

Generative AI in Senior High Schools: Investigating Students' Perceptions of its Role in Supporting Creativity, Critical Thinking, and Collaboration

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ABSTRACT

In secondary school, generative artificial intelligence (AI) has been a powerful influence in recent years, influencing how pupils approach assignments. The perceptions of Senior High School (SHS) students on generative AI and its function in fostering creativity, critical thinking, and teamwork were examined in this study. Questionnaires and focus group discussions were combined in a mixed-methods descriptive survey methodology. Through stratified sampling, 222 pupils from Asante Akim Central Municipality schools made up the sample. Thematic analysis and descriptive statistics were used to analyse the data. The results showed that most students were confident using ChatGPT and other AI technologies for academic work, even with little help from teachers. AI was seen as fostering creativity, supporting analytical and introspective thinking, and improving group task efficiency. Poor internet access, shortage of devices, lack of institutional support, and concerns about reliability were main obstacles

INTRODUCTION

Background of the Study

The emergence of artificial intelligence (AI) is significantly altering schooling around the globe. The way individuals access information, solve issues, and generate new ideas is being transformed by generative AI tools like ChatGPT, Bard, Claude, and picture generators. These technologies are becoming more prevalent in classrooms and are changing how teachers instruct, how knowledge is communicated, and how students learn. They are no longer only found in research labs. ChatGPT has exciting opportunities to enhance instruction and learning, but its use must be considered carefully. In schooling, it can be a useful aid rather than a diversion with the correct direction and prudence. (Irzawati, Unamo, & Angelika, 2024).

The Senior High School (SHS) curriculum in Ghana plays a major part in determining how young students will develop in the future. In addition to preparing students for the realities of the labour market, it serves as a link between elementary school and higher education. The skills that SHS graduates develop throughout this crucial phase of their academic careers are just as important as the subjects they learn to succeed in postsecondary education or the workforce (Wang, Liang, Li, Yang, & Hu, 2024).

21st-century abilities like creativity, critical thinking, and teamwork become crucial in this situation. Ghana's SHS curriculum emphasises these abilities as essential tools for students to succeed in a world that is becoming more digital and linked (Laar, 2024). According to Lim, Gunasekara, Pallant, Pallant, and Pechenkina (2023) generative AI can be a transformative resource in the future of education, but its potential benefits must be balanced with its potential risks. The quick growth of generative AI, however, presents fresh issues about how students perceive and apply these resources to enhance their education and skill-building.

Therefore, it's critical to comprehend how SHS students view generative AI. Their preparedness to use AI responsibly and creatively as future knowledge workers will affect not just their academic performance but also how they contribute to the workforce and larger society (Ahmad & Bilal, 2024). Examining these viewpoints can help us better understand how to include generative AI in ways that promote meaningful learning while addressing the potential and problems it poses.

Many Senior High School (SHS) students in Ghana have already started utilising generative AI technologies like ChatGPT, Bard, and Claude informally for study aids, assignments, and idea production. Despite this unofficial adoption, little is known about their personal opinions, particularly about whether these technologies support the crucial 21st-century abilities that are taught in SHS, such as creativity, critical thinking, and teamwork. In Ghana, most of the research to date has focused on students in higher education (Arowosegbe, Alqahtani, & Oyelade, 2024), leaving the SHS level mainly unexplored.

International organisations have stressed the importance of ethical and human-centred approaches to AI in education, which makes this knowledge gap noteworthy. AI must be incorporated in ways that advance equity and fortify the fundamental skills students will need in the future, according to UNESCO (2021)

and the OECD (2025). Like this, extensive research on perceptions like Jisc's Student Perceptions of AI 2025 report demonstrate that although students worldwide are already using AI tools for learning, they continue to have concerns about issues like originality, fairness, and job market readiness (Jisc, 2025).

However, there are risks as well as opportunities indicated by experimental findings. Although it may limit the range of ideas and promote fixation on expected results, recent meta-analyses indicate that generative AI can foster creativity when students work together with the tool (Holzner, Maier, & Feuerriegel, 2025). According to findings from other studies, an excessive dependence on AI may result in poorer memory retention and a decrease in critical thinking skills (Bai, Liu, & Su, 2023). According to Lee et al. (2025), greater self-confidence is linked to more critical thinking, but greater confidence in GenAI is linked to less critical thinking.

Teachers and legislators cannot decide whether generative AI is strengthening or weakening the very talents the curriculum aims to develop without a thorough grasp of the opinions of Ghanaian SHS students. To guarantee that AI tools are carefully included into SHS education and that students are prepared to become innovative, critical, and cooperative knowledge workers, it is imperative that this gap be filled.

The study will combine surveys and interviews to investigate this. While the interviews will allow students to express their more in-depth ideas and individual experiences, the surveys will help paint a more comprehensive picture of how SHS students perceive generative AI. It will be feasible to comprehend both the broad patterns and the unique narratives underlying pupils' perceptions thanks to this combination of approaches.

To assist educators, curriculum designers, and policymakers in Ghana in making well-informed decisions on the integration of generative AI into SHS classrooms, this study aims to provide useful insights. By doing this, the study intends to guarantee that AI tools are applied in ways that genuinely foster students' critical thinking, creativity, and teamwork while also equipping them for the needs of future learning and employment.

LITERATURE REVIEW

Theoretical Framework

This study is anchored in three complementing theoretical frameworks: Constructivism, the 21st Century Skills Framework, and the Technology Acceptance Model (TAM). When combined, these frameworks offer a comprehensive perspective for investigating how Senior High School students view generative AI in connection to creativity, critical thinking, and teamwork.

Constructivism

According to constructivist theory, rather than passively collecting information, students actively construct knowledge through experiences, relationships, and reflection (Piaget, 2008; Vygotsky & Cole, 2018). This implies that learning occurs most effectively in the classroom when students are working on assignments that challenge, test, and improve their own knowledge. Students are encouraged to actively study and explore their own skills, knowledge, and technology while also realising the importance of scientific education by the constructivism learning theory (Sugrah, 2020). In the same direction, Zajda (2021) believes that constructivist learning theory and pedagogy seek to establish productive learning environments through student engagement and their involvement in critical thinking and meaningful knowledge building.

Generative AI tools can participate as cognitive partners in the learning process; they are a good fit for this perspective. For example, students may utilise ChatGPT or Bard to generate ideas, compare various approaches to an issue, or explain complex ideas; but learning happens when they critically assess and modify the AI's recommendations (Gonsalves, 2024). According to research, AI-supported learning environments promote inquiry-based learning and facilitate deeper student engagement with the material (Yannier, Hudson, & Koedinger, 2020).

This suggests that in SHS contexts, AI offers a foundation for learning rather than taking the place of students' thought processes. Students are transforming material into new knowledge structures that reflect their own thinking when they incorporate AI-generated inputs into group discussions or assignments, rather than merely consuming it (Kim et al., 2024). Therefore, constructivism serves as the basis for comprehending generative AI as a technology that encourages knowledge production as opposed to rote memorisation.

21st Century Skills Framework

For students to succeed in a digital and connected society, the 21st Century Skills Framework emphasises the need of skills including creativity, critical thinking, teamwork, and communication (El Mawas, & Muntean, 2018). The development of these abilities is specifically emphasised in Ghana's SHS curriculum, which frames them as essential outcomes for preparing students for both further education and the workforce (Laar, 2024). The new SHS Standards-Based Curriculum in Ghana, according to the National Council for Curriculum and Assessment (2024), places a clear emphasis on the development of 21st-century skills and competencies like critical thinking, creativity, collaboration,

and communication in addition to character traits and Ghanaian values. This is done to prepare students for postsecondary education, responsible adulthood, and the workforce.

These 21 century skills are intimately related to generative AI. First, it can foster creativity by assisting students in coming up with fresh viewpoints, coming up with unique ideas, and considering several options (Wei, Wang, Lee, & Liu, 2025). Text or picture generators, for instance, can encourage pupils to consider alternatives to the standard responses. Secondly, by asking students to evaluate the precision, applicability, and moral implications of AI outputs, AI tools can foster critical thinking (Ruiz-Rojas, Salvador-Ullauri, & Acosta-Vargas, 2024). Students are urged to consider AI's limits and adjust their logic accordingly.

Lastly, AI can help students work together on collaborative projects where they analyse AI-generated recommendations together or co-create content on shared digital platforms (Holzner, Maier, & Feuerriegel, 2025).

This study links students' opinions of generative AI to more general educational objectives by utilising the 21st Century Skills Framework. It presents AI as a resource for developing the higher-order skills required in a knowledge society rather than just as a technological instrument.

Technology Acceptance Model (TAM)

Several factors, such as perceived utility, convenience of use, and compatibility with teachers' pedagogical objectives, affect the adoption of GenAI in educational settings. These dynamics can be better understood with the help of the technology acceptance model (TAM). Although constructivism and the 21st Century Skills Framework describe how generative AI might enhance learning, the TAM describes why students could or might not accept these resources. Davis (1989) first presented the Technology Acceptance Model (TAM), which posits that perceived usefulness (PU) and perceived ease of use (PEOU) are the two primary criteria that impact user acceptance of technology. When discussing SHS students, PU refers to whether students think AI tools improve their ability to think critically, create creatively, or interact more successfully. PEOU is associated with the perceived ease of use, intuitiveness, and accessibility of these technologies (Venkatesh & Davis, 2000). Research on

AI in education demonstrates that when students believe AI to be both practical and user-friendly, they are more willing to incorporate technology into their education (Ahmad & Bilal, 2024). In contrast, students may steer clear of AI despite its possible advantages if they believe it to be unclear or unreliable. As a result, TAM gives this study a psychological and behavioural component by capturing the attitudes and convictions that influence how students interact with generative AI.

Integration of Frameworks

When combined, these three frameworks offer a thorough conceptual perspective. The 21st Century Skills Framework identifies the outcomes creativity, critical thinking, and collaboration that are essential to Ghana's SHS

curriculum and the demands of the global digital economy, while Constructivism explains the learning processes involved when students interact with AI. Finally, TAM takes into consideration the factors that influence students' acceptance and perceptions of AI. By including different viewpoints, the study transcends the idea that AI is merely a technological advancement.

Rather, it places generative AI in the larger educational goal of educating students to be creative, critical, and cooperative thinkers in a world driven by artificial intelligence.

Conceptual Diagram of Theoretical Frameworks

Constructivism, the 21st Century Skills Framework, and the Technology Acceptance Model (TAM) work together to direct the study, as shown in the picture below. The 21st Century Skills Framework specifies the desired objectives (creativity, critical thinking, and teamwork), constructivism describes how SHS students learn with AI, and TAM discusses the reasons behind students' use or rejection of generative AI tools. When combined, these frameworks offer a thorough basis for comprehending how students perceive things.

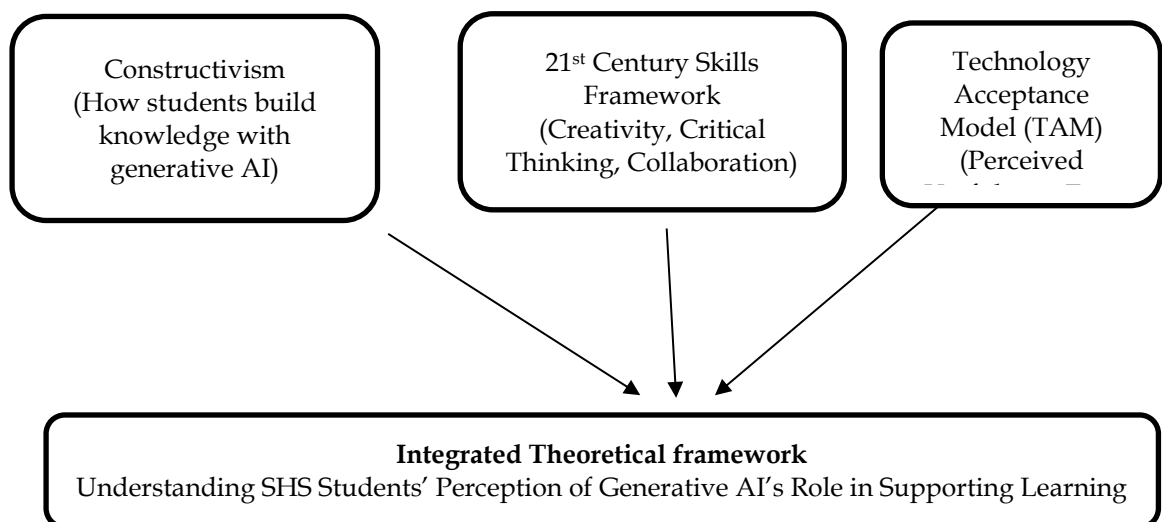


Figure 1. Conceptual Diagram of Theoretical Framework

Generative AI in Education

Generative artificial intelligence (GenAI) refers to AI systems that can produce original content such as text, images, audio, or code by drawing from patterns in large datasets (Banh & Strobel, 2023). In the view of Alavi, Leidner, and Mousavi (2024), generative GenAI enhances knowledge creation, storage, transfer, and application in organizations, but requires a balanced approach to integrate it with human insights for effective knowledge management.

In education, Gen AIs are becoming increasingly prominent in the field of education, where they can be used for a variety of purposes, such as expanding individualised support, enhancing learning resources, facilitating prompt feedback, and developing novel assessment techniques. Yan, Greiff, Teuber, and Gašević (2024). Senior high school students are starting to experiment with GenAI informally by utilising tools like ChatGPT, Bard, and Claude to answer

scientific or mathematical issues, create summaries, write essays, and assist with coding tasks (Chen, Zhu, & Castillo, 2023).

Some of the idealistic viewpoints include the claims that AI can improve students' self-efficacy and creativity (Wang, Sun, & Chen, 2023), offer inclusive curricula (Bozkurt, 2023), and customise instruction (Mogali, 2023). It has been shown that providing overseas students with personalised content improves their educational experience and increases their chances of success (Wang, Sun, & Chen, 2023).

Generative AI's adaptability and accessibility set it apart from previous educational technology tools. Generative AI can influence a wide range of academic activities, in contrast to the internet, which transformed access to information, and calculators, which were first presented largely as tools for science and mathematics. By giving immediate feedback and direction, it can help students with essay draughting, research concept development, writing fluency improvement, code debugging, and providing individualised learning experiences. Because of this promise, generative AI can be an effective instrument for encouraging student independence, creativity, and involvement in the learning process (Farrelly & Baker, 2023).

In addition to concerns about cheating, generative AI faces problems with the learning process itself. According to some, the capacity of learners to develop critical thinking, problem-solving, and creative skills, all crucial for success in higher education, would be hampered by their excessive reliance on AI technologies (Michel-Villarreal, Vilalta-Perdomo, Salinas-Navarro, Thierry-Aguilera, & Gerardou, 2025).

According to survey participants in the McGrath, Pargman, Juth, and Palmgren (2023) study, AI support could be advantageous for students from underprivileged groups, such as those who struggle with learning. They also agreed that organisations had solid reason to employ relevant AI methods for equity-based goals. Both the potential advantages regarding technology in education and the significance of comprehending its possible effects on Ghanaian SHS students are underscored by these uses.

Generative AI and Creativity

GenAI can foster artistic expression, idea development, and project-based learning, all of which can improve creativity. AI tools are frequently cited by students as useful for unsticking them throughout the creative process and providing them with options that they may modify or improve (Zhai, 2024). The United States Department of Educational Technology's most recent report, *Artificial Intelligence and the Future of Teaching and Learning* (2023), states that although artificial intelligence (AI) has many advantages, the human should always come first when utilising AI in educational settings. Additionally, the paper says that giving every student the optimum learning experience requires using discretion and control when utilising AI systems and tools.

Even though AI, machine learning, and computer-driven systems have been around for decades, new applications like ChatGPT, Bard, MidJourney, and DALL E 2, which are powered by generative intelligence and large language

models, have spurred novel studies on the relationship between human and artificially intelligent creativity (Anantrasirichai & Bull, 2022). Vinchon et al. (2023) claim that we are living in a new era of supported creativity and that AI systems can be identified from other computerised systems by their adaptability, which sometimes extends beyond what was initially planned. AI is not a trusted partner creator in this regard, but rather a cooperative creative agent.

On the other hand, plagiarism and originality are issues. GenAI may enhance the number of individual outputs, but it may also decrease the diversity of collective thoughts, resulting in homogenised thinking, according to studies (Mariani & Dwivedi, 2024). Students with different cognitive styles can achieve equal design outcomes thanks to generative AI's ability to balance cognitive types and improve reflections in design education (Liu et al., 2024). How SHS students might strike a balance between the creative affordances of GenAI and the requirement for originality in academic writing is a crucial challenge raised by this contradiction.

Generative AI and Critical Thinking

The characteristics of Generative AI (GenAI) provide a challenge to management instructors. On the one side, GenAI gives students access to more diverse viewpoints and data (Hyde, Busby, & Bonner, 2024). However, its self-assured presentation of sometimes misleading or hallucinogenic content may cause consumers to accept information without question, stifling critical thinking on both an individual and social level (Lindebaum & Fleming, 2024).

When students are asked to ask the AI to point out writing errors or offer alternative perspectives, GenAI can improve learning and encourage critical thinking (Hyde, Busby, & Bonner, 2024). However, there are serious hazards that offset this promise. First, consumers may view GenAI's output as objective and logical because it responds rapidly and competently. They might ignore the biases present in their data used for training because of this view (Bianchi et al., 2023).

Second, the grammar of GenAI's output frequently resembles that of humans, and it can occasionally be more empathetic and readable than human specialists (Chen et al., 2024). In addition to cognitive trust, this can arouse emotional trust (Glikson & Woolley, 2020). Even while GenAI lacks the embodied experience that supports true human thinking and learning, it excels at simulating conversation when it poses as a human interlocutor. As a result, GenAI's presenting approach can deter users from doing critical introspection on their own. Thirdly, there is mounting evidence that GenAI is capable of immoral behaviour, such as strategic deception and lying. Models that were specifically told to lie have also been shown to exhibit this behaviour (Park, Goldstein, O'Gara, Chen & Hendrycks, 2023).

In the past, social contact has influenced how human critical thinking has evolved. However, consumers are being encouraged to view technologies as social actors more via tools like GenAI (Sundar & Nass, 2000). The misapplication of interaction scripts that were initially created for human-to-human interaction

can be caused by the way humans interpret social cues in technology (Ossadnik, Muelfeld & Goerke, 2023).

This change implies that the way we teach critical thinking needs to be reconsidered. Teachers may need to assist students in rethinking and improving their interactions with GenAI rather than depending only on abilities developed for human social contexts. People's presumptions regarding the reliability of sources are different when they critically evaluate information from other people than when they do the same for conventional computers. However, neither group adequately describes GenAI (Shulner-Tal, Kuflik, Kliger & Mancini, 2024). Users may ultimately need to create a new critical thinking script to use GenAI. Examining the willingness component of personal critical thinking is a promising direction for future study (Glaser, 1941).

Generative AI and Collaboration

Students have utilised GenAI in collaborative contexts to assist with group assignments by coming up with ideas or creating outlines, which are then refined by peers (Anderson et al., 2025). Shifting students' focus from memorisation to conceptual comprehension, Labadze, Grigolia, and Machaidze (2023) explore the significant opportunities by promoting deeper understanding and improving students' communication skills.

Exercises that encourage user participation and shared learning while utilising ChatGPT's AI as a facilitator or student are known as collaborative learning. By organising, leading, and facilitating collaborative efforts, ChatGPT can improve group learning activities by boosting engagement, clarity, structure, and skill development, according to Ramandanis and Xinogalos (2023).

ChatGPT uses AI-powered conversations, simulations, and problem-solving activities to promote interactive learning (Imran & Almusharraf, 2023). AI powered platforms allow students to investigate ideas in a more dynamic and participatory way, encouraging engagement in learning (Singh, 2023).

Students' Perceptions on Generative AI

Regarding AI in education, student opinions and attitudes show a range of excitement, prudence, and a need for organised instruction. According to surveys conducted throughout higher education, many students currently use generative AI for activities like brainstorming, summarising, and draughting; they frequently present these tools as helpful and timesaving rather than complete substitutes for their own labour (EDUCAUSE, 2023).

Evidence from K-12 and secondary level studies indicates that students exhibit interest but rely more heavily on teacher guidance, even though most of the empirical study focusses on higher education. Students express less confidence in their ability to judge correctness and a greater desire for clear classroom guidance on responsible and ethical use (Marzano, 2025). These results highlight the necessity of scaffolded AI literacy programs in secondary education, especially in areas with disparities in digital proficiency.

Perceptions of ease of use, past exposure to AI, and prior digital competency are all factors that influence positive sentiments. Students'

behaviour is greatly influenced by institutional norms and signals. When teachers set clear guidelines and demonstrate appropriate use, students see AI as a valid learning tool; when guidance is lacking or inconsistent, they see AI as dangerous or unjust (Arkorful et al., 2025).

Self-reports by students on the effects of learning are still inconsistent. Many point out that using AI as a brainstorming partner or feedback source increases creativity, iteration speed, and confidence. Other talk about a decreased interest in in-depth education and an excessive dependence on artificial intelligence-generated content, which could impair critical thinking abilities (Mustafa, 2024). These ambivalences are consistent with experimental results showing that, contingent upon task design and direction, AI can either promote higher-order thinking or surface-level shortcuts.

Students consistently demand three answers from institutions across studies: specific training in AI literacy, including critical evaluation and disclosure procedures; clear and consistent policies outlining acceptable usage; and measures for equitable access. They state that they would rather be involved in the creation of such policies than be viewed as passive beneficiaries (UNESCO, 2025).

There are still research gaps despite these revelations. Higher education in Europe, North America, and several regions of Asia is the source of most extensive studies. There aren't many thorough, representative studies on secondary students, especially in African settings. Moreover, there are few intervention studies on how AI-literacy programs or alternative policy framings affect students' perspectives, and there is a dearth of longitudinal research on how attitudes change over time. This literature would be enhanced by qualitative research examining how students balance creativity, teamwork, and accountability in regular classroom activities (Osondu, 2024).

According to this body of research, concerns about fairness, integrity, and trust moderate students' acceptance of AI, even though they generally accept it as a helpful learning tool. Clear institutional policies, fair access, and systematic AI literacy would be crucial in fostering responsible and positive attitudes in Ghanaian SHS students.

METHODOLOGY

Research Design

A mixed-methods descriptive survey design is used in this investigation. When the research aims to capture both the depth of experiences through qualitative inquiry and the variety of viewpoints through quantitative measures, a mixed-methods approach is deemed appropriate (Creswell & Plano Clark, 2018). While the qualitative component offers deeper insights into students' perspectives and interpretations of AI use in education, the descriptive survey component is well-suited to gathering quantitative data on student awareness, attitudes, and obstacles. A more comprehensive understanding of the phenomenon being studied is made possible by combining the two approaches, which also increases the validity of the results (Tashakkori & Teddlie, 2010).

Population

The study's population consists of senior high school students in Ghana's Asante Akim Central Municipality. Because SHS students are more exposed to digital technologies and are at a key juncture where technological integration collides with curriculum demands and exam pressures, they are a pertinent population to study how AI is perceived (Arkorful, 2025). Examining their perspectives yields important data that can guide practice and policy in the integration of AI in secondary school implementation.

Sample and Sampling

A sample of 222 SHS students, chosen from local schools, participated in the study. To make sure the sample includes important subgroups within the student body, such as year groups, academic programs, and gender, stratified sampling will be used. According to Cohen, Manion, and Morrison (2018), stratification improves representativeness and lowers sampling error, guaranteeing that the results accurately represent the range of student experiences. To ensure fairness and balance, participants will be chosen proportionately within each stratum.

Instruments

Data was gathered using two tools: focus group discussions (FGDs) and a questionnaire. The structured items in the questionnaires were arranged into parts that accurately represent the goals of the study. In particular, the sections A evaluated: Student demographic information. Students' awareness and use of generative AI tools are covered in Section B. Students' opinions on how generative AI fosters creativity was covered in Section C. Students' opinions on how generative AI improves critical thinking was covered in Section D. Students' opinions on generative AI as a collaborative learning tool was covered in Section E. Finally, students' opinions on the difficulties they face when using generative AI was covered in Section F. Structured questionnaires are especially helpful in descriptive studies and enable effective data collection from large groups (Bryman, 2016).

The FGDs was used as the qualitative tool, giving students the chance to discuss their experiences in more detail and offer complex opinions about AI considering the study's goals. According to Krueger and Casey (2015), focus group discussions (FGDs) are useful for capturing group opinions, interactions, and underlying attitudes that may not come through in individual responses. Six to ten people will participate in each FGD to provide a meaningful conversation without being crowded.

Validity and Reliability

To guarantee validity, the questionnaire was reviewed by ICT and education experts to make sure the items are in line with the study's goals and sufficiently address the topics being studied. Such validity checks aid in verifying the suitability and intelligibility of the text (Fraenkel & Wallen, 2019). Pilot testing in one SHS that is not included in the primary study sample will be used to determine the questionnaire's reliability. The Cronbach's alpha coefficient, which evaluates the instrument's internal consistency, was calculated using the data from the pilot. For reliability, a coefficient value of 0.70 or above will be deemed appropriate (Tavakol & Dennick, 2011). The necessary changes will be made prior to the full-scale implementation.

Data Collection

The study took two phases in the data collection process. To guarantee orderly participation, teachers will first help distribute questionnaires to pupils in their classes. Individual surveys were filled out by respondents following predefined guidelines. Second, purposively chosen students from various sample strata participated in focus group discussions. With permission, conversations audio was recorded, and a semi-structured guide was used to encourage discussion of important topics like AI's potential, difficulties, and ethical issues.

Data Analysis

Descriptive statistics like means, percentages, and frequencies and standard deviation was used to examine the quantitative data from the surveys. In survey research, descriptive statistics are suitable for describing trends and patterns in sizable datasets (Field, 2018). After the FGDs' qualitative data has been transcribed, it underwent thematic analysis. (Braun & Clarke, 2006). Thematic analysis added deeper meanings to quantitative findings and was especially helpful in examining participants' subjective experiences and opinions.

Ethical Considerations

Letters were written to the chosen schools, and they provided their ethical approval. Students were reassured that participation is entirely voluntary and that they can leave at any time without facing any repercussions. Data was securely stored, and responses was anonymised to maintain confidentiality. According to Cohen, Manion, and Morrison (2018), ethical precautions are

essential for upholding the integrity of the research and defending the rights of participants.

RESEARCH RESULT

Analysis of Data from Respondents

Table shows the results of the respondents regarding their gender.

Table 1. Demographic Information of Respondents (n=222)

Category	Sub-Category	Frequency	Percentage
Gender	Male	117	52.7
	Female	105	47.3

Source: Field Data, Adade (2025)

From table 1, out of 222 students that took part in the study, 117 were male (52.7 %) and 105 were female (47.3 %). The distribution shows a near balance, with males slightly more represented.

Table 2. Awareness and use of generative AI Tools

Statements on Awareness and use of generative AI tools	M	SD
I am aware of generative AI tools such as ChatGPT, Bard, or others.	3.27	.445
I have used generative AI tools for academic purposes.	3.31	.464
I feel confident using generative AI tools without assistance	3.28	.526
I have learned about generative AI tools from teachers or school activities	3.17	.605
I believe generative AI tools are useful for students.	3.68	.466

Source: Field Data, Adade (2025)

From table 2, Students reported high awareness of generative AI tools (M = 3.27, SD = 0.445). Use of AI for academic purposes was also high (M = 3.31, SD = 0.464). Confidence in using AI without assistance was positive (M = 3.28, SD = 0.526). Learning about AI from teachers or school activities scored lower (mean = 3.17, SD = 0.605). Students strongly believed AI tools are useful (M = 3.68, SD = 0.466). This shows students are aware, use AI frequently, and see its value, but school-based teaching on AI is limited.

FGD insights supported these findings. Students explained:

“I use ChatGPT for summarising notes and checking my understanding, but we rarely learn about it in class.”

“AI helps me finish tasks faster, but I mostly figure it out on my own.”

Table 3. Perceptions of AI and Creativity

Statements on perceptions of AI and creativity	M	SD
Generative AI helps me develop new ideas for assignments or projects.	3.61	.489
Using AI makes my work more original and creative.	3.77	.424
AI encourages me to think of solutions I might not have considered on my own.	3.31	.543
AI helps me express my thoughts more clearly in writing.	3.32	.466
AI inspires me to explore new topics or ideas.	3.43	.496

Source: Field Data, Adade (2025)

From table 3, students agreed AI supports creativity. They rated AI highly for making their work more original (M = 3.77, SD = 0.424) and for developing new ideas (M = 3.61, SD = 0.489). AI was seen as moderately helpful in inspiring exploration (M = 3.43, SD = 0.496) and supporting clear expression in writing (mean = 3.32, SD = 0.466). Encouragement of alternative solutions scored lower (M= 3.31, SD = 0.543).

FGD insights supported these findings. Students explained:

“AI gives me new ideas I hadn’t thought of. I still choose which ones to use.”

“Sometimes AI sparks ideas for projects, but I have to refine them to make them my own.”

Table 4. Perceptions of AI and Critical Thinking

Statements on perceptions of AI and critical thinking	M	SD
When I use AI, I usually question and verify the information it provides.	2.56	1.274
AI challenges me to reflect more deeply on what I am learning.	3.65	.478
I feel AI improves my ability to analyse problems and generate solutions.	3.65	.477
I use AI to compare different viewpoints or arguments.	3.61	.566
AI helps me identify gaps in my understanding.	3.77	.424

Source: Field Data, Adade (2025)

From table 4, questioning and verifying AI information had a low ($M=2.56$, $SD = 1.274$), showing weak critical engagement. In contrast, students strongly agreed that AI helps them reflect deeply ($M = 3.65$, $SD = 0.478$), analyse problems ($M = 3.65$, $SD = 0.477$), compare viewpoints ($M = 3.61$, $SD = 0.566$), and identify knowledge gaps ($M = 3.77$, $SD = 0.424$).

FGD insights supported these findings. Students explained:

“I tend to trust AI suggestions, but sometimes I check with my notes if something seems wrong.”

“AI makes me think about problems differently, but I don’t always question everything it says.”

Table 5. Perceptions of AI as a Collaborative Tool

Statements on perceptions of AI as a collaborative tool	M	SD
AI makes group assignments easier to complete.	3.84	.365
AI improves communication and sharing of ideas among group members.	3.35	.478
AI supports equal participation among students during collaborative work.	2.33	1.104
AI helps us organize and plan group tasks more effectively.	2.64	1.330
AI encourages teamwork and cooperation.	2.73	.811

Source: Field Data, Adade (2025)

From table 5, AI was seen as highly effective in easing group assignments (mean = 3.84, $SD = 0.365$). It was moderately helpful for communication (mean = 3.35, $SD = 0.478$). Lower scores were found for equal participation (mean = 2.33, $SD = 1.104$), planning tasks (mean = 2.64, $SD = 1.330$), and encouraging teamwork (mean = 2.73, $SD = 0.811$). This shows AI supports efficiency but does not guarantee balanced participation or collaboration quality.

FGD insights supported these findings. Students explained:

“AI helps us finish group tasks faster, but some group members rely on it more than others.”

“It’s easier to organize work using AI, but not everyone contributes equally.”

Table 6. Challenges in Using AI

Statements on challenges in using AI	M	SD
I sometimes find it difficult to access AI tools due to internet or device limitations.	2.45	1.242
I worry about the accuracy of information from AI tools.]	2.58	.846
I am concerned that using AI may reduce my own effort in learning.	2.25	1.254
Teachers encourage the use of AI in schoolwork.	1.86	.958
I feel unsure about when it is appropriate to use AI for school tasks.	3.33	.838

Source: Field Data, Adade (2025)

From table 6, students expressed moderate difficulty accessing AI due to internet or device limits ($M = 2.45$, $SD = 1.242$). Concerns about accuracy scored low-moderate ($M = 2.58$, $SD = 0.846$). Worry about reduced personal effort was low ($M = 2.25$, $SD = 1.254$). Teacher encouragement was very low ($M = 1.86$, $SD = 0.958$). Uncertainty about when to use AI scored higher ($M = 3.33$, $SD = 0.838$).

FGD insights supported these findings. Students explained:

“Sometimes I cannot use AI at home because the internet is slow, or my phone is not powerful enough.”

“I am not always sure when it’s okay to use AI for assignments, teachers don’t guide us much.”

DISCUSSION

Summary of the Study

The study examined five objectives:

1. Determine students’ awareness and usage of generative AI tools.
2. Explore students’ perceptions of AI in supporting creativity.
3. Examine students’ views on AI’s role in enhancing critical thinking.
4. Assess students’ perceptions of AI as a collaborative tool.
5. Identify challenges and risks associated with generative AI in education.

A descriptive survey design was adopted. Data were collected from 222 students through questionnaires. Descriptive statistics such as frequencies, means, and standard deviations were used to analyse the responses.

Key Findings

The study brought to light these findings:

Firstly, students showed high awareness of generative AI tools such as ChatGPT. Most had used AI for academic purposes and felt confident in doing so. Teacher

guidance and encouragement were minimal. This supports Kasneci et al. (2023) on growing student adoption of AI, and echoes UNESCO (2023), which warns of weak institutional support for AI literacy.

Again, Students agreed that AI enhances creativity. They said it helps generate ideas, provide alternative perspectives, and support originality. This finding aligns with Mhlanga (2023), who found AI promotes new forms of expression and innovation in learning.

Moreover, Students saw AI as useful for reflection, analysis, and comparing viewpoints. Yet, their ability to question and verify AI outputs was weak. This matches Rudolph et al. (2023), who caution against overreliance on AI without critical evaluation.

Again, Students reported that AI made group tasks faster and improved idea sharing. At the same time, they noted weaker effects on teamwork, planning, and equal participation. This supports Siau and Wang (2023), who observed that AI improves efficiency but does not guarantee deeper collaboration.

Lastly, Students identified barriers. These included poor internet access, limited devices, lack of clear guidelines, and doubts about the accuracy of AI responses. Similar infrastructural and ethical issues have been noted in earlier studies (UNESCO, 2023; Mhlanga, 2023).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The analysis of the data led to these conclusions:

The findings revealed that SHS students are aware of generative AI and actively engage with tools such as ChatGPT for academic purposes. This shows that students are not passive users of technology but are already integrating AI into their learning practices. Yet, schools provide little formal support, which limits structured and guided use.

Students perceived generative AI as a strong enabler of creativity. They reported that it helps them generate new ideas, refine their thinking, and express originality in assignments. AI was also seen as valuable for reflective thinking, encouraging deeper engagement with subject content. In contrast, its role in collaboration was weaker. While it made group assignments easier, it did not strengthen teamwork, planning, or equal participation among peers.

The results also showed weak critical evaluation skills among students. Many did not question or verify AI-generated content, leaving them vulnerable to misinformation. This raises concerns about overreliance on AI outputs without proper judgment or validation.

Barriers remain a major challenge to effective integration of AI in SHS education. Infrastructure gaps such as poor internet connectivity and limited access to devices restricted consistent use. Teacher encouragement was also low, leaving students without clear guidance on when and how to use AI responsibly.

Overall, SHS students recognize the value of generative AI in learning. Yet, without stronger institutional support, teacher involvement, and clear policies, its benefits will remain underutilised, and its risks will continue to affect learning outcomes.

Recommendations

The study offered these recommendations derived from the conclusions of the findings:

- Structured guidance on responsible use of AI in assignments and projects must be provided to students.
- Students should be trained to question, cross-check, and critically evaluate AI outputs to avoid misinformation.
- AI must be integrated into lessons as a supportive tool while still promoting independent thinking and originality.
- ed AI literacy must be embedded into SHS curricula, focusing on creativity, critical thinking, and digital ethics.
- Clear policies to guide ethical and responsible AI use in schools, covering privacy, academic integrity, and fair access must be developed to assist students.
- Digital infrastructure must be invested into to ensure students have adequate internet access and electronic devices for learning.

ADVANCED RESEARCH

To further understand how generative AI affects learning in various circumstances, more study is required. Given that infrastructure disparities like internet access, device availability, and school resources are likely to influence understanding and views of AI, a comparison study between SHS students in rural and urban areas is advised. A study of this kind would show whether unequal access results in unequal chances for pupils to use AI tools.

A gender-based study is also necessary, because male and female students may differ in how they perceive AI's role in creativity and collaboration. When these differences are identified it would provide insight into how gender influences adoption, confidence, and the perceived value of AI in supporting learning processes.

Lastly, a longitudinal study is suggested, as this would reveal the long-term effects of AI use on originality, problem-solving, and independent learning. Students' engagement with AI over time would show whether continued exposure strengthens or weakens independent thinking and higher-order skills.

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