STUDENTS' AND TEACHERS' PERCEPTIONS OF ARTIFICIAL INTELLIGENCE (AI) - ENHANCED LEARNING, CREATIVITY, AND ACADEMIC EMOTIONS IN SOUTH-EAST NIGERIAN COLLEGES OF EDUCATION.

BY

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ABSTRACT

This study looked at how teachers and students perceived artificial intelligence (AI)-enhanced learning, creativity, and academic emotions in selected South-East Nigerian colleges of education. It looked specifically at the problems and benefits of employing AI applications, as well as respondents' attitudes regarding AI-integrated educational tools. A mixed-methods research methodology was used, with both a quantitative survey and qualitative interviews. The quantitative component included 300 respondents (100 teachers and 200 students) who completed a standardised questionnaire, while the qualitative component included semi-structured interviews with 25 purposefully chosen individuals. Quantitative data were analysed using descriptive statistics (mean and standard deviation), whereas qualitative data were analysed using thematic content analysis, and the results were triangulated. Results indicated that respondents perceived **significant challenges**, including limited infrastructure, lack of training, and occasional frustration or anxiety when using AI tools. However, AI applications were also perceived as **beneficial for enhancing creativity, motivation, personalized learning, and academic confidence**. Teachers and students demonstrated **positive attitudes toward AI integration**, expressing willingness to adopt AI-enhanced learning with adequate support. The study concluded that **AI-enhanced learning is a valuable tool** for improving creativity and academic emotions, but its effectiveness depends on **infrastructure, training, and policy support**. Recommendations include **enhancing AI training programs, improving digital infrastructure, establishing data privacy guidelines, and integrating AI into the curriculum**. The study provides insights for policymakers, educators, and researchers seeking to maximize the benefits of AI in education.

Keywords: *Artificial Intelligence, AI-enhanced learning, Creativity, Academic Emotions, Teachers, Students, Colleges of Education*

INTRODUCTION

Background to the Study

Artificial Intelligence (AI) is a branch of computer science that employs algorithms and machine learning techniques to simulate human intelligence (Helm, 2020). AI is commonly classified into narrow AI, general AI, and artificial super intelligence. Among these, narrow AI is the most widely applied in education and focuses on accomplishing specific tasks such as speech recognition, image recognition, intelligent tutoring, and virtual assistance.

The integration of AI into education has expanded rapidly, with applications including automated grading, adaptive learning, personalized instruction, intelligent tutoring systems, virtual reality, augmented reality, and distance learning (Yuseia, 2020). The goal of Artificial Intelligence in Education (AIED) is to develop learning systems that can provide instructional support comparable to one-on-one human tutoring (VanLehn, 2011).

Contemporary educational practices emphasize the development of 21st-century skills such as creativity, critical thinking, collaboration, and problem-solving. AI-powered educational applications have the potential to foster these competencies by providing personalized learning experiences, adaptive feedback, and opportunities for creative exploration (Gordon, 2015; Ryu, 2018; Marrone, 2022). Furthermore, AI technologies facilitate collaborative and multidisciplinary learning through intelligent tutoring systems, virtual simulations, and immersive learning environments. AI also enables access to diverse educational resources and personalized recommendations that stimulate curiosity and intrinsic motivation among learners (Hu, 2024; Ali, 2020).

In addition to cognitive development, AI technologies can influence students' academic emotions, including motivation, engagement, satisfaction, anxiety, and boredom. Through facial recognition, sentiment analysis, and affective computing, AI systems can detect students' emotional states and adapt learning experiences accordingly (Helm, 2020). Such capabilities can enhance positive emotions and reduce negative emotions, thereby improving learning outcomes and emotional well-being.

Statement of the Problem

Despite the increasing adoption of AI-integrated educational applications and their recognized benefits in improving learning experiences, there remains limited empirical evidence regarding their influence on students' creativity and academic emotions. Traditional educational approaches often fail to adequately nurture creativity and address students' emotional experiences during learning. Although previous studies have explored various educational applications of AI, insufficient attention has been given to understanding how AI affects students' creative abilities and academic emotions. Moreover, there is inadequate information on teachers' and students' perceptions of the benefits and challenges associated with AI-integrated educational applications. This knowledge gap necessitates an investigation into the role of AI applications in enhancing students' creativity and academic emotions and the attitudes of educational stakeholders toward their adoption.

Objectives of the Study

The main objective of the study is to investigate the influence of AI-integrated educational applications on students' creativity and academic emotions.

The specific objectives are to:

1. Determine teachers' and students' perceptions of the merits of AI applications in enhancing students' creativity and academic emotions.
2. Examine teachers' and students' perceptions of the challenges associated with the use of AI applications in enhancing students' creativity and academic emotions.
3. Investigate teachers' and students' attitudes toward AI-integrated educational applications.

Research Questions

The study seeks to answer the following research questions:

1. How do teachers and students perceive the merits of using AI applications in enhancing students' creativity and academic emotions?
2. How do teachers and students perceive the challenges of using AI applications in enhancing students' creativity and academic emotions?
3. What are the attitudes of teachers and students toward AI-integrated educational applications?

Significance of the Study

The findings of this study will be beneficial to students, teachers, educational administrators, policymakers, curriculum developers, and researchers.

Students will benefit from improved understanding of how AI applications can enhance creativity, critical thinking, engagement, and positive academic emotions.

Teachers will gain insights into effective strategies for integrating AI technologies into teaching and learning processes.

Educational administrators will obtain evidence-based information for making decisions regarding the adoption and implementation of AI technologies in schools.

Curriculum developers will benefit from findings that can guide the integration of AI-related learning experiences into educational curricula.

Policymakers will gain useful information for developing policies that support responsible and effective AI adoption in education.

Researchers will find the study valuable as a reference for future investigations on AI, creativity, academic emotions, and educational technology.

Overall, the study will contribute to the growing body of knowledge on Artificial Intelligence in Education (AIED) and provide empirical evidence regarding its impact on students' creativity and academic emotions.

LITERATURE REVIEW

Artificial Intelligence–Enhanced Learning in Education

More and more people are realising that artificial intelligence (AI) can revolutionise education, especially when it comes to improving the teaching and learning process. AI-enhanced learning, according to Zawacki-Richter et al. (2019), is the use of intelligent systems to assist instruction through learning analytics, adaptive feedback, and tailored content delivery. According to their research, despite AI's great potential to enhance learning outcomes and instructional quality, its application is frequently hampered by a lack of technological know-how and insufficient digital infrastructure, particularly in developing nations.

According to UNESCO (2021), digital inequality continues to be a significant obstacle to the successful integration of AI in education. The fair incorporation of AI tools is hampered, according to UNESCO, by unequal access to technology resources, poor internet connectivity, and a lack of opportunity for teachers to further their careers. These issues are especially pertinent to teacher preparation programs in underdeveloped nations, where there may not be as much institutional preparedness for cutting-edge teaching tools.

AI-enhanced learning environments at education colleges provide chances for individualised instruction, self-paced learning, and increased student engagement. However, institutional backing, infrastructure availability, and user technical proficiency are critical factors in these systems' effectiveness (Zawacki-Richter et al., 2019).

AI and Students' Creativity

One important result of AI-enhanced learning settings is creativity. According to Holmes et al. (2019), AI-powered educational technologies foster creativity by facilitating instant feedback, personalised learning routes, and experimental learning opportunities. These characteristics enable students to interact with the material more thoroughly, try out concepts, and provide original answers to learning assignments.

Research by Kong et al. (2020) shows that learning environments with AI support improve students' capacity for original problem-solving. According to their research, adaptive learning platforms and intelligent tutoring systems promote introspective learning, idea development, and divergent thinking. These results imply that AI promotes higher-order thinking abilities necessary for creativity in addition to academic success. For teacher education students, exposure to AI-enhanced creative learning experiences is particularly important, as it shapes their pedagogical beliefs and future classroom practices.

Academic Emotions and AI-Enhanced Learning

Emotions in the classroom have a big impact on students' motivation, involvement, and output. According to Pekrun's (2006) Control-Value Theory, students' feelings about their academic performance are influenced by how much control they believe they have over their learning activities and how much they value them. Positive academic feelings like delight, confidence, and motivation are likely to surface when students feel highly valued and in charge.

Unfamiliar interfaces, system malfunctions, or insufficient user skills might make learners feel less in control in AI-enhanced learning environments, which can lead to negative feelings like dissatisfaction and fear (Zawacki-Richter et al., 2019). However, AI systems can improve perceived control and foster good academic emotions, enhancing learning effectiveness, provided they are easy to use and offer adaptive feedback and support (Pekrun, 2006). Additionally, UNESCO (2021) highlights that broader institutional and socioeconomic issues, such as training opportunities, diversity, and policy support, have an impact on learners' emotional reactions to AI.

Teachers' and Students' Attitudes toward AI

For AI to be successfully incorporated into educational settings, attitudes regarding its adoption are essential. According to Davis' (1989) Technology Acceptance Model (TAM), consumers' attitudes toward technology and their intention to use it are greatly influenced by perceived utility and perceived ease of use. Teachers and students are more likely to adopt positive attitudes and embrace the integration of AI into teaching and learning when they believe it to be useful and simple to use.

Teo (2011) expands on this viewpoint by emphasising how crucial institutional support and enabling circumstances are in influencing educators' adoption of technology. When educators and learners see better learning outcomes, more creativity, and greater motivation, positive attitudes about AI are strengthened.

According to Holmes et al. (2019), instructors' positive perceptions of AI are reinforced when they witness improved student engagement and instructional efficacy. These views are especially significant in education colleges since they affect pre-service teachers' future use of technology as well as current teaching methods.

Summary of Reviewed Literature

According to the reviewed literature, AI-enhanced learning may help teachers and students become more creative, motivated, and emotionally invested in their studies. Nonetheless, there are still a lot of issues with technical proficiency, infrastructure, and emotional adjustment, especially in developing educational settings (UNESCO, 2021; Zawacki-Richter et al., 2019). Strong theoretical frameworks for comprehending attitudes and views of AI-enhanced learning include the Technology Acceptance Model (Davis, 1989), Control-Value Theory (Pekrun, 2006), and technology adoption models (Teo, 2011). These viewpoints support the investigation of how educators and students in South-East Nigerian colleges of education perceive AI-enhanced learning, creativity, and academic emotions.

METHODOLOGY

A mixed-methods research design was used in this study, integrating quantitative and qualitative techniques. In order to gather quantitative data on instructors' and students' opinions, attitudes, and experiences using AI-enhanced learning, the quantitative component used a descriptive survey approach. Semi-structured interviews were used in the qualitative component to delve deeper into participants' perceptions of AI's impact on academic emotions and creativity. To give complementary strengths, a mixed-methods design was selected: quantitative data provided trends that could be applied broadly, while qualitative data offered context and in-depth explanations for comprehending participants' opinions (Creswell & Creswell, 2018).

The study was carried out in a few South-East Nigerian colleges of education, including those in the states of Abia, Anambra, Ebonyi, Enugu, and Imo. These universities were picked because they prepare future educators and have started incorporating AI-supported and digital resources into their curricula. All lecturers (teachers) in particular South-East Nigerian colleges of education as well as all students enrolled in those colleges during the study period made up the population. Since

they are the main consumers and recipients of AI-integrated educational products, these groups were chosen. The sampling method was multistage. Purposive sampling was utilised to identify colleges of education that use AI-integrated teaching technologies. The respondents were then divided into two categories using stratified sampling: teachers and students. For the quantitative survey, participants were selected using simple random sampling from each strata. For the qualitative component, 10 teachers and 15 students were purposefully chosen for semi-structured interviews based on their experience with AI-enhanced learning and willingness to participate.

The data was collected using the following instruments: a structured questionnaire titled "Teachers' and Students' Perceptions of AI-Enhanced Learning Questionnaire (TSPAIELQ)" and a semi-structured interview guide. A standardised questionnaire titled "Teachers' and Students' Perceptions of AI-Enhanced Learning Questionnaire (TSPAIELQ)" was utilised to collect quantitative data from respondents. Responses were rated on a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree). Questionnaires were distributed in person, with the help of study assistants. Completed questionnaires were gathered immediately or within a specified duration. Teachers and students were asked to provide qualitative information or in-depth insights using a semi-structured interview guide regarding the following topics: the advantages and disadvantages of AI-enhanced learning, the impact of AI on creativity and academic emotions, personal experiences, and recommendations for improvement. The interviews were audio recorded with participants' permission and transcribed for analysis; a select group of teachers and students were interviewed in private settings to ensure candid responses, and each interview lasted 20 to 30 minutes.

Key themes and sub-themes pertaining to AI challenges, merits, and attitudes were identified and triangulated with quantitative results to provide a comprehensive understanding. The questionnaire responses were analysed using descriptive statistics (mean, standard deviation) to answer research questions. Likert-scale responses were interpreted using a mean cut-off of 2.50. Thematic content analysis was used to analyse the transcribed interviews.

RESULTS

The findings of the study on how educators and learners at a few South-East Nigerian colleges of education perceive AI-enhanced learning, creativity, and academic emotions are presented in this section. Analysis is done on both qualitative (interview) and quantitative (questionnaire) data. The analysis incorporates thematic ideas from interviews and responds to the study questions (H01–H03).

Research Question 1: How do teachers and students perceive the merits of using AI applications in students' creativity and academic emotions?

Table1: Mean Ratings of Teachers' and Students' Perceptions of the Merits of AI Applications on Students' Creativity and Academic Emotions

S/N	Merit Item	Mean	SD	Decision
11	AI helps generate new ideas	3.10	0.65	Agree
12	AI improves problem-solving	3.05	0.70	Agree
13	AI makes learning engaging	3.20	0.60	Agree
14	Immediate feedback increases confidence	3.15	0.63	Agree
15	AI supports personalized learning	3.12	0.64	Agree
16	AI reduces academic stress	2.95	0.71	Agree
17	AI encourages creativity	3.08	0.66	Agree
18	AI motivates students	3.00	0.68	Agree
19	AI allows self-paced learning	3.18	0.62	Agree
20	AI improves overall performance	3.05	0.67	Agree
		3.09	**0.66**	**Agree**

Teachers and students generally agree that AI applications have a positive impact on students' creativity and academic emotions, with the highest consensus on AI making learning more engaging (Mean = 3.20), allowing self-paced learning (Mean = 3.18), and providing immediate feedback that boosts confidence (Mean = 3.15), as well as benefits such as generating new ideas, supporting personalised learning, reducing academic stress, and improving overall performance. An aggregate mean of 3.09 (SD = 0.66) implies a strong perception of AI's benefits.

Qualitative findings from Theme 1, Perceived Benefits, revealed that AI tools improved creativity by allowing students to brainstorm and visualise ideas more quickly, increased students' confidence through adaptive feedback, and supported personalised learning by enabling self-paced engagement that reduced frustration. Both quantitative and qualitative evidence show that AI is seen positively for creativity, learning motivation, and emotional support.

Research Question 2: How do teachers and students perceive the challenges of using AI applications in students' creativity and academic emotions?

Table 2: Mean Ratings of Teachers' and Students' Perceptions of the Challenges of AI Applications on Students' Creativity and Academic Emotions

S/N	Challenge Item	Mean	SD	Decision
1	AI reduces students' independent thinking	2.87	0.74	Agree
2	Excessive reliance on AI affects creativity	2.92	0.69	Agree
3	AI increases learning anxiety	2.65	0.81	Agree
4	Limited access affects learning	3.10	0.63	Agree
5	Lack of training makes AI difficult to use	3.15	0.68	Agree
6	AI feedback can be confusing	2.78	0.70	Agree
7	AI causes frustration	2.71	0.75	Agree
8	Data privacy concerns discourage AI use	3.02	0.66	Agree
9	AI widens digital skill gaps	2.95	0.72	Agree
10	Poor internet limits AI effectiveness	3.18	0.60	Agree
		2.99	**0.69**	**Agree**

The quantitative analysis result from Table 2 revealed that the respondents agreed to all the items. The **average mean score of 2.99** (SD = 0.69) across all items indicates that both teachers and students **generally agree** that challenges exist when using AI applications related to creativity and academic emotions. Three main issues emerged from interviews under the qualitative findings under Theme 2, Perceived Challenges: students faced inadequate infrastructure, such as unreliable internet and a lack of devices; both students and some lecturers showed skill gaps in using AI effectively; and several students initially felt frustrated or anxious when interacting with AI systems without supervision. Quantitative results support qualitative findings, indicating that teachers and students see AI as beneficial but problematic due to infrastructure, training, and emotional issues.

Research Question 3: What are teachers' and students' attitudes toward AI-integrated educational applications?

Table 4: Mean Ratings of Teachers' and Students' Attitudes Toward AI-Integrated Educational Applications

S/N	Attitude Item	Mean	SD	Decision
21	Comfortable using AI tools	3.05	0.66	Agree
22	AI should be integrated in teaching	3.20	0.61	Agree
23	Willing to learn more about AI	3.15	0.64	Agree
24	AI supports teachers	3.12	0.63	Agree
25	Prefer AI-integrated learning	3.08	0.66	Agree
26	Benefits outweigh challenges	3.00	0.67	Agree
27	AI improves education quality	3.18	0.62	Agree
28	Support continued AI use	3.05	0.65	Agree
29	Training improves attitude toward AI	3.12	0.63	Agree
30	Would recommend AI learning	3.10	0.64	Agree
		3.11	**0.64**	**Agreed**

Teachers and students have a generally positive attitude toward AI-integrated educational applications, agreeing that they are comfortable using AI tools, support their integration into teaching, are eager to learn more about AI, recognise its benefits for education quality and teacher support, and believe that training improves their attitude toward AI, with an overall mean score of 3.11 indicating favourable perceptions despite some acknowledged challenges.

Qualitative findings under Theme 3: Attitude towards AI suggest that teachers and students have a good attitude toward AI, are willing to participate in AI training, and strongly support its continued integration into education. The quantitative and qualitative findings are consistent, indicating a good overall attitude toward AI-enhanced learning despite perceived obstacles.

DISCUSSION OF FINDINGS

The discussion is presented according to the study's research questions:

Perceived Merits of AI in Learning

Respondents said AI improves creativity, drive, self-paced learning, and academic confidence. This is consistent with Holmes et al. (2019), who found that AI technologies increase engagement and personalise learning experiences. Kong et al. (2020) discovered that AI-supported learning improves students' innovative problem-solving.

The findings back up the TAM framework (Davis, 1989): respondents saw AI as valuable and simple to use, which leads to positive attitudes and increased acceptance rates. Personalised feedback and adaptive systems help to improve academic emotions, which supports the Control-Value Theory.

Perceived Challenges of AI in Learning

The study discovered that teachers and students view AI issues in terms of infrastructure, technical skills, and emotional impact. These findings are congruent with Zawacki-Richter et al. (2019), who found that poor digital infrastructure and a lack of training hampered effective AI implementation. Similarly, UNESCO (2021) identified digital inequality as a significant impediment in underdeveloped nations.

Students noted that unfamiliar AI interfaces or system malfunctions generated brief bewilderment or stress, which is consistent with the Control-Value Theory (Pekrun, 2006), which holds that low perceived control over learning activities can raise negative academic feelings like anxiety and dissatisfaction.

Teachers' and Students' Attitudes toward AI

The study found that participants had positive opinions toward integrating AI into teaching and learning. This verifies Teo's (2011) discovery that perceived usefulness, simplicity of use, and institutional support influence positive technology uptake. The observable benefits of AI, such as increased creativity, academic achievement, and motivation, reinforced respondents' perspectives.

Integration of Findings

Overall, the data indicate a balanced view: while AI has some drawbacks, its advantages outweigh them. Teachers and students are eager to accept AI-enhanced learning if proper training, infrastructure, and policy support are provided.

CONCLUSION AND RECOMMENDATION

Based on the findings, the study concludes that teachers and students see AI-enhanced learning as a valuable tool for improving students' creativity, academic engagement, and academic emotions, though challenges such as limited infrastructure, insufficient training, and emotional adaptation remain significant but manageable with appropriate support. Teachers and students are usually positive about AI integration and willing to participate in additional training and adoption initiatives, indicating a high potential for long-term use. Therefore, a coordinated strategy involving technological, pedagogical, and policy interventions is needed for the successful integration of AI in Colleges of Education. This strategy should include government and institutional funding for high-speed internet and AI-compatible devices, regular training programs to boost technical competence and confidence, the establishment of clear data privacy and ethical guidelines, and the inclusion of AI literacy in student and teacher curricula. Teachers should use AI applications to foster creativity through interactive activities, brainstorming, and simulations; incorporate feedback mechanisms to support students' emotional wellbeing and lower anxiety; continuously monitor and assess the efficacy of AI tools to make sure they meet academic and emotional goals; and combine AI-enhanced learning with group projects to improve peer learning and social interaction.

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