative AI enhances academic productivity	4.18	0.82
Generative AI improves creativity and idea development	3.97	0.88
Generative AI reduces students' critical thinking ability	3.74	1.02
Generative AI creates academic integrity concerns	4.32	0.79

Source: Field data.

Note: Scale: 1 = Strongly Disagree; 5 = Strongly Agree.

Respondents expressed a generally positive attitude toward the use of generative AI for teaching and learning, and recognized potential negative impacts. The statement "Generative AI raises academic integrity issues" received the highest mean score (4.32) and standard deviation (0.79). This result shows that the respondents' primary concern related to academic integrity. It implies that while generative AI could aid in academic pursuits, it also raises questions about plagiarism, originality, cheating, and the quality of students' submitted work.

A second-highest mean score was given for the statement, "Generative AI enhances access to learning resources", with a standard deviation of 0.86. This discovery indicates that respondents were aware of the potential of generative AI to help users receive explanations, examples, summaries and other learning support quickly. This can be especially helpful during moments when students need further discussion or explanation beyond the confines of a classroom session. Learners can ask questions of the academic content, seek clarification, ask more questions, or request help with unfamiliar concepts, using generative AI.

A mean score of 4.18, with a standard deviation of 0.82, showed that the respondents also agreed that generative AI improves academic productivity. This perception could be linked to the use of AI-based tools to help to produce ideas, structure information, enhance written expression or research-centred tasks. It is evident that there is a comparatively consistent level of agreement between respondents as evidenced by the relatively low standard deviation. This discovery only further reinforces the notion that generative AI is becoming a more and more academic aid that can help users accomplish certain tasks more efficiently.

Slightly above the average mean rating was the perception of generative AI as a means for independent learning, which scored 4.05 (SD 0.91). Overall, this finding suggests that participants felt that generative AI could enable students to be more responsible for their learning. AI tools can provide instant explanations and engaging feedback, allowing students to investigate concepts on their own and get help if they run into difficulties. But this independent learning should not be interpreted as being entirely reliant on AI-generated responses. The learning value of AI-supported learning is dependent on whether or not students actively assess, question and utilize what has been presented.

With a mean score of 3.97 and a standard deviation of 0.88, the statement 'Generative AI has enhanced creativity and idea development' had the highest score. Overall, there is some consensus that generative AI is making a positive contribution to creative and developmental academic activities, although this was the lowest mean of the positive statements. Some respondents might consider generative AI as helpful in brainstorming, finding potential viewpoints or opinions, building early arguments, or brainstorming different approaches to academic tasks. However, the application of AI in creating content and ideas calls for prudence and consideration, as content ideas might be repetitive, inaccurate, or fail to relate to the particular context of a task at hand. Students are thus responsible to edit, assess, and build upon ideas generated using AI assistance.

The mean score for the statement "Generative AI is impacting students' critical thinking skills" was 3.74 with a standard deviation of 1.02. The result shows that respondents agreed that the concern of using the generative AI to diminish students' critical thinking is true. The relative standard deviation indicates that there is more variation in respondents' attitudes on this issue than on some of the other issues. Some respondents might see AI as a tool that helps them analyze and comprehend information, while others might fear students would blindly believe the information they receive from AI without verifying its accuracy or logic. The difference might be influenced by the kind of use that generative AI is being made of and the extent to which academic work necessitates students to exercise independent judgement.

The outcomes, in turn, indicate a cautious yet balanced view of generative AI. The respondents acknowledged its contribution to the improvement of learning resources, self-learning, academic productivity and creativity and idea development. Concurrently, they recognized key threats around critical thinking and academic honesty. The results indicated that generative AI is neither seen as good nor bad. Its impact on learning and teaching is dependent on the aim of using it, the ability of the people who use it, the quality of the information produced, and the level of support that is offered within the institutions for responsible application.

The results are important for the field of authentic assessment in higher education. Generative AI can support learning, generate ideas, and enhance academic communication, and could have a positive impact in students' education when used in these ways. The authenticity of the assessment evidence may be at risk, however, if students are using it to create assessment responses but are not meaningfully part of the learning process. This is especially crucial when the assessment tasks rely primarily on generic written answers that can be generated or significantly altered using AI tools.

The high mean score of 4.32 for academic integrity concerns indicates the need for the review of current assessment practices in universities and setting of clear guidelines on acceptable and unacceptable uses of generative AI. The focus of institutional responses should not just be on the limitation of access to AI tools. They should also encourage responsible use by fostering AI literacy, clear expectations, acknowledging the use of AI in an appropriate manner, and designing assessments that promote and require students to explain, use, reflect on, and defend their work.

Beyond that, the worry about a decline in critical thinking skills makes it essential to have tasks where more thought is required than just reproducing information. Authentic assessment strategies may involve students in the use of knowledge in a specific context, analysis of problems in real-life situations, providing reasons for decisions, questioning their learning, and explaining the process in which they made their decisions. These can make it more challenging for students to learn to generate answers automatically, and can offer lecturers more evidence of student understanding.

Table 3 as a whole illustrates that the respondents saw generative AI as either an opportunity or a challenge to higher education. The technology was seen as being able to help with access, productivity, independent learning and idea development. But so too was a concern over diminished critical thinking and academic honesty. The results show that institutional readiness, user understanding, ethical principles, and evaluation procedures that maintain students' engagement in learning are important for the successful implementation of generative AI.

4.4 Generative AI and Challenges to Conventional Assessment Practices

It seems like a natural fit, so generative AI is introduced in the classroom. It could only be a logical step, so generative AI enters the classroom. One of the key objectives of the study was to explore the impact of generative AI on traditional evaluation methods in HEIs in Ghana. Key challenges in the analysis included issues such as authorship, academic integrity, institutional policies, identification of AI-generated work and the utility of traditional assessment tasks. The results are summarized in Table 4.

Table 4. Challenges Associated with Generative AI and Traditional Assessment

Challenge	Frequency (n)	Percentage (%)
Difficulty determining authorship of submissions	276	78.9
Increased possibility of academic dishonesty	264	75.4
Limited institutional AI policies	238	68.0
Difficulty detecting AI-generated content	221	63.1
Reduced effectiveness of take-home written assignments	214	61.1
Limited lecturer preparedness for AI assessment redesign	206	58.9

Source: Field data.

Based on the results, the most common difficulty was the authorship of submissions (276 respondents (78.9%)). The next most likely occurrence was the increased chance of academic dishonesty (reported by 264 respondents; 75.4%). This research indicates that with the use of generative AI, teachers are no longer able to easily identify independent knowledge, reasoning, and writing skills from the work submitted by their students.

Only 238 respondents (68.0%) reported the presence of limited institutional AI policies, highlighting the lack of institutional policies for the use of generative AI and the acceptable and ethical use of the technology. Additionally, 221 respondents (63.1%) said they found it difficult to identify AI-generated content. The discovery raises the question about the effectiveness of traditional plagiarism detection tools in detecting AI-generated content or heavily edited work.

214 respondents (61.1%) reported that take-home written assignments were not as effective. This result indicates that assessment tasks based primarily on unsupervised written submissions may provide less reliable evidence of students'

individual learning when generative AI tools are readily available. Another 206 (58.9%) saw the limited preparedness of lecturers in AI assessment redesign as a challenge. The results provide a call to action on the importance of training and institutional assistance to enable lecturers to adjust their assessment practices in the evolving technology.

In general, the findings indicate the profound challenges generative AI poses to traditional assessment methods. The results are not intended as recommendations to ban the use of generative AI in universities. Instead, they call attention to the need to reconceptualise assessment methods to emphasize critical thinking, creativity, reflection, context application, oral explanation, and personal understanding. These strategies could further enhance the authenticity of assessments and allow students to responsibly utilize generative AI as a learning aid.

4.5 Assessment Approaches Considered Suitable for the Generative AI Era

In the era of generative AI, these are the ways that are considered suitable for assessing. Additionally, the study analyzed the types of assessment that respondents felt would be appropriate for higher education in the era of generative artificial intelligence. The results shown in Table 5 show that there is strong support for assessment methods that involve using knowledge, practical competence, communication of understanding, and reflection on experiences of learning.

Table 5. Assessment Approaches Considered Suitable for the Generative AI Era (N = 350)

Assessment Strategy	Frequency (n)	Percentage (%)
Project-based assessment	292	83.4
Oral presentations and defence	276	78.9
Practical demonstrations	258	73.7
Reflective learning journals	232	66.3
Community-based assignments	214	61.1
Traditional written examinations	118	33.7

Source: Field data.

The most popular approach was project-based assessment, with 292 respondents (83.4%). Respondents identified projects as being very suitable for evaluating students' learning in a setting with access to generative AI technology. Project based assessment may involve students' investigations of the problems, creation of products or solutions, use of disciplinary knowledge, documentation of processes, and the presentation of products. It could therefore be used to demonstrate a wider range of learning than a written answer. Projects can also be tailored to institutional, professional, or community settings which makes it harder to use answers that are purely generic and generated by AI.

276 respondents (78.9%) identified that oral presentation and defence would be identified. This is a good outcome of face-to-face communication between students and professors to determine if students grasp and can communicate their work. Students may be asked to explain their choices, to elaborate their ideas, to answer questions and to explain how and what they have done in their work in a presentation and oral defence. These activities may be useful to help establish an assessment-performance-to-understanding link.

258 (73.7%) felt practical demonstrations are appropriate. The finding is significant because it indicates that the knowledge and task application assessment of the students is more important than just reproducing information. Practical demonstration can be especially appropriate in subjects which involve technical, professional, clinical, laboratory or some other applied skill or competency. They offer chances for pupils to apply their skills in a particular context, helping to assess pupils' skills more accurately.

232 (66.3%) respondents said they supported reflective learning journals. Reflective journals can document students' learning experiences, struggles, choices, growth and reactions to academic experiences. They can also ask students to consider their own information and technology use to accomplish a task. Reflective writing for generative AI might involve reflecting on whether the AI tools were used, how the written product was evaluated, and how AI tools were applied to the final product. This can facilitate transparency and reinforce students' awareness of their own learning.

One in three (214) respondents identified "community-based assignments". This finding suggests a level of support for tasks in the assessment that involve the integration of academic learning and community service needs and social contexts. Community-based assignments can involve students in a particular problem, gather or analyze information pertinent to the problem, involve students in stakeholder discussions, and suggest solutions that are appropriate to the context. These activities can help make assessment more relevant and involve students in making judgments and reacting to situations that are not covered by the generic output of AI.

The traditional written examinations were supported by the least number of respondents (118, 33.7%) as being suitable for the generative AI era. This finding should not lead to the conclusion that written exams are not useful anymore. Instead, they appear to have been seen as less adequate as the primary means of assessing learning when students have access to high-capacity digital tools in the learning environment. The effectiveness of written examinations can vary with the design and administration of the examination. Examinations that involve critical analysis, application, interpretation, problem solving, may still be of value in situations where suitable arrangements are made to ensure that the responses are indicative of the students' own capabilities.

Overall, the results show that there is a clear preference for approaches that involve the application, performance, interaction, reflection and contextual understanding of the assessment. Project-based assessment, oral presentations and defence, practical demonstrations and reflective learning journals are the most supported strategies, and are all consistent with the principles of authentic assessment, which calls for students to demonstrate learning through processes and performances instead of through the production of isolated written answers.

The results also indicate that assessment transformation should not be based on a single alternative assessment strategy, but rather multiple. For instance, a project can include an oral defense, practical demonstration or a reflective journal. These can be used in conjunction to give lecturers a variety of evidence of what students know, as well as how they think, how they skillfully perform tasks, and their level of participation. It can also help cut down the risk of a student's work being portrayed as one AI-generated output.

These assessment methods do not have to exclude the use of generative AI entirely. Rather, they can be built to permit accountable, responsible, transparent use, with academic accountability. The use of AI is allowed for appropriate purposes, such as brainstorming, language support, etc., but requires students to be responsible for verifying information, not copying arguments, and acknowledging the use of AI. Assessment, therefore, should gauge the student's ability to describe the process, explain the decision making process and show some level of student engagement in the task and in producing meaningful work.

Finally, clear and task-based assessment methods for the generative AI age were overwhelmingly popular with the respondents. The technologies that received the most support were Project-based assessment, oral presentations and defence, practical demonstration, reflective learning journals and community based assignments. Written exams were less well supported than traditional exams. The results suggest that there is a need for a greater focus on assessment designs in higher education institutions in Ghana that will encourage critical thinking, application, creativity, reflection, communication, and personal understanding. These can help ensure assessment's credibility and enable the responsible use of generative AI in teaching and learning.

4.6 Institutional Readiness for Generative AI Integration

The study evaluated the readiness of institutions to apply generative artificial intelligence in the field of teaching and learning, as well as assessment. The levels of readiness were analyzed in relation to the availability of guidelines for the use of AI tools, preparedness of lecturers, training students with AI literacy, technological support, and institutional commitment to the governance of AI tools. Each factor was rated on a scale of 1-5 with 1 being Very Low and 5 being Very High. These are summarized in Table 6.

Table 6. Institutional Readiness for Generative AI Integration

Institutional Factor	Mean	Standard Deviation
Availability of AI usage guidelines	2.91	1.14
Lecturer preparedness to integrate AI into assessment	3.08	1.09
Student AI literacy training programmes	2.76	1.21
Institutional technological support	3.22	1.04
University commitment towards AI governance	3.01	1.12

Source: Field data.

Note: Scale: 1 = Very Low; 5 = Very High.

The findings reveal differences in attitudes among respondents regarding institutional preparedness to integrate generative AI. The institutional technological support (3.22, s.d. 1.04) showed the highest mean score. This means that this aspect of technological support was the most favorable feature of the technologies studied. The mean does not, however, imply a consistent level of readiness, because the respondents rated the technological support they had as moderate on the 5-point scale.

The mean score for lecturer's preparedness to include AI in assessment was 3.08 with a SD of 1.09. The result shows the moderate assessment of preparedness of lecturers. The results indicate that preparedness for using generative AI in assessment may vary across the respondents but that some lecturers have started to build the knowledge and resources necessary to use generative AI in assessment. To effectively incorporate AI into assessment, there's more to it than just learning about the technology. It can also mean rethinking assessment purposes, deciding on suitable modes of use of AI and sourcing evidence of the individual student's learning.

The mean score for University commitment towards AI governance was 3.01, with a standard deviation of 1.12. The overall score shows that there is a moderate awareness of institutional commitment on AI governance. The result indicates that the respondents were aware that there was some institutional response to the issue, but not that in-depth governance arrangements are already effective. Governance can include the building of institutional expectations on responsible use of AI, academic integrity, transparency, accountability, and safeguarding of academic standards.

Mean of AI usage guidelines = 2.91, Standard Deviation = 1.14. This one was one of the least favorable in the table. This reveals that, compared to technological support, respondents did not rate the availability of guidelines significantly high. The discovery could signal a lack of clarity about the guidelines and expectations for generative AI in educational settings. Depending on the course, department, and/or assessment task, students and lecturers might have different views on what constitutes acceptable use of AI.

The training programmes of student AI literacy recorded the lowest mean score (2.76) and the highest standard deviation (1.21). This is reflected in the table as the lowest rated point of institutional readiness for student training. The relatively high standard deviation also indicates that there is a considerable amount of variation in how respondents felt this type of programme was available and/or adequate. The discovery suggests that students might not have the same opportunities as to acquire the knowledge to be able to use generative AI responsibly and critically.

The range of standard deviations of each measurement is 1.04 (institutional technological support) to 1.21 (student AI literacy training programmes). All of the values reflect differences in the perceptions of respondents for each institutional factor. The biggest differences were in relation to student AI literacy training programmes, with comparatively less consistency when it comes to perceptions of technological support. The disparities could be due to variations in the experiences of respondents, their academic position or institutional resources. The descriptive results however don't specify the actual cause of this variation.

The results as a whole indicate that there is uneven institutional readiness. The highest mean score was received by technological support (3.22) while student AI literacy training programmes received the lowest mean score (2.76). The gap between these two ratings may indicate that technological resources do not always correspond to equal

amounts of training and support. Likewise, the mean scores for AI usage guidelines and university commitment towards AI governance were still lower than the score obtained for technological support.

This trend is relevant to the use of generative AI in assessment practices. When technology resources are available, but guidelines and training are lacking, users are likely to use AI without a common knowledge of its application in academic writing. This may cause confusion on acceptable levels of assistance, who is responsible for the content created by AI tools, and whether AI should be disclosed. These outcomes are not directly measured by the table, but the lower rating for guidelines and student training suggests areas that could be a focus of institutional effort.

It is also argued that lecturer preparedness, along with student training, should be enhanced. The mean score of the 3.08 would suggest that lecturer preparedness was not very low, but was not very high. Additional preparation can help lecturers design assessment tasks to assess students' abilities to apply, reason, reflect, and know personally. It can also enable an educator to set clear expectations for student AI-assisted work and assess student learning using multiple evidence forms.

Similarly, the rating for university commitment towards AI governance, with a mean of 3.01, indicates the importance of developing a coordinated institutional approach. While individual lecturers and/or departments can decide how to implement this, institutional guidance might help to ensure more uniformity in how generative AI is treated in academic activities. Such guidance would require to be made clear to students and staff and in line with the purposes of assessment.

Overall, Table 6 shows that the level of institutional readiness for the integration of generative AI is evolving but unevenly distributed by the dimensions analysed. Technological support scored most highly and student AI literacy training programmes the least highly. Lecturer preparedness was in the middle with 27% of the respondents, while guidelines for the use of AI and university commitment to AI governance were in the middle ground. AI usage guidelines and university commitment to AI governance were placed in the middle with 27% and 26% of the respondents respectively. The results thus suggest that user preparation, user assessment support, and institutional governance in addition to technological capacity are all key areas of concern. A multidisciplinary approach that brings these components together would offer a more solid foundation for the responsible use and integration of generative AI in teaching, learning, and authentic assessment.

5. Conclusions

The current study explored the link between the use of generative AI and the use of authentic assessment practices in HEIs in Ghana, using data from 350 respondents who were undergraduate and postgraduate students and lecturers from four main disciplines. This investigation was triggered by the swift adoption of Generative AI by academic institutions and its potential to create a conflict between how students are traditionally assessed and how it can be used to advance learning. The findings contribute empirical evidence to the understanding of the impact the technology is having on teaching, learning and assessment and will provide guidance for institutions to respond to the technology in the Ghanaian university setting.

The study brings to light several conclusions. As for perceptions on generative AI, there were opportunities and challenges identified. The most common consensus was on academic integrity (mean: 4.32), then better access to learning materials (4.21), better academic productivity (4.18), support for independent learning (4.05), and contributions to creativity and idea development (3.97). The fear of generative AI being a threat to students' critical thinking was given a mean score of 3.74. All these findings suggest that the technology is not clearly associated with either negative or positive effects; these effects relate to its use—how, why, and when.

The following six concerns were common when assessing the conventional assessment. Seventy-eight.9% of the respondents reported difficulty in determining the authorship of submissions, and 75.4% reported greater opportunities for academic dishonesty. 68.0% of respondents noted the lack of institutional AI policies, 63.1% reported difficulties detecting AI-generated content, and 61.1% indicated that take-home written assignments were not as effective in the presence of AI. 58.9% expressed difficulty with lecturers being prepared for redesigning their assessment. Overall, these numbers suggest a high degree of tension in assessment practices and a lack of institutional support and capability to effectively manage the use of AI in academic work.

Regarding appropriate assessment methods, respondents expressed high priorities for methods that involve student application, performance, communication and reflection rather than recall and reproduction. The most popular forms of assessment were project-based assessment (83.4%), oral presentations and defence (78.9%), practical

demonstrations (73.7%), reflective learning journals (66.3%), and community-based assignments (61.1%). Rarely (33.7%) were written exams the preferred method of assessment. The pattern has been developed following the principles of authentic assessment, which involves collecting evidence of learning from tasks that are similar to or related to real academic and professional situations, and involving students in demonstrating an understanding of the material through performance and reasoning, rather than repeating generic written material.

Regarding institutional readiness, the results showed that there is still a lot of unevenness in terms of the five dimensions. The mean score for institutional technological support was the highest at 3.22/5.0. The mean values for Lecturer preparedness for the integration of AI in assessment, University commitment towards the governance of AI, Availability of AI usage guidelines, and Student AI literacy training programmes were 3.08, 3.01, 2.91, and 2.76, respectively. Technological readiness contrasts with training readiness shows that not enough preparation is provided for users of AI tools. This difference in understanding can have direct consequences for assessment integrity, as there is no guarantee that students and staff have the same expectations regarding its acceptable use.

This study has three implications. First, it adds empirical evidence on the impact of generative AI on assessment from the largely unexplored context of higher education in Ghana, hence filling a research gap that can inform and contribute to national and institutional discussions on the implication of generative AI on assessment. Second, the study combines the views of students and lecturers, providing a comprehensive picture of the impact of generative AI on the creation of and assessment of academic work. Third, the study systematically relates the perceptions of AI, the assessment challenges, appropriate assessment strategies, and institutional readiness, generating results that can be used to systematically redesign the assessment practice.

There are also some main limitations of the study that should be recognized. The data were obtained from a cross-sectional sample of 350 respondents from Ghanaian public and private universities, from an undergraduate dominated sample (60.0%) and a single country study. The findings are the self-reported perceptions and experiences at a particular time and could vary across the universities, disciplines and academic roles and may change over time as the technology, institutional policies and assessment practices evolve. The study also focussed on higher education and excluded secondary-level and other educational settings in which a generative AI-assessment relationship might be different.

The study is relevant to the higher education policymakers in Ghana, and in similar contexts, interested in the balancing act between the learning advantages of generative AI and the safeguarding of academic integrity. It is pertinent to the University Administrators especially those involved in academic affairs, quality assurance and curriculum development, who are making decisions on assessment policy, development of lecturers and support for students. Based on the findings, lecturers can reflect on the design of assessment tasks, establish clear expectations about using AI, and embrace more authentic evidence. The findings can help students become more aware of their responsibilities in terms of integrity and originality, as well as how to appropriately use AI tools. The findings can inform future research in educational technology, assessment, and higher education policy, both within and outside of Ghana, for comparative and longitudinal studies.

The implications for practice from the study are several in nature. Universities are invited to provide clear and explicit policies for the use of generative AI in teaching, learning, and assessment that are clearly communicated and define expectations regarding disclosure, credit and authorship. Assessment practices could be reframed to increase the quantity of project-based tasks, oral defence, practical demonstration, reflective journals, and community-based tasks, as well as the combination of these tasks, depending on the programme objectives and the disciplinary contexts. Lecturers can take advantage of structured professional development programmes on assessment redesign, evaluation of AI-supported work and on embedding AI literacy in their course. Educational technology units can collaborate with academic departments to make the use of AI in education visible, to facilitate instructional design, and to offer resources for teachers and students.

The following is recommended for implementation of the recommendations: Ghanaian universities must have a common framework that categorises the use of generative AI as restricted, conditional and allowed in certain

assessments and that communicates the same framework uniformly to the staff and students. Second, the policies on assessment should include that lecturers should have at least one aspect of an authentic assessment formative in each major course, as well as, or instead of, taking-home written assignments. Third, AI literacy courses should be implemented at the orientation stage of new undergraduate students, and they should be continued with regular faculty-driven training sessions. Fourth, academic staff should be supported by dedicated workshops on assessment redesign, in the use of AI in the disciplinary learning process and in the evaluation of academic work using AI. Fifth, longitudinal monitoring should be implemented to indicate changes in the use of AI among students, assessment results, and lecturer preparation. Lastly, collaboration among universities in Ghana (including through consortia and quality assurance bodies) should be promoted to identify and establish common standards for the use of AI and the use of authentic assessment that are grounded in the Ghanaian educational context.

The study illustrates that generative AI is transforming the context in which assessments are made in higher education in Ghana, and assessment systems need to adapt to this new context. With institutional readiness, AI literacy, lecturer preparation, and clear governance, authentic assessment offers a positive alternative to maintaining academic integrity while taking advantage of the learning opportunities afforded by generative AI. The conclusions drawn here will not be used to demonize or uncritically embrace generative AI, but to be used as a guide to inform that pathway.

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