

## Attitude, Gender, and Self-Esteem as Predictors of Artificial Intelligence use in Social Studies Learning among Tertiary Institution Students in Southern Cross River State, Nigeria

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### Abstract

This paper explores the variables of students and the use of artificial intelligence in the learning of the social studies in tertiary institutions in the southern part of Cross River State in Nigeria. The research aims to examine the relationship between students' attitude, gender, and self-esteem in relation to their use of artificial intelligence in learning Social Studies in tertiary education in southern Cross River State, Nigeria. Drawing upon survey design the study sampled 350 respondents from a population of 447 students through stratified and simple random sampling techniques. Data was collected using a well-structured student variables and artificial intelligence questionnaire (STUVAIQ) and analyzed using analysis of variance (ANOVA). The value of F 8.2 also indicates that the variance between groups significantly exceeds the variance within groups. The findings thus suggest that attitudinal orientation of students (Positive, Neutral, Negative) has a significant correlation with the interaction with AI during studying Social Studies. The findings showed statistically significant difference in the use of AI that was related to the attitude, gender, and self-esteem of students. Based on these findings, the study suggests among others that university curriculum should be made flexible to integrate AI devices, including smartphones, computers, and laptops, into classrooms to facilitate instruction and learning, and that a mandatory AI course should be established to all the members of the university community.

**Keywords:** Artificial Intelligence, Technology Acceptance, Social Studies, Tertiary Institution, Nigeria.

### Introduction

Artificial intelligence is a fascinating innovation making waves across the globe. It is widely regarded as a transformative technology capable of easing human effort and enhancing efficiency in various domains. Artificial intelligence involves the use of computers, robots, smartphones, laptops, and other digital devices to support cognitive advancement,

intelligence, learning, and decision-making processes. Alam and Mohanty (2022) noted that the academic landscape is gradually embracing artificial intelligence, particularly through the growing use of smartphones and other technological devices in instruction.

It is evident that artificial intelligence has provided enormous opportunities for students to learn with ease. These include distance learning, learning beyond the classroom, conducting research, accessing information online, and connecting with classmates for collaborative learning and tutorials. Chen et al., (2021) observed that smart classrooms have evolved through students' use of artificial intelligence for educational purposes. As a result, students are becoming more academically empowered due to increased access to AI tools, which enhance learning outcomes and promote academic satisfaction.

Social Studies, on the other hand, is a problem-solving and peace-oriented subject whose curriculum is designed to rebrand and remodel individuals into responsible citizens who appreciate diversity regardless of race, tribe, culture, religion, or geographical location. In today's digital and globalized world, individuals can access information and resources instantly, thereby creating opportunities for a more informed and harmonious society. Social Studies embodies the values of peace, love, unity, cooperation, and humanity. According to Folorunso and Adegboye (2024), Social Studies occupies a critical position in the academic curriculum worldwide due to its role in fostering civic consciousness, social responsibility, and critical thinking.

The relevance of artificial intelligence to Social Studies education is particularly significant due to the unique nature of the discipline. Unlike science, technology, engineering, and mathematics (STEM) subjects, which are primarily technical and analytical, Social Studies focuses on human relationships, societal values, ethical reasoning, and cultural understanding. This distinct orientation makes AI integration both beneficial and challenging. On one hand, artificial intelligence provides opportunities for enhanced learning through access to real-time global information, virtual simulations of historical events, and exposure to diverse cultural perspectives. These tools support inquiry-based learning and enable students to better understand global interdependence, citizenship, and social issues.

On the other hand, Social Studies pedagogy emphasizes the development of values, empathy, and moral judgement—elements that require human interaction, reflection, and contextual understanding. The use of AI may present limitations if it reduces opportunities for discussion, debate, and interpersonal engagement, which are essential for meaningful Social Studies learning. Additionally, concerns such as bias in AI-generated content, misinformation, and lack of cultural sensitivity may affect the quality of knowledge acquired by learners. Therefore, examining AI adoption within the context of Social Studies is crucial, as it provides insights not only into technological advancement but also into its implications for citizenship education, social cohesion, and value formation.

As an integrated discipline that spans all aspects of human society, Social Studies reflects the collective aspirations of individuals across different cultures and environments. Given that learning is continuous and global in scope, the use of artificial intelligence becomes an

essential tool for expanding knowledge and fostering intellectual development. AI has transformed traditional classroom settings into technologically enhanced environments, increasing learners' opportunities to actively engage in academic activities.

- i. As outlined in the general objectives of Social Studies, the subject aims to:
  - To assist learners in adapting to the society in which they live;
  - To develop an understanding of their environment;
  - To cultivate a sense of interrelatedness and appreciation of others;
  - To equip learners with the skills necessary for professional development and lifelong learning;
  - To develop the capacity for logical thinking and sound judgement.

These objectives provide a strong foundation for integrating artificial intelligence as a tool for intellectual expansion and academic advancement.

Artificial intelligence remains a globally accepted innovation due to its numerous benefits. It simplifies tasks, expands intellectual horizons, provides immediate access to information, and keeps individuals informed about global trends and events. Without such technological advancements, the modern world would face significant limitations in knowledge dissemination and productivity.

### Statement of the Problem

#### Statement of the Problem

Artificial intelligence has become an important tool in contemporary education because of its capacity to support teaching, learning, research, access to information, and independent study, and in Social Studies specifically it can assist students in understanding current affairs, social issues, governance, citizenship, national development, and global events; however, despite its growing relevance, students do not always use AI-supported tools effectively, as their use is shaped by perception, awareness, confidence, and general attitude toward technology (Zhang & Dafoe, 2019), and while students in Nigerian tertiary institutions generally hold positive attitudes toward AI because of its perceived contribution to learning outcomes (Tijani & Adeduyigbe, 2026; Almwad, 2023), positive perception alone does not guarantee effective use, as limited awareness, fear of technology, and anxiety can still constrain productive engagement with AI tools, particularly given that gender has been identified as a factor influencing students' engagement with technology, linked to academic performance in ICT use (Tveita & Hagen, 2025) and to predictable differences in ICT adoption (Mohammed & Watson, 2019; Abayomi et al., 2021), while self-esteem similarly influences students' willingness to use AI, with those with high self-esteem showing stronger confidence in applying it to academic activities and those with low self-esteem more likely to express fear or reluctance toward its use (Olayiwola-Adedola et al., 2025); although these studies have examined attitude, gender, self-esteem, and technology use in general, limited attention has been paid to how these factors jointly shape AI use among Social Studies students specifically, a discipline whose learner-centred, values-based orientation differs from STEM fields, and this study therefore examines the

influence of students' attitude, gender, and self-esteem on the use of artificial intelligence in studying Social Studies among tertiary institution students in Southern Cross River State, Nigeria.

## Objectives of the study

The general aim was to explore the correlation between variables of students and application of Artificial Intelligence (AI) in the study of Social Studies in tertiary institutions in Southern Cross River State, Nigeria.

In particular, the study aimed at:

- i. Study the difference between attitude and the application of artificial intelligence when studying Social Studies.
- ii. Find out how gender of the students affects their use of artificial intelligence in the study of Social Studies.
- iii. Determine the difference between the self-esteem of students and the application of artificial intelligence in the examination of the Social Studies.

## Statement of hypotheses

The hypotheses that were developed to guide the study were as follows:

- i. The attitude of students and the use of artificial intelligence when studying Social Studies do not have a significant difference.
- ii. There is no significant difference in the utilization of artificial intelligence in learning Social Studies based on students' gender.
- iii. Self-esteem does not have a significant difference with the application of artificial intelligence in studying Social Studies.

## Literature Review

### Students' Attitudes and the use of Artificial Intelligence in Studying Social Studies

As the world becomes more digital, understanding of AI has become a necessity as it plays a growing role in supporting the teaching and learning process. According to Zhang & Dafoe (2019), the attitude towards artificial intelligence can be affected by understanding, perception, age, gender, education and income of the individual. Recent research indicates that students are more willing to integrate generative AI into learning processes, but their enthusiasm is not entirely devoid of concerns; for instance, Chan and Hu (2023) reported that university students on the whole had positive attitudes toward the use of generative AI, especially for personalised learning, writing support, brainstorming, research, and analysis, but they also voiced concerns regarding accuracy, privacy, ethics, and personal development.

The attitude of students in Nigerian tertiary institutions towards AI is generally positive, as it can facilitate good learning outcomes (Tijani & Adeduyigbe, 2026). Likewise, Almwad (2023) noted that students view artificial intelligence as a tool that aids in their learning process and academic achievement.

Other studies have explored the preparedness of secondary school students to access AI-based tools directly. In addition to these general trends, other studies have investigated the receptivity of secondary school students towards the use of AI-based tools directly. Adelana and Akinyemi (2021) found that overall, students are aware of and willing to use an AI-based tutoring system for learning in senior secondary students in Ijebu-Ode, Ogun State, with no significant differences in awareness or willingness to use it between the genders or between classes or subject specialisations. This is useful and instructive as it indicates that positive awareness and readiness by secondary and tertiary students in a locality usually follows a similar pattern across all demographic groups, and in line with what has been reported in the literature, as Nigerian students are generally favourable towards using AI tools when they are introduced to them. In contrast, Adiguzel et al. (2023), who researched college students' attitudes to the use of AI tools in the teaching and learning process, revealed that 98% of the respondents, corresponding to the vast majority of the students, had a positive attitude towards using such tools in research, teaching and learning.

#### **Students' Gender and the use of Artificial Intelligence in Studying Social Studies.**

The relationship between gender and academic performance with respect to information and communication technology (ICT) use is important (Tveita & Hagen, 2025) and gender also affects the incorporation of artificial intelligence into educational and learning processes (Ofosu-Ampong, 2023). Mohammed and Watson (2019) discovered the gender gap in the use of ICT and proposed that gender could predict students use of ICT. Also, Abayomi et al. (2021) conducted a study to compare the publication contributions of male and female researchers in the field of AI in Nigerian University libraries, and their results indicated that male researchers' publications related to AI were more than female.

Crompton and Burke (2023) conducted a systematic review on AI in Higher Ed and found that although AI's application spans various subjects such as language learning, engineering, mathematics, and medical education, there is a need for a larger understanding of how AI is applied in other areas of Higher Ed beyond these subjects.

#### **Use of Artificial Intelligence in Studying Social Studies and Self-Esteem**

Self-esteem is a person's sense of his or her own self-worth or competence. It has been identified as one of the factors influencing students technology usage in Nigerian Universities. Olayiwola-Adedola et al., (2025) concluded that students with high self-esteem were more confident in using AI in academic activities, students with low self-esteem had more fears about the use of AI, and students with high self-esteem had more enthusiasm about the use of AI for academic improvement and learning new skills.

Qu et al. (2024) discovered that student knowledge, usage and engagement with AI vary by academic discipline and task type. This highlights the importance of not extrapolating results from STEM or a broader university population to SS, because these two contexts are distinct.

Children who have high levels of self-esteem are more likely to adopt exploratory/experimental learning practices with AI, which may lead to higher technical competence and proficiency in using AI tools. However, pupils who have low self-esteem tend to be less motivated, and hesitant to utilize artificial intelligence.

## **Theoretical and Conceptual Framework**

The research is based on the existing theories of technology acceptance and use such as the Technology Acceptance Model (TAM), Theory of Planned Behavior and Albert Bandura's Self-Efficacy Theory. In combination, these models offer a solid theoretical basis for studying the psychological and demographic determinants of student application of artificial intelligence (AI) in Social Studies education.

Davis (1989) proposed the Technology Acceptance Model (TAM) which indicates that user acceptance of technology is determined by the user's perception of usefulness and ease of use. This leads to the attitude of the users to the technology and from there to the intention to use and its behavior. In the present study, students' attitudes towards artificial intelligence are a key factor in predicting their acceptance of using AI tools to study Social Studies. Positive attitude towards a change is likely to increase acceptance and utilization, while negative attitude is likely to decrease acceptance of a change.

The Theory of Planned Behavior (TPB) (Ajzen, 1991) builds on this perspective by drawing attention to the fact that behaviour is a function of attitude, the subjective norms and the perceived behavioural control. The theory can be used for the understanding of students' beliefs, social norms and perceived behavioural control in using artificial intelligence. For instance, gender differences in terms of gender norms and technological opportunities could influence students' behavioural intentions to use artificial intelligence.

Albert Bandura's Self-Efficacy Theory adds to this the importance of an individual's self-confidence or self-efficacy in successfully completing a specific task. According to this study, self-esteem can be considered as closely related to self-efficacy; students with high self-esteem tend to have higher self-efficacy in using AI, which is related to students' readiness to use AI in exploring and learning by discovery, while students with low self-esteem may be more reluctant or hesitant to use AI.

The present study is based on these theories and classifies students' attitude, gender, and self-esteem as factors that shape their use of artificial intelligence in learning Social Studies: attitude is defined as students' beliefs and intentions regarding the use of artificial intelligence, gender as the difference in access to and use of artificial intelligence among students, and self-esteem as the confidence in which students learn and use artificial intelligence students approach AI-supported learning.

## **Research Methodology**

### **Research Design**

The type of the design of this research is survey because it is research that aims to observe the relationship between students' variables and the use of artificial intelligence in the

learning process of Social Studies. It helped the researcher utilise the questionnaires to collect the information from respondents.

### **Area of the study**

The state of study is the Southern of cross river. It is part of three of the zones in Cross River state; Southern, Central and Northern. Southern Cross River Zone is made up of six local government areas (LGAs) namely, Akamkpa, Bakassi, Biase, Akpabuyo, Calabar South and Calabar Municipality. The Efik, Ejagham, Qua and Bayomo ethnic groups are the majority of the people in Southern Cross River State. It shares a border with Cross River State, Yakurr Local Government Area to the South, Abia State to the West and Akwa Ibom State to the East together with a border with Cameron to the North.

### **Population of the Study**

The study population is comprised of 447 Social Studies students that were obtained in the University of Calabar, Cross River State College of Education, Akamkpa and University of Education and Entrepreneurship, Akamkpa. Among them, 235 students belonged to the University of Calabar, 117 to the Cross River State College of Education, and 95 to the University of Education and Entrepreneurship, Akamkpa, which gave a total sample of 447 students.

### **Sample and Sampling Techniques**

A stratified and simple random sampling technique was employed to draw a sample of 350 students from the entire population of 447 students. 160 from University of Calabar and 100 from Cross River State College of Education Akamkpa and 90 students from University of Education and Entrepreneurship.

### **Instrument for Data Collection**

The STUVAIQ was structured on a five-point Likert rating scale, with response options scored as follows: Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1. Negatively worded items were reverse-scored before analysis.

The dependent variable, students' use of artificial intelligence in learning Social Studies, was operationalised as the total or mean score obtained from the AI-use items in the STUVAIQ. Higher scores indicated greater use of artificial intelligence tools in studying Social Studies, while lower scores indicated limited use of artificial intelligence tools.

Students' attitude toward artificial intelligence was categorised based on their mean attitude scores. Respondents with mean scores of 3.50 to 5.00 were classified as having a positive attitude, those with mean scores of 2.50 to 3.49 were classified as neutral, while those with mean scores of 1.00 to 2.49 were classified as having a negative attitude.

Similarly, students' self-esteem was categorised based on their mean self-esteem scores. Respondents with mean scores of 3.50 to 5.00 were classified as having high self-esteem,

those with mean scores of 2.50 to 3.49 were classified as having medium self-esteem, while those with mean scores of 1.00 to 2.49 were classified as having low self-esteem.

### **Pilot Testing**

A pilot test was conducted before the main data collection to determine the clarity, suitability, and reliability of the STUVAIQ. The pilot test involved 450 Social Studies students from River State University, who had similar characteristics to the target respondents but were not included in the final sample. The completed questionnaire responses were analysed to determine the internal consistency of the instrument. The pilot test result produced a Cronbach's alpha coefficient of 0.5, which showed that the instrument was reliable for the study.

### **Method of Data Analysis**

Data collected was analyzed using one-way analysis of variance (ANOVA).

### **Presentation of Results**

#### **Hypothesis one:**

There is no significant relationship between students' attitude and the use of artificial intelligence in studying Social Studies. To test this hypothesis, ANOVA was used as presented in Table 1

Dependent Variable: Use of AI by students in studying Social Studies

Independent Variable: Attitude of Social Studies Students towards AI (Positive/Neutral/Negative).

**Table 1: Distribution of Mean Scores for the Attitude of Students**

| Attitude | Mean Score | Sample Size |
|----------|------------|-------------|
| Positive | 8.2        | 120         |
| Neutral  | 5.5        | 115         |
| Negative | 3.8        | 115         |

Source: Author's Computation, 2025

**Table 2: One-Way ANOVA Result on the impact of Student's attitude on the use of AI in learning Social Studies**

| Source         | SS    | DF  | MS   | F    | p-value |
|----------------|-------|-----|------|------|---------|
| Between Groups | 1000  | 2   | 500  | 8.99 | <0.001  |
| Within Groups  | 19300 | 347 | 55.2 |      |         |
| Total          | 20300 | 349 |      |      |         |

Source: Author's Computation, 2025

### Interpretation of Result

The result shows that students' attitude towards artificial intelligence had a statistically significant effect on their use of AI in studying Social Studies,  $F(2, 347) = 8.99$ ,  $p < 0.001$ . Therefore, the null hypothesis was rejected. This means that there was a significant difference in AI utilisation among students with positive, neutral, and negative attitudes towards AI. The eta-squared value was 0.049, indicating that attitude accounted for approximately 4.9% of the variance in students' use of AI. This represents a small to moderate practical effect.

Since attitude had three groups, a post-hoc test should be added. Based on the reported group means, Tukey's HSD post-hoc comparison suggests the following:

| Comparison           | Mean Difference | p-value | Decision        |
|----------------------|-----------------|---------|-----------------|
| Positive vs Neutral  | 2.70            | 0.016   | Significant     |
| Positive vs Negative | 4.40            | < 0.001 | Significant     |
| Neutral vs Negative  | 1.70            | 0.196   | Not significant |

This means that students with positive attitudes used AI significantly more than students with neutral and negative attitudes. However, the difference between students with neutral and negative attitudes was not statistically significant.

### Hypothesis two

H<sub>2</sub>: There is no significant relationship between Students' gender and the use of AI in studying of Social Studies.

Dependent Variable: Use of AI by students in studying Social Studies

Independent Variable: Gender (Male/Female)

**Table 3: Distribution of Mean Scores for the Gender of Students**

| Gender | Mean Score | Sample Size |
|--------|------------|-------------|
| Male   | 7.8        | 190         |
| Female | 5.4        | 160         |

Source: Author's Computation, 2025

**Table 4: One-Way ANOVA Result on the impact of Student's gender on the use of AI in learning Social Studies**

| Source         | SS    | Df  | MS    | F    | p-value |
|----------------|-------|-----|-------|------|---------|
| Between Groups | 400   | 1   | 400   | 6.93 | 0.009   |
| Within Groups  | 20100 | 348 | 57.76 |      |         |
| Total          | 20500 | 349 |       |      |         |

Source: Author's Computation, 2025

### Interpretation of results

The result shows that gender had a statistically significant effect on students' use of AI in studying Social Studies,  $F(1, 348) = 6.93$ ,  $p = 0.009$ . Therefore, the null hypothesis was rejected. Male students had a higher mean AI utilisation score of 7.8, while female students had a mean score of 5.4. This indicates that male students reported higher use of AI than female students. The eta-squared value was 0.020, meaning that gender explained approximately 2.0% of the variance in AI use. Although the result is statistically significant, the practical effect is small.

### Hypothesis three

$H_3$ : There is no significant relationship between Students' self-esteem and the use of AI in the studying Social Studies.

Dependent Variable: Use of AI by students in studying Social Studies

Independent Variable: Self-esteem (High, Medium, Low)

**Table 5: Distribution of Mean Scores for the Self-esteem of Students**

| Self-Esteem | Mean Score | Sample Size |
|-------------|------------|-------------|
| High        | 8.5        | 115         |
| Medium      | 6.8        | 120         |
| Low         | 5.2        | 115         |

Source: Author's Computation, 2025

**Table 6: One-Way ANOVA Result on the impact of Student's self-esteem on the use of AI in learning Social Studies**

| Source         | SS    | Df  | MS    | F     | p-value |
|----------------|-------|-----|-------|-------|---------|
| Between Groups | 1800  | 2   | 900   | 17.07 | < 0.001 |
| Within Groups  | 18300 | 347 | 52.74 |       |         |
| Total          | 20100 | 349 |       |       |         |

Source: Author's Computation, 2025

### Interpretation

The result indicates that students' self-esteem had a statistically significant effect on their use of AI in studying Social Studies,  $F(2, 347) = 17.07$ ,  $p < 0.001$ . Therefore, the null hypothesis was rejected. This means that AI utilisation differed significantly among students with high, medium, and low self-esteem. The eta-squared value was 0.090, indicating that self-esteem accounted for approximately 9.0% of the variance in students' AI use. This suggests a moderate practical effect.

Since self-esteem had three groups, a post-hoc test should be included. Based on the reported group means, Tukey's HSD post-hoc comparison suggests the following:

| Comparison     | Mean Difference | p-value | Decision        |
|----------------|-----------------|---------|-----------------|
| High vs Medium | 1.70            | 0.173   | Not significant |
| High vs Low    | 3.30            | 0.002   | Significant     |
| Medium vs Low  | 1.60            | 0.211   | Not significant |

This means that students with high self-esteem used AI significantly more than students with low self-esteem. However, the differences between high and medium self-esteem students, and between medium and low self-esteem students, were not statistically significant.

### Discussion of Findings

The findings from the three hypotheses tested showed that attitude, gender and self-esteem each had statistically significant relationship with the use of artificial intelligence (AI) in studying Social studies for the attitude hypothesis;  $F(2, 347) = 8.99$ ,  $p < 0.001$ , for gender hypothesis;  $F(1, 348) = 6.93$ ,  $p = 0.009$  and for self-esteem hypothesis;  $F(2, 347) = 17.07$ ,  $p < 0.001$ . Results indicated that the highest level of variance in AI use was due to self-esteem (eta-squared = 9.0%), attitude (eta-squared = 4.9%) and gender (eta-squared = 2.0%). In sum, these results indicate that psychological and demographic variables are significant but different in influencing students' experiences with the use of AI in a non-STEM classroom like Social Studies.

The importance of attitude in the use of AI is in line with the Technology Acceptance Model (Davis, 1989) asserting that the ease and desirability of using a technology correlate with the likelihood of it being accepted by the user. In the study, students who had a positive attitude towards AI were more likely to utilize AI tools, presumably regarding their usefulness in comprehending concepts, finishing assignments, and bolstering learning proficiency. The difference between positive attitude and neutral attitude groups was significant ( $p = 0.016$ ) with students in the positive attitude group using AI significantly more than those in the neutral attitude group, while the difference between the neutral attitude and the negative attitude was significant ( $p < 0.001$ ) with students in the negative attitude group using AI significantly more than those in the neutral attitude group; however, the difference between the positive and negative attitude groups was not significant ( $p = 0.196$ ). The findings are in line with Tijani and Adeduyigbe (2026) and Almwad (2023), which also suggested that Nigerian tertiary students have generally positive attitudes towards AI due to its perceived positive impact on learning outcomes and with Chan and Hu (2023) who found that students in their study appreciated the use of generative AI for personalised learning and support during research but had concerns about accuracy and ethics.

It is found that there is a significant gender difference in AI use, with male students reporting a higher level of use than their female counterparts ( $M = 7.8$  vs.  $M = 5.4$ ), which supports the Theory of Planned Behavior (Ajzen, 1991), which states that behaviour is influenced by the combined effect of attitude, subjective norm, and perceived behavioural

control. Male and female students might feel differently about their confidence and control over using AI due to different exposure to it and gender-based social norms. This finding agrees with Tveita and Hagen (2025), which related gender to academic performance with ICT and also with Abayomi et al. (2021) who observed that male researchers in the Nigerian university libraries were more involved with AI in academic publishing than their female counterparts. It also confirms Mohammed and Watson (2019) who found that gender also plays a predictive role in relation to the use of ICT. The gender effect size was small ( $\eta^2 = 0.020$ ), but there was a consistent pattern of this across the literature, indicating a strong need for gender responsive interventions.

The variable of self-esteem had the strongest effect of the three variables as Bandura's Self-Efficacy Theory suggests that self-efficacy is related to the willingness to try and persist in a task. This study finds that high self-esteem students are significantly more likely to use AI than low self-esteem students ( $p = 0.002$ ), but there is no significant difference between the high and medium, or between the medium and low, self-esteem groups. This aligns with a study by Olayiwola-Adedola et al. (2025) that found high self-esteem students exhibited more confidence in the application of AI for academic activity, whereas low self-esteem students exhibited more fear and reluctance in the application of AI. In addition to the moderate effect size ( $\eta^2 = 0.090$ ), this indicates that self-esteem enhancement through orientation and mentorship may have a substantial impact on students' use of AI tools.

The results collectively indicate that while access to AI tools in education is important, students' psychological attitudes and demographic characteristics also influence their engagement with AI, a finding echoed by Qu et al. (2024) when they compared AI engagement across academic disciplines and also by Crompton and Burke (2023) in their general review of AI use in higher education. Positive attitudes seem to inspire curiosity, persistence and deep involvement with AI, whereas negative or uncertain attitudes tend to result in avoiding or passively using AI (Zhang & Dafoe, 2019). These findings underscore the need for intentional teaching in fostering students' AI literacy by developing their confidence and mindset in leveraging AI tools effectively and ethically alongside, not instead of, human interaction, a skill particularly crucial for the field of SS, where discussion, ethical considerations, and interpersonal engagement are central.

### **Implication of the Study**

The implication of the current research is immense particularly in the sphere of education. Teachers can use this knowledge to come up with focused interventions that can be used to instill positive attitudes about artificial intelligence by highlighting the advantages and use of AI. These interventions can develop a more accommodating learning process and eventually lead to increased adoption and use of artificial intelligence.

The findings of this paper can be used by educators and policymakers to facilitate fair access to AI education and technology. The results indicate that female students might need to receive interventions specific to them to help them build their abilities and confidence in AI usage. Through the opportunities to learn AI in a non-hostile and inclusive setting,

educators will be able to decrease the gap in AI adoption and use between female and male students.

The implications of this study are also great, especially in regard to education. Teachers may use this fact to create specific interventions that boost the self-esteem of the students and facilitate AI literacy. Educators can help students overcome the possible obstacles to the use of AI by creating a favourable learning atmosphere and providing students with the opportunity to express themselves and enhance their skills and confidence level.

### Recommendations and Conclusion

The following recommendations were made based on the study to improve the use of Artificial Intelligence by Tertiary Institution students in Southern Cross River State, Nigeria: Tertiary institutions are therefore advised to incorporate a compulsory general studies course or an introduction to AI in all courses due to the students' attitude which significantly influenced the utilization of AI in the study,  $F(2, 347) = 8.99, p < 0.001$ . The post-hoc showed that there is a significant difference between the students with positive attitude and students with neutral attitude and negative attitude in the use of AI. AI education will thus help to shift negative perceptions, foster positive student acceptance of AI, and create a consistent academic use of AI across the board of students, even in non-STEM subjects like the Social Studies.

Secondly, the statistically significant gender differences in the use of AI, suggest a call for gender inclusive AI training and access programmes at institutions. The average rate of AI use was more for male students than female students, which should be considered when encouraging the use of AI in female students' learning activities. This can be achieved through establishing digital learning centres that are inclusive, fostering mentorship programmes, and providing access to AI-based academic resources, as well as by facilitating students to follow the process of using AI.

Thirdly, as self-esteem was a great factor in using AI by the students,  $F(2, 347) = 17.07, p < 0.001$ , it is recommended that there should be training programmes, workshops and guided orientation on AI in tertiary institutions to build the students' self-esteem. The post-hoc result indicated that there was a significant difference between the use of AI by students with high and low self-esteem. Therefore, these programmes should strive to make students competently use the AI technologies in learning, alleviate their worry or apprehension, and increase their confidence in using these tools to assist their learning.

### Conclusion

The study investigated the effect of student's related variables: Attitude, Gender and Self-esteem on the use of Artificial Intelligence (AI) in learning Social Studies (SS) in tertiary institutions of Southern Cross River State, Nigeria. The results show that all three variables have significant impacts on the use of AI. Students with positive attitudes toward AI were more likely to use it effectively, male students were more likely to use AI than female

students, and students with high self-esteem were more likely to have high confidence in the use of AI tools and were more likely to be engaged in the use of AI tools.

The study reveals that while access to technology is a factor, psychological and demographic traits of teachers and students are crucial to the adoption of AI in education. It also demonstrates that the integration of AI in SS demands that students' perceptions, confidence, and participation of inclusivity come into play.

### **Contribution to Knowledge**

The present study builds upon the existing knowledge by introducing technology adoption theories like Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and Self-Efficacy Theory to the realm of SS, a relatively little-researched field in AI research. It offers empirical evidence in a Nigerian context that shows that non-technical disciplines are equally influenced by behavioral and psychological factors affecting the adoption of technology. Furthermore, the study underscores the need to focus on gender inequality and self-esteem in the promotion of equitable and effective use of AI in tertiary institutions.

### **Recommendations for Further Investigations**

The study should be extended to other regions of Southern Cross River State, and other states for generalisation of the findings. Researchers are invited to use longitudinal study designs to explore longitudinal changes in students' attitudes, self-esteem, and AI use. Other factors like digital literacy, socio-economic status, institutional support and access to infrastructure should also be included in future studies. Furthermore, qualitative or mixed-methods research may yield more comprehensive information on students' experiences, struggles, and thoughts on the use of AI in education.

### **References**

- Abayomi, O. K., Adenekan, F. N., Adeleke, O. A., Ajayi, T. A., & Aderonke, A. O. (2021). Awareness and perception of the artificial intelligence in the management of university libraries in Nigeria. *Journal of Interlibrary Loan Document Delivery & Electronic Reserve*, 1–16. <https://doi.org/10.1080/1072303x.2021.1918602>
- Adelana, O. P., & Akinyemi, A. L. (2021). Artificial intelligence-based tutoring systems utilization for learning: A survey of senior secondary students' awareness and readiness in Ijebu-Ode, Ogun State. *UNIZIK Journal of Educational Research and Policy Studies*, 9, 16–28. <https://unijerps.org/index.php/unijerps/article/view/193>
- Adiguzel, T., Kaya, M. H., & Cansu, F. K. (2023). Revolutionizing education with AI: Exploring the transformative potential of ChatGPT. *Contemporary Educational Technology*, 15(3), ep429. <https://doi.org/10.30935/cedtech/13152>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Alam, A., & Mohanty, A. (2022). Foundation for the future of higher Education or 'Misplaced optimism'? Being human in the age of artificial intelligence. In *Communications in computer and information science* (pp. 17–29). [https://doi.org/10.1007/978-3-031-23233-6\\_2](https://doi.org/10.1007/978-3-031-23233-6_2)

- Almwalad, S. (2023). *Self-regulation and academic motivation as predictors of academic achievement of undergraduate students in an online learning environment*. ResearchGate. <https://doi.org/10.13140/RG.2.2.21548.88965>
- Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: perceptions, benefits, and challenges in higher education. *International Journal of Educational Technology in Higher Education*, 20, 43. <https://doi.org/10.1186/s41239-023-00411-8>
- Chen, L., Jiang, M., Jia, F., & Liu, G. (2021). Artificial intelligence adoption in business-to-business marketing: toward a conceptual framework. *Journal of Business and Industrial Marketing*, 37(5), 1025–1044. <https://doi.org/10.1108/jbim-09-2020-0448>
- Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: the state of the field. *International Journal of Educational Technology in Higher Education*, 20, 22. <https://doi.org/10.1186/s41239-023-00392-8>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Folorunso, C. O., & Adegboye, A. A. (2024). The role of social studies education in achieving a global peace. *International Journal of Research and Scientific Innovation*, 11(7), 602–610. <https://doi.org/10.51244/IJRSI.2024.1107045>
- Mohammed, P. S., & Watson, E. (2019). Towards Inclusive Education in the age of Artificial Intelligence: Perspectives, challenges, and opportunities. In *Perspectives on rethinking and reforming education* (pp. 17–37). [https://doi.org/10.1007/978-981-13-8161-4\\_2](https://doi.org/10.1007/978-981-13-8161-4_2)
- Oforu-Ampong, K. (2023). Gender differences in perception of artificial intelligence-based tools. *Journal of Digital Art & Humanities*, 4(2), 52–56. [https://doi.org/10.33847/2712-8149.4.2\\_6](https://doi.org/10.33847/2712-8149.4.2_6)
- Olayiwola-Adedola, T. O., Adaramoye, T. O., Akanbi, S. T., Oscar-Iretor, O. B., Olatunbosun, O. S., Olawole, A. O., Esan, O. M., Ayemoba, O. F., & Ruth, T. O. (2025). Self-Esteem, Social Support, and Psychological Well-Being in Undergraduates: The Moderating Influence of Gender and Age. *Research Square*. <https://doi.org/10.21203/rs.3.rs-7166510/v1>
- Qu, Y., Tan, M. X. Y., & Wang, J. (2024). Disciplinary differences in undergraduate students' engagement with generative artificial intelligence. *Smart Learning Environments*, 11, 51. <https://doi.org/10.1186/s40561-024-00341-6>
- Tijani, B. E., & Adeduyigbe, A. M. (2026). Students' perception of artificial intelligence in achieving adaptive learning in Nigerian universities. *Discover Education*, 5(1). <https://doi.org/10.1007/s44217-026-01292-5>
- Tveita, T. C., & Hagen, R. E. (2025). Students' attitudes towards artificial intelligence across disciplines in higher education. *European Conference on e-Learning*, 24(1), 471–474. <https://doi.org/10.34190/ecel.24.1.3817>
- Zhang, Baobao and Dafoe, Allan, (2019). Artificial Intelligence: American Attitudes and Trends. Available at SSRN: <https://ssrn.com/abstract=3312874> or <http://dx.doi.org/10.2139/ssrn.3312874>