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Thank you,

Professor Bonke Adepeju Omoteso,

Editor-in-Chief,

08035038069

PREVIEW OF VOL. 5, 2025 ISSUE OF THE JOURNAL OF EDUCATION, PSYCHOLOGY AND RESEARCH (JEPAR)

It is with great pleasure that I welcome you to Volume 5, 2025 issue of the Journal of Education, Psychology and Research (JEPAR). The journal is unique as authors are encouraged to submit studies addressing fundamental issues that advance scholarship and make significant contributions to knowledge. It publishes issues regularly and welcomes papers from every specialty in the fields of Education, Psychology and other related areas of research in tertiary institutions in Nigeria and globally. This issue comprises twelve research articles presented at the 2025 Conference of Educational Psychology Society of Nigeria (EPSON) held from 11th to 14th November, 2025 on Artificial Intelligence, Psychology of Education and Research.

The issue starts with the article by Idowu Victoria Makinwa on the relationship between Artificial Intelligence (AI) usage, motivation, and academic performance among university students in Ondo State, Nigeria. With the increasing adoption of AI tools such as ChatGPT, Grammarly, and Google Bard in higher education, concerns have emerged regarding their influence on students' learning habits and academic outcomes. Using the descriptive survey research design, the study sampled 144 university students through simple random sampling. Data were collected using a validated instrument titled *AI and Motivation Scale (AIMS)* with a reliability coefficient of 0.73. The study examined the extent of students' AI usage and the combined influence of AI usage and motivation on academic performance. Findings revealed that AI usage among students was high, with ChatGPT identified as the most frequently used AI tool. The results further showed that AI usage positively influenced academic performance, while motivation contributed negatively. However, the joint contribution of AI usage and motivation to academic performance was weak and not statistically significant. The study concluded that although AI tools might support learning, they did not automatically guarantee improved academic achievement when combined with students' motivational factors. It therefore recommended responsible AI engagement and strengthened mentoring systems to guide students toward effective and productive study habits.

This study by Emmanuel Olajipe Awopetu and Oluwaseun Odunayo Adeyemo explored the use of Artificial Intelligence (AI) tools in English language essay writing among senior secondary school students in Ile-Ife, Osun State, Nigeria. Specifically, it examined the prevalence of AI tool usage, the educational benefits derived from these tools, and the challenges associated with their use. Using a descriptive survey design, data were collected from 150 students selected from ten secondary schools in Ife-East Local Government Area. The findings revealed that ChatGPT and Meta AI were the most frequently used AI tools for writing tasks. Students reported that AI tools enhanced their writing by improving grammar, vocabulary, sentence structure, organisation of ideas, and providing instant feedback. However, concerns such as overdependence on AI, diminished independent writing skills, inadequate training, internet connectivity problems, and loss of originality were also identified. The study concludes that AI has significant potential to improve students' writing competence when used

responsibly and ethically. It therefore recommends greater investment in digital infrastructure, the development of clear guidelines for the ethical use of AI in schools, and the promotion of balanced AI-assisted writing practices that encourage students' creativity and independent thinking.

Oluwafunmilayo Adedayo Ayoola and Wasiu Olasunkanmi Adeniyi in their study on Social *Networking and Self-Construal as Predictors of Interpersonal Relationships among Undergraduate Students in Private Universities in Osun State, Nigeria*, examined the level of interpersonal relationships among students and assessed the individual and joint influence of social networking and self-construal on students' ability to relate effectively with others. The study adopted the descriptive survey research design and sampled 1,200 undergraduate students selected through a multistage sampling technique from private universities in Osun State. Data were collected using three instruments: the *Interpersonal Relationship Scale (IRS)*, *Social Networking Questionnaire (SNQ)*, and *Self-Construal Scale (SCS)*. Data analysis involved percentages, frequency counts, Pearson Product Moment Correlation, and Multiple Regression analysis tested at the 0.05 level of significance. The findings revealed that the majority of students demonstrated a high level of interpersonal relationships. The results further showed a positive and significant relationship between social networking and interpersonal relationship, as well as between self-construal and interpersonal relationship. However, self-construal emerged as the stronger predictor of students' interpersonal relationships compared to social networking. The study concluded that students' perception and understanding of themselves played a more significant role in shaping interpersonal relationships than their engagement on social networking platforms. It therefore recommended that university authorities should encourage programmes that promote healthy self-development and responsible social networking among students.

In *Joint Influence of Parenting Styles and Intentional Parent-Child Relationships on the Moral Behaviour of Adolescents in Tertiary Institutions in Ibadan South West, Oyo State, Nigeria*, Elizabeth Oluwaseyi Ogundipe· and Olabisi T. Precious Killian investigated the increasing concerns over moral decadence among adolescents and its negative effects on families, communities, and society at large. Using a descriptive survey research design, the study sampled 580 students from tertiary institutions in the study area. Data were collected through a validated instrument titled *Parenting Styles and Intentional Parent-Child Relationship Questionnaire (PSIPRQ1)* with a reliability coefficient of 0.97. Descriptive statistics and multiple regression analysis were employed to analyze the data at the 0.05 level of significance. Findings revealed that authoritative parenting style had the strongest and most significant influence on adolescents' moral behaviour. The study also found that intentional parent-child time and communication were widely practiced and positively related to adolescents' moral development. Furthermore, the joint contribution of parenting styles and intentional parent-child relationship significantly predicted adolescents' moral behaviour, accounting for a very high proportion of the variance observed. The study concluded that positive parenting practices and deliberate parent-child interactions are crucial in fostering sound moral values among adolescents. It therefore recommended that parents intentionally create time for bonding, communication, and guidance in order to promote positive character development and bridge generational gaps among adolescents in tertiary institutions.

The study by Chioma Gloria Umunna, Charles Onwubiko, Nkechi Bridget Nwosu and Victor Chidi Nwanguma investigated the effect of the Project-Based Learning Strategy (PBLS) on students' interest and cognitive retention in secondary schools in Orlu, Imo State, Nigeria. The study was motivated by the need to improve students' engagement and long-term retention in English language composition writing through learner-centered instructional approaches. Guided by two research questions and two hypotheses, the study adopted a quasi-experimental pretest-posttest control group design. Two co-educational public secondary schools were purposively selected from Orlu Educational Zone 1, with a total of 87 Senior Secondary One (SS1) students participating in the study. Students in the experimental group were taught using the Project-Based Learning Strategy, while those in the control group received instruction through the teacher exposition method. Data were collected using the *Researchers-Made Interest-Retention Achievement Test (RMIRAT)*, which had a reliability coefficient of 0.78. Mean, standard deviation, and Analysis of Covariance (ANCOVA) were used for data analysis. Findings revealed that students exposed to PBLS demonstrated significantly higher interest and better cognitive retention in composition writing than those taught through the conventional teaching method. The study concluded that PBLS is an effective learner-centered instructional strategy that promotes active participation, collaboration, and sustained learning among students. It therefore recommended that English language teachers adopt Project-Based Learning Strategy to enhance students' interest and long-term retention in composition writing.

Joshua Olawale Oyedokun, Temitope Babatimehin and Olufunke Kehinde Opatunji assessed the psychometric qualities of the 2019 Basic Education Certificate Examination (BECE) Mathematics questions in Ekiti State using Item Response Theory (IRT). The study specifically examined the item difficulty and discrimination indices of the examination items, as well as their content validity, with the aim of providing empirical evidence for improving the quality of Mathematics assessments in the state. A descriptive survey research design was adopted for the study. The population consisted of all Junior Secondary School students who sat for the 2019 BECE Mathematics Examination in Ekiti State, from which 300 students were selected using a multistage sampling technique. Data were collected using the 2019 BECE Mathematics multiple-choice questions and Optical Mark Recognition (OMR) sheets. The data were analyzed using Microsoft Excel, R-Studio statistical packages, frequency counts, and percentages. Findings revealed that the examination items possessed moderate difficulty levels, indicating that the questions were appropriately structured for the candidates. The discrimination indices also showed acceptable internal consistency, suggesting that the items effectively distinguished between high- and low-performing students. Furthermore, the examination items demonstrated reasonable content validity. The study concluded that the 2019 BECE Mathematics Examination in Ekiti State exhibited satisfactory psychometric properties, making it a reliable instrument for assessing students' achievement in Mathematics. It therefore recommended continuous review and validation of examination items to maintain and improve assessment quality in secondary school Mathematics examinations.

Morakinyo O. Oyetayo and Abayomi D. Ilesanmi examined the influence of social vices on the academic achievement of undergraduates at Adeyemi Federal University of Education, Ondo with particular emphasis on its implications for counselling. The study was motivated by growing concerns over the involvement of university students in various social vices and the

negative consequences on their academic performance and personal development. The descriptive survey research design was adopted for the study. The population comprised all undergraduate students of Adeyemi Federal University of Education, while a sample of 300 students was selected through simple random sampling from six departments in the Faculty of Education. Data were collected using a self-developed instrument titled *Influence of Social Vices on Academic Achievement Questionnaire (ISVAAQ)*. The study was guided by three research questions, and the data collected were analyzed using simple percentage analysis. Findings revealed that social vices significantly influenced students' academic achievement and negatively affected their educational outcomes. The study further observed that involvement in social vices could result in serious consequences such as suspension, expulsion, poor academic performance, and even death. The study concluded that social vices pose a major threat to students' academic success and overall wellbeing. It therefore recommended that parents, counsellors, and other stakeholders provide adequate moral guidance, academic support, and counselling services, including socio-personal, educational, vocational, rehabilitation, and career counselling, to help students make positive life choices and improve their academic performance.

This position paper by Blessing Oreoluwa Adeosun, Fatimat Fadeke Zakariyah and Bukola Favour Akingbohungbe examined the integration of Artificial Intelligence (AI) into educational psychology as a means of enhancing cognitive engagement and improving students' learning outcomes. The study explored the convergence between AI technologies and educational psychology, highlighting the increasing role of AI-powered tools in modern teaching and learning processes. Guided by the Cognitive Load Theory, the paper examined how AI can support cognitive engagement through personalized instruction, adaptive learning, and active participation in classroom activities. The study further investigated the influence of AI-driven tools on students' academic achievement and overall learning experiences. Findings from the paper suggested that the integration of AI into educational practice has significant potential to improve teaching effectiveness and foster learner-centered education. However, the study emphasized that AI cannot completely replace conventional classroom learning, as meaningful student-teacher interaction remains essential for students' academic and emotional development. The paper concluded that the effective integration of AI into educational psychology can better prepare students for success in an increasingly technology-driven world. It therefore recommended the responsible inclusion of AI tools in teaching and learning while maintaining strong teacher-student relationships to ensure balanced and effective educational outcomes.

Kennedy Imasuen, (Ph.D) and Iyabo Ayodeji Ukanah compared the effectiveness of Artificial Neural Networks (ANN) and Classical Discriminant Analysis (CDA) in predicting undergraduate students' degree classifications at graduation using 100 Level GPA as a predictor. An ex-post facto design was adopted, involving 233 students from the University of Benin, Nigeria. Both predictive models were developed and evaluated using classification accuracy and cross-validation techniques. The findings of the study revealed that ANN and CDA achieved the same overall predictive accuracy of 72.5%, indicating that first-year academic performance is a strong predictor of graduation outcomes. Classical Discriminant Analysis (CDA) produced interpretable linear relationships between GPA and degree

classification, while ANN provided flexibility for modelling complex patterns. However, ANN did not demonstrate superior predictive performance when only one predictor variable was used. The study highlighted the importance of early academic performance monitoring for identifying students who may require intervention. It concluded that both CDA and ANN are useful predictive tools, with model selection depending on the need for interpretability or modelling flexibility. The findings have implications for educational planning, student support services, and evidence-based decision-making in higher education.

In *Brain and Bot: Artificial Intelligence Chatbots Usage and Cognitive Functioning among University Undergraduates in Osun State, Nigeria*", Kamorudeen Ayo Ibraheem and Gloria Aghogho Okunola examined the usage of Artificial Intelligence (AI) chatbots and their influence on the cognitive functioning of university undergraduates in Osun State, Nigeria. The growing adoption of AI tools in higher education has generated concerns regarding their psychological and cognitive effects on students' learning processes and mental engagement. The study specifically investigated the level of cognitive functioning among undergraduates, the extent of AI chatbot usage, and the degree to which AI chatbot usage influences students' cognitive functioning. The descriptive survey research design was adopted for the study, with a sample of 1,308 undergraduate students. Data collected were analyzed using descriptive statistics and regression analysis. Findings revealed that the majority of undergraduates demonstrated a moderate level of cognitive functioning, while nearly half of the respondents reported a high level of AI chatbot usage. The study further established a significant influence of AI chatbot usage on students' cognitive functioning, indicating that the increasing use of AI-powered chatbots plays an important role in shaping students' thinking processes, learning patterns, and cognitive engagement. The study concluded that AI chatbots have a meaningful impact on the cognitive functioning of university undergraduates. It therefore recommended that educational institutions should encourage the responsible and guided use of AI technologies in order to maximize their educational benefits while promoting critical thinking and healthy cognitive development among students.

The study by Olurotimi Israel Agbeja, Deborah Oluwatosin Dada and Stephen Okeowo investigated the influence of locus of control and selected demographic factors on the predisposition of undergraduate students toward self-employment in universities in Osun State, Nigeria. The research was motivated by the growing challenge of youth unemployment and the need to understand factors that encourage entrepreneurial intentions among graduates. The study adopted the descriptive survey research design and sampled 900 final-year students selected through a multistage sampling technique from three universities in Osun State. Data were collected using the *Determinants of Predisposition to Self-Employment Questionnaire (DPSEQ)*, developed from validated scales on locus of control and entrepreneurial predisposition. Findings revealed that the majority of the undergraduates demonstrated a moderate predisposition toward self-employment, while a considerable proportion showed a positive entrepreneurial orientation. Regression analysis further showed that locus of control significantly and positively influenced students' predisposition to self-employment, indicating that students who believed in personal control over life outcomes were more likely to develop entrepreneurial intentions. However, demographic variables such as age, sex, course of study, birth order, and parents' socioeconomic status did not significantly influence students'

predisposition to self-employment. The study concluded that locus of control is a major psychological factor influencing entrepreneurial orientation among undergraduates, whereas demographic factors have minimal effect. It therefore recommended that educators, career counsellors, and policymakers develop programmes that strengthen students' self-confidence, initiative, and entrepreneurial mindset in order to promote self-employment among Nigerian graduates.

In the article titled *AI-Driven Tools in Addressing Learning Gaps in Overcrowded Classrooms: Supporting Undergraduates with Diverse Learning Needs in Oyo Metropolis",* Bolanle Idayat Olagunju, Lawrence Olagoke Adika, Olugbenga Oladapo Ayena, Oyekola Olukayode Oyelade and Esther Adebimpe Ogunwole assessed the potential of Artificial Intelligence (AI)-driven tools to address learning gaps among undergraduate students with diverse learning needs in overcrowded classrooms in Oyo Metropolis, Nigeria. Using an explanatory sequential mixed-methods design, data were collected from 320 students and 15 lecturers in two public universities. Findings revealed significant learning gaps in critical thinking, practical application of knowledge, and students' confidence in succeeding within overcrowded learning environments. Although awareness of AI tools was moderately high, actual access and utilization remained low due to poor internet connectivity, unstable power supply, and inadequate training. Students showed strong preference for adaptive learning systems and intelligent tutoring tools that provide personalized learning support. The findings align with Constructivist Learning Theory and Universal Design for Learning principles, emphasizing learner-centered and inclusive instruction. The study concluded that AI-driven tools could help restore personalization and improve learning outcomes in large classes. It recommended investment in digital infrastructure, faculty capacity building, and policies that support the ethical and effective integration of AI in higher education.

This study by Bukola Adurapemi Oluwafemi, Olurotimi Israel Agbeja, Abimbola Roseline Olawale-Jimoh and Rosemary Alaba Adeniyi examined the relationship between Artificial Intelligence (AI) adoption and teachers' self-efficacy in lesson preparation among secondary school teachers in Ibadan and Osogbo, Nigeria. Using the descriptive cross-sectional survey design, data were collected from 400 public secondary school teachers. The study investigated teachers' knowledge of AI tools, the influence of AI on lesson preparation, and the role of self-efficacy in AI adoption. Findings revealed that most teachers possessed a high level of knowledge of AI tools in education. AI was found to enhance lesson planning, reduce the time spent searching for instructional resources, and improve lesson organization. Results also showed that teachers with higher self-efficacy were more willing to adopt and utilize AI tools in lesson preparation. The study concluded that self-efficacy is a significant factor in successful AI adoption among teachers. It recommended continuous professional development and practical AI training to strengthen teachers' competence and confidence in integrating AI into teaching.

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VOLUME 5

CONTENTS

ARTIFICIAL INTELLIGENCE USAGE, MOTIVATION AND ACADEMIC PERFORMANCE OF UNIVERSITY STUDENTS IN ONDO STATE, NIGERIA

by

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Abstract

This study examined artificial intelligence (AI) usage, motivation and academic performance of university students in Ondo State, Nigeria. The growing integration of AI tools such as ChatGPT, Grammarly, Google Bard, and so on, into academic activities has raised questions about their impact on students' learning outcomes and motivation levels. The study was guided by two research questions and two hypotheses. The descriptive research design of the survey type was adopted for the study. The population comprised all University students in Ondo State, from which 144 respondents were chosen with the aid of simple random sampling technique. A validated questionnaire titled "AI and Motivation Scale (AIMS)" with a reliability coefficient of 0.73 (Cronbach Alpha) was employed for data collection. Data were analysed with frequency, percentage and Multiple Regression analysis at 0.05 margin error. Findings showed that the students' usage of AI is high and the most used AI is ChatGPT. Multiple regression analysis revealed that AI usage and motivation together had a weak but positive influence on academic performance. The joint contribution of AI and motivation to academic performance was not statistically significant ($R=0.193$, $R^2=0.037$, $F_{(2,141)}=2.728$, $p=0.069$). AI usage contributed to academic performance ($\beta=.320$, $t=2.140$, $p<0.05$) in a positive direction while motivation ($\beta=-.344$, $t=-2.301$, $p<0.05$) contributed in a negative direction. The study concluded that AI usage and motivation did not jointly enhance academic performance. The study recommended that universities promote responsible AI engagement and motivational support through mentoring and feedback should be strengthened to help students channel their drive toward productive study habits

Keywords*:* Artificial Intelligence, Motivation, Academic Performance, University Students, Ondo State

Introduction

The emergence of Artificial Intelligence (AI) has significantly changed the methods through which students learn, communicate, and interact with academic materials amid the evolving landscape of modern education. AI-driven technologies such as ChatGPT, Grammarly, Coursera, Google Bard, and other adaptive learning platforms have become integral to higher education environments, offering personalised learning experiences, immediate feedback, and efficient access to information. These tools not only enhance cognitive engagement but also provide learners with opportunities for independent study and self-directed learning. As universities in Nigeria, particularly those in Ondo State, embrace digital transformation, it is important to understand how AI usage and motivation relate to students' academic performance.

Intelligence is defined through both human cognitive functions and the capabilities of artificial systems designed to mimic those functions. Generally, it is the ability to carry out tasks that requires human cognition, like knowledge attainment, critical thinking, problem-solving, and decision-making (Chidiebere *et al*., 2024; Okwelogu & Olamoyegun, 2024). Artificial Intelligence (AI) can be described in terms of; simulation of human intelligence (Frankenfield, 2023), ability to perform human-like tasks (Copeland, 2023), programmes with human-like intelligence (Ogunode *et al*., 2023). Okwelogu and Olamoyegun (2024) described Artificial Intelligence (AI) as a field of study dedicated to creating agents or computer systems that can perceive their environment and make decisions accordingly, mimicking human cognitive functions such as learning, understanding, reasoning, interacting, adapting, synthesising, and self-correction.

In education, AI technologies include generative AI, adaptive learning systems, AI-powered feedback tools, and intelligent tutoring systems, all of which enable personalised instruction, data-driven evaluation, and virtual learning environments (Hu, 2024). Examples of generative AI tools are; ChatGPT, Microsoft Copilot, and Google Gemini, GitHub Copilot, etc, which are particularly transformative due to their ability to produce original and contextually relevant content using advanced natural language models (Almassaad *et al*., 2024). These tools facilitate individual learning, automate administrative tasks, and provide feedback immediately, thereby transforming traditional motivational constructs and academic achievement metrics (Anghel et al., 2025). Through real-time support, they enhance cognitive skills, stimulate motivation, and influence academic performance (Guidoum & Saadi, 2024).

Furthermore, AI contributes to digital literacy and critical thinking, empowering students with necessary competencies for educational and professional success in the digital era (Anghel et al., 2025). It has been shown to enhance students' performance by facilitating quick comprehension, supporting assignment completion, and promoting critical thinking through interactive learning. Basch, Hillyer, Gold, and Yousaf (2025) investigated undergraduate students' understanding, perceptions and patterns of use of artificial intelligence (AI), particularly in relation to classroom activities, academic tasks, and personal purposes. Yousaf (2025) The study reported that over half of the students demonstrated familiarity with AI tools which are widely adopted for academic and related purposes. However, over reliance on AI may result to decline in creativity, critical reasoning, problem solving capacity and self-motivation — factors essential for sustainable academic success (Chidiebere, 2024; Guidoum, 2024; Ododo, *et al.*, 2024; Vieriu & Petrea, 2025; Zhai *et al.*, 2024).

Motivation is the process that initiates, guides, and sustains goal-oriented behaviours, shaping a student's desire to participate in educational activities, their resilience, and learning outcomes (Idulsa & Luzano, 2024; Shuaili, 2025). Motivation is generally divided into two main types. They are intrinsic motivation and extrinsic motivation. The intrinsic motivation is driven by inner satisfaction and curiosity while the extrinsic motivation is influenced by external rewards which include grades or recognition. Motivation plays an important role in driving students towards academic excellence. Without sufficient motivation, students may lack the persistence, focus, and enthusiasm necessary for academic success, regardless of their intellectual potential. Consequently, understanding the interaction between motivation and AI engagement is essential for optimising academic performance.

Academic performance is a critical indicator of students' academic success, reflecting students' intellectual abilities, learning commitment, and the effectiveness of instructional delivery. A student's academic performance is usually affected by the interaction among internal, external, technological, and personal factors. Studies show that while internal motivations and personal characteristics are significant, external elements like school resources, teaching methods, and parental support also play crucial roles. Furthermore, the inclusion of modern technologies such as AI and social media gives both opportunities and challenges to students' academic performance (Eneye et al., 2025; Gella et al., 2025; Shuaili, 2025; Sukor, et al., 2017).

Researches on AI have been carried out across the globe in Australia, Spain, Switzerland, Qatar, Malaysia, South Africa, etc (Bentley *et al.*, 2024; Borges *et al.*, 2024; Bouteraa *et al.*, 2024; Cronje, 2023) to mention a few, which cut across all fields of study – engineering, business, law, education, business, sciences, and the humanities. Few research studies were conducted in Nigeria, focusing on the intersection of technology, education, and student outcomes. The studies explored the use of AI in academic environment, its consequences, and the factors influencing student and teacher performance in various Nigerian states, including Akwa Ibom, Ogun, Rivers, North-Central Nigeria, and Ondo State (Amuseghan & Emmanuel, 2025; Ejeh & Igbokwe, 2025; Eneye *et al.*, 2025; Nwile, 2025; Ododo *et al*., 2024; Okwelogu & Olamoyegun, 2024).

Academic performance, as a measure of learning success, traditionally depends on students' study habits, learning environments, and personal attributes. Guidoum and Saadi (2024) observed that the introduction of AI into educational practice adds new mediating mechanisms that influence performance outcomes. AI can diagnose learning challenges, personalised interventions, and offer adaptive feedback that caters to diverse learning needs. Empirical study has linked artificial intelligence utilisation to improved students' academic engagement suggesting that AI could enhance academic performance among students (Anierobi *et al.*, 2025). Students who perceive AI tools as supportive often demonstrate higher engagement and more effective learning strategies, while those who misuse or over-rely on AI may experience reduced critical-thinking skills and diminished self-motivation.

Artificial Intelligence has been shown to positively influence academic performance by improving learning efficiency, broadening access to knowledge, and offering individualised practice opportunities (Ododo *et al.*, 2024). Adaptive learning systems and AI-based platforms deliver personalised feedback that optimises students' learning trajectories and supports mastery of complex concepts (Vieriu & Petrea, 2025). Students confident in using AI often report better academic results and higher self-perceived competence (Anghel *et al.*, 2025). However, Anierobi *et al.* (2025) reported insignificant relationships between AI usage and academic satisfaction, suggesting that technological benefits may not translate directly into improved emotional or social learning outcomes.

Hinton *et al.* (2025) analysed 331 research reports on the use of AI in higher education and observed that while leaders in the faculties and institutions experimented with generative artificial intelligence (GenAI), its implementation and reports vary widely across different settings. The review revealed that ChatGPT features prominently in the literature, most of the research focused on undergraduate students, with only one study conducted in Nigeria and none

in Ondo State, underscoring the necessity of the present study. Wang and Fan (2025) sought to evaluate the impact of ChatGPT on enhancing the learning performance of students, perceptions of learning and higher-order thinking by conducting a critical review of 51 research articles published between November 2022 and February 2025. The findings reveal that ChatGPT significantly contributes to improving students' learning performance.

Shuaili (2025) investigated the contribution of intrinsic and extrinsic motivation to academic performance (measured by GPA) and learning attitudes of 890 students in Omani private and public schools. The findings indicate that while both types of motivation influence student outcomes, intrinsic motivation was more potent in predicting both academic performance and positive attitudes toward learning. The effect of extrinsic motivation, though positive was comparatively weaker, indicating that external rewards alone would not foster a long-term academic success or a genuine desire to acquire more knowledge. The correlation matrix in this study showed a weak negative correlation between both types of motivation and GPA, and regression analysis confirmed that motivation alone did not strongly predict academic performance. Sukor, *et al.* (2017) found a significant and positive relationship between motivation as a whole and students' academic performance.

AI's influence on motivation and academic performance is complex and multidimensional. Studies (e.g. Salleh *et al.*, 2025 and Anghel *et al.*, 2025) show that AI enhances motivation through personalised learning experiences that foster engagement and minimise frustration. By tailoring content and offering progress feedback, AI helps students feel competent and autonomous, thus heightening intrinsic motivation (Salleh *et al.*, 2025). Generative AI tools such as ChatGPT can also stimulate motivation by providing immediate feedback, simplifying complex tasks, and enhancing learning efficiency (Anghel *et al.*, 2025). However, certain challenges persist. Some students report anxiety or over-dependence on AI, which may reduce confidence in their independent learning abilities (Anierobi *et al.*, 2025). Research indicates that students with higher AI literacy and positive attitudes toward technology experience greater motivational and cognitive benefits than those with limited exposure (Salleh *et al.*, 2025; Anghel *et al.*, 2025).

In the Nigerian context, emerging research documents growing awareness and selective adoption of AI among students and lecturers. Adebayo (2024) found that university lecturers generally perceive AI tools as beneficial for enhancing student performance, creativity, and efficiency. Nonetheless, concerns about over-dependence, misinformation, and loss of interpersonal connection persist. Anayochukwu (2025) reported that while Nigerian students frequently use AI for assignments and administrative support, overall adoption remains uneven due to infrastructural limitations, inconsistent internet access, and varying levels of digital literacy. Despite this progress, empirical evidence examining how AI usage and motivation jointly influence academic outcomes among students in Ondo State remains scarce. The present study, therefore, investigated the contribution of AI and motivation to academic performance among university students in Ondo State. The findings are expected to inform policy and practice by guiding universities toward balanced strategies that promote responsible AI usage while nurturing students' intrinsic and extrinsic motivation for sustained academic excellence.

Research Questions

These research questions guided the study:

1. What is the level of Artificial Intelligence (AI) utilisation by university students in Ondo State?
2. Which AI tool is mostly used by university students in Ondo State?

Research Hypotheses

In line with the research questions, the following hypotheses were formulated.

1. There is no significant joint contribution of AI utilisation and motivation to the academic performance of university students in Ondo State.
2. There is no significant relative contribution of AI utilisation and motivation to the academic performance of university students in Ondo State.

Methodology

The descriptive research design of the survey type was adopted for the study. This design was chosen because it allowed the researcher to retrieve data from a sample representing the population of the study. It also examined the relationships among Artificial Intelligence (AI) utilisation, motivation, and academic performance without manipulating any variable. The design also supports the use of inferential statistics such as correlation and regression to determine predictive relationships among variables. The population of this study comprised all undergraduate students of public universities (both Federal and State) in Ondo State, Nigeria**.** This population was chosen because university students are among the most active users of digital and AI-based learning tools and represent diverse academic disciplines. A sample of 144 undergraduates were chosen with the aid of simple sampling technique**.**

A structured questionnaire "AI and Motivation Scale (AIMS)" designed by the researcher was used for data collection. The instrument consisted two sections: Section A was on the demographic data (gender, age, level of study, course of study, institution type, etc) of the respondents. Section B sought responses on the utilisation of AI tools (e.g., ChatGPT, Grammarly, Google Bard, Coursera), motivation and Academic Performance — measured using students' self-reported Cumulative Grade Point Average (CGPA) and self-evaluation of learning outcomes. The items were rated on a 4-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree). The instrument was subjected to face and content validity by three experts — one in Educational Psychology, one in Measurement and Evaluation, and one in Educational Technology. The feedback received led to the reconstruction or deletion of some ambiguous items and ensure alignment with the research objectives. A pilot study was conducted with 20 students from universities outside the study sample to determine the reliability of the instrument. The data obtained were analysed using Cronbach Alpha**,** yielding the coefficient of 0.73 which indicated high internal consistency and reliability of the questionnaire. Google Forms were distributed to respondents online via academic forum to collect data. Participation was voluntary, and respondents were assured of confidentiality and anonymity. Completed questionnaires were retrieved and screened for completeness before analysis. Data were analysed using both descriptive (frequency and

percentage) and inferential statistics (Multiple Regression Analysis). All the hypotheses were tested at 0.05 level of significance.

Results

Research Question: What is the level of Artificial Intelligence (AI) utilisation by university students in Ondo State?

To answer this research question, responses from 144 students were analysed using frequency and percentage. The level of AI utilisation was categorised into three levels of Low (0-18), Moderate (19-38), and High (39-56).

Table 1: ***Level of Artificial Intelligence (AI) Utilisation by University students***

Level	Range of scores	Frequency	Percentage (%)
Low	14-27	17	11.81%
Moderate	28-41	31	21.52%
High	42-56	96	66.67%
Total		144	100%

Note. Researcher's computation (2026)

Table 1 shows the distribution of respondents based on their level of AI utilisation. The findings reveal that 96(66.67%) students fall within the high level of AI utilisation, 31(21.52%) students reported moderate level of usage, while 17(11.81%) students are within the low level of utilisation. This shows that AI utilisation among university students in Ondo State is predominantly high which suggested widespread of its adoption and integration in students' academic activities.

Research Question 2: Which AI tool is mostly used by university students in Ondo State?

Table 2:*Type of AI tool mostly used by University Students in Ondo State*

AI TOOLS	F	%
ChatGpt	105	72.92
Meta AI	34	23.61
Gemini	1	0.69
QuilBot	1	0.69
Grammarly	1	0.69
Others	2	1.40
TOTAL	**144**	**100**

Note. Data collected from field survey (2026)

Table 2 shows that 105(72.92%) of the University students make use of ChatGPT, followed by Meta AI with 34(23.61%) users, each of Gemini, QuilBot, and Grammarly has 1(0.69%) users. This is an indication that though the students understand what AI means, they are not aware of the multiple tools available at their disposal for use to enhance their academic performance.

Hypothesis 1: There is no significant joint contribution of AI utilisation and motivation to academic performance of university students in Ondo State.

To test this hypothesis, the scores of AI utilisation and motivation were computed on the scores of academic performance using multiple regression analysis. The result is presented in Table 3.

Table 3: ***Summary of Multiple Regression Analysis of AI Utilisation and Motivation to Academic Performance of University Students in Ondo State.***

R	.193[a]	Model	Sum of Squares	DF	Mean Square	F	Sig
R Square	.037	Regression	3.791	2	1.895		
Adjusted R square	.024	Residual	97.954	141	.695	2.728	.069[b]
Standard Error	.83349	Total	101.745	143			

Table 3 shows that AI usage and motivation together have a weak but positive relationship with academic performance (R = 0.193). The predictors explain only a small portion (3.7%), of the variance in academic performance (R^2 = 0.037), suggesting that other factors not included in the model may have a stronger influence on students' academic performance. The ANOVA results show that, although AI usage and motivation together have a positive but weak influence on students' academic performance, this effect does not reach statistical significance at the 0.05 level (*F(2,141) = 2.728, p = 0.069*). Therefore, the null hypothesis cannot be rejected**.** The model does not jointly significantly predict academic performance.

Hypothesis 2: There is no significant relative contribution of AI utilisation and motivation to academic performance of university students in Ondo State.

To test this hypothesis, the scores of AI utilisation and motivation were computed on the scores of academic performance. The result is presented in Table 4.

Table 4: ***The Coefficient of Significance of AI Usage and Motivation to the Prediction of Academic Performance of University Students in Ondo State.***

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.299	.311		10.620	.000
AI Usage	.028	.013	.320	2.140	.034
Motivation	-.039	.017	-.344	-2.301	.023

a. Dependent Variable: CGPA

The regression coefficients in Table 4 revealed the individual contribution of the independent variables to the dependent variable. The unstandardised coefficient (B = 0.028) indicates that for every one-unit increase in AI Usage, the students' academic performance increases by 0.028 units, holding motivation constant. Conversely, B = -0.039 indicates that

for each one-unit increase in motivation, academic performance decreases by 0.039 units, when AI usage is held constant. The use of AI had a significant positive effect on students' academic performance ($\beta = 0.320$, $t = 2.140$, $p < 0.05$), also, motivation had a significant effect ($\beta = -0.344$, $t = -2.301$, $p < 0.05$), but in a negative direction. Therefore, the null hypothesis is rejected, there is a significant relative contribution of AI utilisation and motivation to academic performance of university students in Ondo State.

Discussion

The finding that AI utilisation is predominantly high among university students in Ondo State aligns with the study of Basch, Hillyer, Gold, and Yousaf (2025) reported that over half of the students demonstrated familiarity with AI tools which are widely adopted for academic and related purposes. This suggests that students are increasingly integrating AI technologies into their learning processes, likely due to accessibility, convenience and improved digital literacy. The students who demonstrated low and moderate level of AI usage could be attributed to limited access to digital resources, inadequate skills, or lower awareness of AI applications.

The finding that ChatGPT is the most widely used is in line with the global trend of students adopting conversational AI tools for academic support. Hinton *et al.* (2025) revealed that ChatGPT featured prominently in the literature, most of the analysed studies focused on undergraduate students. This high rate of usage suggests that students perceive ChatGPT as accessible, versatile, and effective in supporting their academic activities such as generating ideas, explaining difficult concepts, assisting with assignments, and providing quick responses to academic questions. In contrast, other AI tools recorded very low usage rates. This could be attributed to limited awareness, restricted functionality, subscription requirements, or students' preference for all-in-one AI platforms like ChatGPT that perform multiple tasks beyond writing correction of paraphrasing.

The positive and significant contribution of AI usage to academic performance aligns with earlier studies showing that the integration of AI tools enhances students' learning efficiency, engagement, and achievement (Almassaad et al., 2024; Hinton, Choi, & Kataria, 2025). The finding implies that students who effectively utilise AI applications such as ChatGPT, Grammarly, and adaptive learning platforms tend to achieve better academic outcomes due to improved access to knowledge, personalised feedback, and efficient study management. This supports the argument of Anghel *et al.* (2025) that AI tools can complement traditional learning methods by offering real-time assistance and fostering self-directed learning.

Interestingly, the study found a negative but significant contribution of motivation to academic performance. The finding is in line with Shuaili (2025) which showed a negative correlation between motivation and GPA, regression analysis confirmed that motivation alone did not strongly predict academic performance. However, Sukor *et al.* (2017) found a positive significant relationship between overall motivation and academic performance. The negative direction may suggest that while students report being motivated, their motivation might not be effectively directed toward productive academic strategies. Excessive pressure, unrealistic expectations, or misalignment between motivation type (extrinsic vs. intrinsic) and learning methods could also explain this inverse relationship.

The findings collectively suggest that while AI usage positively influences performance, motivation alone does not guarantee academic success unless it is supported by effective learning strategies and technological engagement. This underscores the importance of integrating both cognitive and technological support systems to optimise student achievement. The result aligns partly with Zhang and Li (2024) who emphasised that AI can serve as a mediator or enhancer of motivational effects, helping students sustain interest and engagement in learning activities.

Conclusion

The study concluded that while AI usage could enhance academic performance, motivation alone may not be sufficient unless properly guided and supported through structured academic interventions. Thus, effective learning outcomes in the AI era require a balance between technological engagement and directed motivational support**.**

Recommendations

Based on the findings, it is recommended that Universities integrate AI tools such as ChatGPT, Grammarly, and adaptive learning systems into teaching to enhance students' learning efficiency. Institutions should also provide AI literacy training to ensure ethical and effective use of these tools. Additionally, educational psychologists and counsellors should strengthen motivational support through mentoring and feedback to help students channel their drive toward productive study habits.

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EXPLORING ARTIFICIAL INTELLIGENCE IN SENIOR SECONDARY SCHOOL STUDENTS' ENGLISH LANGUAGE ESSAY WRITING IN ILE-IFE, OSUN STATE, NIGERIA

by

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Abstract

The study investigated the prevalence of Artificial Intelligence tools usage in writing tasks among senior secondary school students in Ile-Ife, Osun State. It also identified the benefits and examined the challenges associated with the use of AI tools in writing task of students in the study area. The study adopted the descriptive survey research design. The population comprised all senior secondary school students in Ile-Ife, Osun State. The sample comprised 150 senior secondary school students in Ife-East Area of Osun State. From the two local governments in Ile-Ife, Ife-East Local Government Area (LGA) was selected using simple random sampling technique. From the selected LGA, ten secondary schools were selected using simple random sampling techniques. In each school, 15 senior secondary school students were selected using purposive sampling techniques, students who have access to digital gadget only could fill the questionnaire, making a total of 150 respondents. Three instruments were used to gather information on the prevalence, benefits and challenges of AI tools usage in writing tasks of senior secondary school students in Ile-Ife, Osun State. Data were analysed using descriptive statistics of mean, standard deviation and percentage. The findings of the study showed that the prevalence of AI tools usage among students was Chat GPT at 62.0% in the study area. It was also found that AI tools improved students' mechanics. However, the result showed that students over relied on AI tools; there by, reducing their ability to write independently. The study concluded that AI tools could contribute meaningfully to the development of students' writing. It was recommended that Governments and school managements should invest in necessary digital infrastructure and establish clear guidelines regarding the ethical use of AI tools.

Keywords; Artificial Intelligence, writing, prevalence, benefits and challenges

Introduction

The integration of Artificial Intelligence (AI} into essay writing has the potential to revolutionise the writing skills of students of all grade levels, and teachers are now being challenged to either work with it or risk being left behind. Artificial intelligence (AI) refers to educational software system or computerised machine used to simulate human intelligence, comprehension, communication, learning experience and human-like solution to challenges (Awopetu & Adeyemo, 2024). According to United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2019), artificial intelligence is the theory and development of computer systems able to perform tasks normally requiring human intelligence. Scott (2024) defined artificial intelligence (AI) as technology that allows computers and machines to simulate human intelligence and problem-solving tasks. The scholar explained that the ideal

characteristic of artificial intelligence is its ability to rationalise and take action to achieve a specific goal.

Stryker and Kavlakoglu (2024) posited that artificial intelligence (AI) refers to computer systems capable of performing complex tasks that historically only a human could do, such as reasoning, making decisions, solving problems, creativity and autonomy. Alao (2025) averred that rapid advancement of digital and AI technologies have created digital native students who process information differently than previous generation. The scholar submitted that this generational shift necessitates a corresponding evolution in educational approaches, moving from traditional lecture-based models to more interactive, technology-enhanced learning experience.

Writing is an aspect in English language that allows learners to express their feelings and ideas on paper, to organise them, and convey meaning through well-constructed text (Adeyemo 2023). The scholar maintained that writing skill is an individual's intellectual or expression level. It has a unique position in language teaching. This is because to acquire skills in writing, an individual has to have the knowledge and be able to practice other three skills of language: listening, speaking and reading. As a basic language skill for Nigerian students; writing is being paid close attention to. Writing is important for students because it is used extensively in higher education and the workplace. Government has been trying its best to improve performance of students in writing and how to achieve this remains an arduous task for English teachers (Akinwamide, 2012).

The ability to write well is important to students' life generally and success in the English language examination specifically (Muhammad & Mohammed, 2018). Researches have shown that students are generally poor in written English (Ezeokoli & Igubor, 2016**).** According to Arana (2009) Formal letter writing is a fundamental topic to work with. Arana observed that students are not motivated towards writing and they are not getting good results in the formal writing activities. Adegoju and Adeleke (2019) affirmed that there are challenges which lead to a persistent disparity in creative writing. The scholars maintained that the limitation in the availability of resources and trained educators contributed to challenges faced by students in developing their writing skills. With the recent integration of digital tools and AI in education in many parts of the world, teaching and learning have been greatly improved (Alao 2025). Some studies such as Adegoju and Adeleke (2019,) Awopetu and Adeyemo (2024) have shown positive outcomes of AI in various contexts of writing. AI technologies have revolutionised education globally offering personalised and interactive learning experience including essay writings.

There are various classifications of artificial intelligence based on their capabilities and functionalities. Among the well-known artificial intelligence applicable to writings are Chat GPT, Google Bard, GPT-3, Chat AI, Meta AI, Google Gemini among others. Digital tools and AI tools have the potential to revolutionise literary education by creating and engaging interactive learning experiences that can help students develop creative writing skills. It provides instant feedback, and resources, which can benefit students' engagement and writing performance (Abubakar, Aliyu & Nurchalis, 2024)

Statement of the Problem

Writing is a crucial skill among secondary school students in Nigeria. Students need to master it as it is needed in all other subjects. Hence, it should be taught effectively for students to master the skills. Despite the importance of the core skills of English language writing in Nigerian secondary schools, students continue to demonstrate significant deficiencies. Evidence from West African Examination Examiners' Reports (2020-2024) showed that students struggle with vocabulary competence, creative thinking, and grammatical competence, among others. Scholars like Adeyemo, 2023 and Akinwamide, 2012 supported the use of continuous and frequent practice and feedback as a form of improving students' performance in English language writing.

It is challenging for teachers to give individualised feedback because of some issues including large class size, demanding teaching workloads, and time constraints. As a result of this feedback gap, an increasing number of students now relied on AI-powered writing applications for academic support outside of the classroom instruction. Previous studies have shown that AI technology-driven tools, such as ChatGPT, Meta AI and Grammarly, offer potential solutions to these problems. The adoption of AI in secondary schools is still at an early stage. Understanding their awareness, merits and demerits will provide insights into the potential of AI integration to complement classroom instruction, boost writing proficiency, and shape future pedagogy. In Ile - Ife, Osun-State, not many facts have been established about the merits, demerits, and usage of AI tools in writing task. Therefore, there is a need to explore the use of AI tools for writing task, hence this study.

Theoretical Framework

Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a framework used to explain why and how people adopt new technologies. The theory was developed by Venkatesh et al. in 2003. It consolidates eight earlier theories (like the Technology Acceptance Model) into a single, comprehensive model. The theory proposes that an individual's actual use of a technology is primarily driven by their behavioral intention to use it, which in turn is shaped by four core factors:

Performance Expectancy: Performance Expectancy is the degree to which a person believes that using a technology will help the user gain benefits in job performance. *(e.g., "Will this new software help me finish my tasks faster?")* Performance Expectancy pulls together concept like perceived usefulness, extrinsic motivation theory. Job-fit and relative advantage. This construct is affected by task fit, speed and efficiency, output quality and rewards of the work, Viswanath Venkatesh et al. found Performance Expectancy the strongest predictor of behavioural intention to use a technology.

Effort Expectancy: Effort Expectancy is the degree of ease associated with the use of the technology. (e.g., "Is this application simple to learn and navigate?"). It is affected by perceived ease of use, complexity of the system, time needed to get good at it. Effort Expectancy strongly predicts intention to use, but only in the early stages of experience. Once people get used to a system, it matters less. It is stronger for women, older users, and in mandatory-use setting.

Social Influence: Social Influence is the degree to which the user perceives that important others (peers, bosses, family) believe they should use the new technology. (e.g., "Are all my co-workers using this platform?). It matters most when use is mandatory, in early stages of adoption, for women and older workers. In voluntary settings, it has almost no effect.

Facilitating Conditions: Facilitating Conditions is the belief that organisational and technical infrastructure exists to support usage of the system. (e.g. Do I have the resources, help. and compatibility to actually use this?). It does not directly affect intention to use. Instead, it directly affects actual use behaviour.

The impact of these factors is influenced by four moderators, reflecting individual differences: gender, age, experience, and voluntariness of use (whether use is mandatory or optional).

Overview of Artificial Intelligence

Artificial intelligence (AI) stands as an advanced technological frontier, simulating human intelligence through machine learning algorithms, neural networks, and natural language processing (NLP). Its transformative impact extends across diverse industries, encompassing healthcare, finance, and manufacturing. In recent years, AI has emerged as a potent force in educational management, revolutionising the learning landscape. It contributes to enhancing the learning process, elevating student outcomes, and streamlining administrative tasks. Positioned at the forefront of the fourth educational revolution, AI represents a key driver of technological progress, reshaping societies and economies globally. The study of intelligent machines and software capable of reasoning, learning, knowledge acquisition, communication, manipulation and perception defines the realm of artificial intelligence. Despite the strength of artificial intelligence in most discipline, it has some shortcomings which users need to take cognisant of. Occasionally, AI can misinterpret context, leading to misunderstanding. It lacks the originality of human thought and its capability depends on availability of data.

Influence of Artificial Intelligence on writing

Sunday-Cookey and Nwankwo (2025) explored AI in Nigerian secondary school administration. The study revealed that Artificial intelligence (AI) is transforming the education sector globally, and secondary schools in Nigeria are not exempted from this revolution. The integration of AI in secondary schools in Nigeria provides numerous opportunities like improved student learning outcomes, enhanced teacher productivity, and more efficient school administration. The study also found that AI-powered adaptive learning systems can provide students with personalised learning experiences, while AI-powered intelligent tutoring systems can offer one-on-one support to students. More so, AI-powered chatbots can facilitate parent-teacher communication, improving parental engagement and involvement in their child's education. However, the study submitted that the integration of AI in secondary schools in Nigerian poses significant challenges, including inadequate infrastructure, limited access to technology, and concerns about data privacy and security.

Similarly, Oduma et al. (2025) looked at the impact of Artificial Intelligence (AI) on the academic performance of secondary school students in Ika South Local Government Area, Delta State, Nigeria. The findings revealed a meaningful relationship between AI tools and students' level of assimilation. Oladayo et al. (2025) also examined the impact of artificial

intelligence (AI) on learning outcomes and cognitive development among secondary school students in Delta State. It was ascertained that incorporating technology extends positive improvement of learners' performance by enabling learner-centred practices, enhancing cognition, and embracing self-motivated learning.

Purpose of the Study

The purpose of the study was to explore Artificial Intelligence tools usage in writing tasks among senior secondary school students in Ile-Ife, Osun State.

The specific objectives of the study were to:

1. investigate the prevalence of Artificial Intelligence (AI) tools usage in writing tasks among senior secondary school students in Ile-Ife, Osun State;
2. identify the benefits associated with the use of AI tools in writing skills of senior secondary school students in the study area;
3. examine the challenges associated with the use AI tools in writing task of senior secondary school students in study area.

Research Questions

1. What is the prevalence of Artificial Intelligence (AI) tools usage in writing tasks among senior secondary school students in Ile-Ife, Osun State?
2. What are the benefits associated with the use of AI tools in writing skills of senior secondary school students in Ile - Ife, Osun State?
3. What are the challenges associated with the use of AI tools in writing task of senior secondary school students in Ile-Ife, Osun State?

Methodology

The study adopted the descriptive survey research design. The population comprised all senior secondary school students in Ile-fe, Osun State. The sample consisted of 150 senior secondary school students in Ife-East Area of Osun State. From the two local governments in Ile-Ife, Ife-East Local Government Area (LGA) was selected using simple random sampling technique. From the selected LGA, ten secondary schools were selected using simple random sampling techniques. In each school, 15 senior secondary school students were selected using purposive sampling techniques, students who have access to digital gadget only could answer the quest*i*onn*a*ires, making a total of 150 respondents.

Three instruments were designed to gather information from the respondents. They were Questionnaire on the Prevalence of AI Usage for Writing Task (QPAUWT), Questionnaire on the Benefits of Using AI Tools for writing Task (QBUATWT), and Questionnaire on the challenges of Using AI Tools for writing Task (QCUATWT). Data were analysed using descriptive statistics of means, standard deviation, and percentage. These instruments were subjected to face and content validity by three experts from Department of Arts and Social Science Education, Department of English Language, and Department of Test and Measurement, Obafemi Awolowo University, Ile-Ife. For the face validity, the external appearance of the items were checked by the experts on basis of item ambiguity, relevance, and sentence structure. Inappropriate and irrelevant items were identified and removed,

suggestions were made for modification where necessary and corrections were effected. The researcher also sought the permission of Principals and Heads of Departments of the selected secondary schools about the study and administration of the instruments.

Results

Research Question One: What is the prevalence of Artificial Intelligence tools usage in writing tasks among senior secondary school students in Ile - Ife, Osun State?

In order to answer this research question, data collected on the Artificial Intelligence tools usage in writing tasks among senior secondary school students were subjected to descriptive statistics, specifically, frequency counts and percentages. The results are presented in Tables 1

Frequency = f; Percentage = %

Table 1: Descriptive Analysis of the Prevalence of Artificial Intelligence Tools Usage in Writing Tasks among Senior Secondary School Students in Ile-Ife, Osun State

S/N	Artificial Intelligence Tools	Used f(%)	Not Used f(%)
1.	ChatGPT	93(62.0)	57(38.0)
2.	Grammarly	50(33.3)	100(66.7)
3.	Quilbot	36(24.0)	114(76.0)
4.	Meta AI	85(56.7)	65(43.3)
5.	Pro Writing Aid	28(18.7)	122(81.3)
6.	Slick Write	18(12.0)	132(88.0)
7.	Heming Way Editor	15(10.0)	135(90.0)
8.	Jasper AI	17(11.3)	133(88.7)
9.	Chat PDF	42(28.0)	108(72.0)
10.	AI Chatting	36(24.0)	114(76.0)
11.	Google Gemini	53(35.3)	97(64.7)
12.	Deep Seek	17(11.3)	133(88.7)
13.	Claude	19(12.7)	131(87.3)
14.	Chat Sonic	16(10.7)	134(89.3)
15.	Microsoft Copilot	19(12.7)	131(87.3)

N = 150

The results in Table 1 show the descriptive analysis of the prevalence of Artificial Intelligence tools usage in writing tasks among senior secondary school students in Ile-Ife, Osun State. Considering highest percentage in each item, it could be deduced from the Table that Chat GPT 62.0% and Meta AI 56.7% are the Artificial Intelligence tools usage in writing tasks among senior secondary school students in Ile-Ife, Osun State. Moreover, the most prevalence of Artificial Intelligence tools usage in writing tasks among senior secondary school students was Chat GPT at 62.0% in the study area.

Research Question Two: What are the benefits associated with the use of artificial intelligence (AI) tools in writing skills of senior secondary school students in Ile - Ife, Osun State?

In order to answer this research question, data collected on the various benefits associated with the use of artificial intelligence (AI) tools in writing skills of senior secondary school students

were subjected to descriptive analysis of frequency, percentage and mean statistical tools having summed up the responses of the respondents to each item considering ‘’Strongly Agree’’ (SA) and ‘’Agree’’ (A). The results are presented in Table 2.

Frequency = f; Percentage = %; Mean = $\bar{x}$

Table 2: Descriptive Analysis of the Benefits Associated with the Use of Artificial Intelligence (AI) Tools in Writing Skills of Senior Secondary School Students in Ile - Ife, Osun State

S/N	Benefits of artificial intelligence tools usage	f (%)	$\bar{x}$
1.	Reduction in spelling and grammatical mistakes	124(82.7)	3.11
2.	AI tools improve one writing skills	118(78.7)	2.99
3.	AI tools improve one vocabulary development	98(65.4)	2.85
4.	AI tools enhance sentence structure	79(53.3)	2.59
5.	AI tools provide immediate feedback	119(79.4)	3.12
6.	AI tools help write faster and save time	114(76.0)	3.02
7.	AI tools help in organizing ideas logically	111(74.0)	2.96
8.	AI tools help in addressing writing tasks	99(66.0)	2.85
9.	AI tools make learning English writing easier	101(67.3)	2.88
10.	AI tools increase one interest in writing	96(64.0)	2.79
11.	AI tools promote different writing styles	92(61.4)	2.65
12.	AI tools improve writing scores in schools	93(62.0)	2.77
13.	AI tools promote one editing skills	107(71.3)	2.83
14.	AI tools help one learn from one past writing mistakes	104(69.3)	2.91
15.	AI tools encourage one to write often	104(69.3)	2.95

N = 150

The results in Table 2 show the descriptive analysis of the benefits associated with the use of artificial intelligence (AI) tools in writing skills of senior secondary school students in Ile-Ife, Osun State. Considering mean values, it can be gathered from the Table that reduction in spelling and grammatical mistakes **(**$\bar{x}$ = 3.11), improving students writing skills ($\bar{x}$ = 2.99), improving one vocabulary development ($\bar{x}$ = 2.85**)**, enhancing sentence structure (**$\bar{x}$ =** 2.59**)**, providing immediate feedback ($\bar{x}$ = 3.12), writing faster and save time ($\bar{x}$ = 3.02), organising ideas logically ($\bar{x}$ = 2.96), addressing writing tasks ($\bar{x}$ = 2.85**)**, making learning English writing easier ($\bar{x}$ = 2.88), increasing students’ interest in writing ($\bar{x}$ = 2.79**)**, promoting different writing styles ($\bar{x}$ = 2.65**)**, improving writing scores in schools ($\bar{x}$ = 2.77**),** promoting students’ editing skills ($\bar{x}$ = 2.83**),** helping students learn from their past writing mistakes ($\bar{x}$ = 2.91) and encouraging students to write often ($\bar{x}$ = 2.95**)** are the benefits associated with the use of artificial intelligence (AI) tools in writing skills of senior secondary school students in Ile-Ife, Osun State.

Research Question Three: What are the challenges of using AI tools in writing task of senior secondary school students in Ile-Ife, Osun State?

In order to answer this research question, data collected on the various challenges associated with the use of artificial intelligence (AI) tools in writing task of senior secondary school students were subjected to descriptive analysis of frequency, percentage and mean

statistical tools having summed up the responses of the respondents to each item considering ''Strongly Agree'' (SA) and ''Agree'' (A). The results are presented in Table 3.

Frequency = f; Percentage = %; Mean = $\bar{x}$

Table 3: Descriptive Analysis of the Challenges Associated with the use of Artificial Intelligence (AI) Tools in Writing Tasks f Senior Secondary School Students in Ile-Ife, Osun State

S/N	Challenges of artificial intelligence tools usage	f (%)	$\bar{x}$
1.	Overreliance on the use of AI tools	63(42.0)	2.33
2.	Understanding suggestions made by AI tools	78(52.0)	2.49
3.	AI tools occasionally give confusing feedback	72(48.0)	2.45
4.	Issue of internet connections	82(54.7)	2.77
5.	Reduction in ability to write independently	77(51.3)	2.58
6.	Uncertainty about the use of AI tools by teachers	88(58.6)	2.66
7.	Fear of copying AI generated contents	76(50.6)	2.58
8	AI tools are not suitable for local writing context	75(50.0)	2.66
9.	Poor device to make use of AI tools	90(60.0)	2.75
10.	Uncertainty about the use of appropriate AI tools	85(56.7)	2.69
11.	Suggestions of complex words from AI tools	95(63.3)	2.75
12.	Inadequate training for the use of AI tools	98(65.4)	2.76
13.	Encouragement of laziness to proofread work	73(48.7)	2.50
14.	Loss of writing originality	90(60.0)	2.69
15.	Disparity in what teacher taught and AI tools	69(46.0)	2.58

N = 150

The results in Table 3 show the descriptive analysis of the challenges faced in the use of artificial intelligence (AI) tools in writing task of senior secondary school students in Ile-Ife, Osun State. Considering mean values, it can be observed from the Table that overreliance on the use of AI tools ($\bar{x}$ = 2.33**),** understanding suggestions made by AI tools ($\bar{x}$ = 2.49**),** AI tools occasionally give confusing feedback ($\bar{x}$ = 2.45**),** issue of internet connections ($\bar{x}$ = 2.77), reduction in ability to write independently ($\bar{x}$ = 2.58**),** uncertainty about the use of AI tools by teachers ($\bar{x}$ = 2.66**),** fear of copying AI generated contents ($\bar{x}$ = 2.58**),** AI tools are not suitable for local writing context ($\bar{x}$ = 2.66**),** poor device to make use of AI tools ($\bar{x}$ = 2.75**),** uncertainty about the use of appropriate AI tools ($\bar{x}$ = 2.69**),** suggestions of complex words from AI tools ($\bar{x}$ = 2.75**),** inadequate training for the use of AI tools ($\bar{x}$ = 2.76**),** encouragement of laziness to proofread works ($\bar{x}$ = 2.50**),** loss of writing originality ($\bar{x}$ = 2.69) and disparity in what teacher taught and AI tools ($\bar{x}$ = 2.58**)** are the challenges faced in the use of artificial intelligence (AI) tools in writing task of senior secondary school students in Ile-Ife, Osun State.

Findings and Discussion

The study showed that Chat GPT 62.0% and Meta AI 56.7% are prevalent AI tools in writing tasks among senior secondary school students in Ile - Ife, Osun State. More so, Chat GPT at 62.0% was the most prevalent in the study area. The study aligns with the findings of Mahapatra (2024) which showed that Chat GPT has positive impact on students' academic writing skills and students' perception. It is also in consonance with the results of the study of

Kiziltaz (2025) which indicated that Chat GPT is effective in developing creative writing and writing self-efficacy skills among primary school pupils in Van, Turkey.

The study also found that senior secondary school students in the study area benefited immensely from the usage of AI tools such as Chat GPT and Meta AI in reduction in spelling and grammatical mistakes ($\bar{x}$ = 3.11), improving writing skills ($\bar{x}$ = 2.99), enhancing one vocabulary development ($\bar{x}$ = 2.85), enhancing sentence structure ($\bar{x}$ = 2.59), providing immediate feedback ($\bar{x}$ = 3.12), and writing faster and save time ($\bar{x}$ = 3.02). The study is in accordance with the submissions of Wang and Fan (2025) which showed that AI tools such as Chat GPT tools have positive impact on learning performance, enhancing learning perception and fostering high-order thinking. The study further highlighted the challenges of using AI tools in writing task of senior secondary school students in the study area such as overreliance on the use of AI tools, complex suggestions made by AI tools, loss of writing originality and technical hitches. This corroborates Aduroja & Adetunji (2025) who found that Yoruba Language teachers perceived the challenges of using AI to teach Yoruba Language as stifling critical thinking of students.

Conclusion

Based on the findings of the study, it was concluded that if properly harnessed, artificial intelligence can contribute meaningfully to the development of students' writing competence and better prepare them for future academic.

Recommendations

The following recommendations are made:

1. Governments and school management should invest in necessary digital infrastructure.

2. Governments and school managements should establish clear guidelines regarding the ethical use of AI tools.

3. Students should make use of AI tools in supporting creative writing ability in writing rather than total reliance on them.

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SOCIAL NETWORKING AND SELF- CONSTRUAL AS PREDICTORS OF INTERPERSONAL RELATIONSHIPS AMONG UNDERGRADUATE STUDENTS OF PRIVATE UNIVERSITIES IN OSUN STATE

by

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Abstract

This study examined the level of interpersonal relationship among undergraduates in private universities in Osun State and assessed the influence of each of social networking and self-construal on students' interpersonal relationship. It established the joint influence of social networking and self- construal on students' interpersonal relationship as well as provided information on the factors that could influence the level of students' interpersonal relationship. The study adopted the descriptive survey research design. The population comprised all undergraduate students in eight private universities in Osun State, Nigeria. A sample of 1200 respondents was selected using multistage sampling technique. Three private universities were selected from the study area using simple random sampling. Four faculties within each institution were similarly selected at random, and one hundred students per faculty were subsequently recruited via convenience sampling. Three instruments titled Interpersonal Relationship Scale (IRS), Social Networking Questionnaire (SNQ) and Self- Construal Scale (SCS) were used to elicit information from the respondents. Percentages, frequency counts, Pearson Product Moment Correlation and Multiple Regression analysis were employed to analyse the data. The hypotheses were tested at the 005 level of significance. The results revealed that 12.3%, 37.3% and 50.4% of undergraduate students in Osun State demonstrated low, moderate and high levels of interpersonal relationships respectively. Also, the results revealed that there was positive and significant relationships between social networking and interpersonal relationships among the students ($N = 1183$, $r = 0.208$, $p < 0.05$). It was discovered that there was a significant relationship between self-construal and interpersonal relationships of students ($N = 1183$, $r = 0.520$, $p < 0.05$). Lastly, the result showed that self-construal ($\beta = 0.431$, $t = 19.231$, $p<0.05$) and social networking ($\beta = -0.057$, $t = -1.456$, $p<0.05$) contributed significantly in predicting students' interpersonal relationships. The study concluded that self-construal had a stronger influence on students' interpersonal relationships than social networking.

Keywords: Social networking, Self-construal, Interpersonal relationships, undergraduates of private university.

Introduction

The concept of interpersonal relationships describes evolving social bonds that shift in nature and depth throughout their existence. It encompasses the degree of closeness and connection that individuals cultivate with one another. Such bonds are foundational to students' academic achievement, psychological health, and social growth. Strong relational ties facilitate adjustment to university life, collaborative engagement, and access to peer support during difficult times. Nevertheless, the emergence of social networking has fundamentally altered how students initiate and sustain these connections. Although social media platforms offer avenues for maintaining contact and broadening social circles, their overuse or misuse can

diminish in-person engagement and erode the depth of relationships, making it increasingly important to understand how social networking shapes interpersonal bonds among university students (Olatunji &Abayomi, 2023).

The use of social networking has become a part of the life of undergraduate students particularly with the proliferation of social networking sites such as WhatsApp, Instagram, Facebook, and X (Twitter). Using such platforms, students can communicate, share experiences and build relationships that go far beyond face-to-face communication. To most students in privately-owned universities, social networking has become the driving force in the development of interpersonal relationships among students because of the digital means of communication, peer interaction, and self-expression, which are daily activities in these institutions (Chukwuere and Chukwuere, 2022).

Self-construal is another significant variable that influences interpersonal relations. Self-construal is a concept that describes the way people perceive themselves relative to others (Tanaka, 2023). There are those who work with an independent self-construal, who see themselves as independent and self-sufficient and those who have an interdependent self-construal, who see themselves as an integral part of their social groups and influenced by them. Such orientations determine how students converse, handle disagreements, and relate to peers (Simpson and Schermer, 2026). In the university setting, self-construal defines the engagement patterns of students whether on the digital platform or in real-life interaction (Drussel, 2012).

Private universities in Osun State is a unique social environment where students with different cultural, religious, and socioeconomic backgrounds come together, each with different communication norms and expectations of relations. The comparatively closed academic setting encourages frequent student interaction, which increases the importance of healthy interpersonal relationships. At the same time, the increased access to internet-enabled devices has increased the use of social networking sites among students, making digital interaction one of the key aspects of their social lives (Owolabi and Fatoye, 2021; Bamidele and Okorie,2022).

Previous studies of the correlation between self-esteem and the use of social media have yielded inconclusive and mixed findings. Han and Yang (2023) carried out two studies that investigated the perceived relational-closeness as a moderator between social media use and self-esteem and the mediating processes. The authors applied a quasi-experimental technique to show that platforms that were weak in terms of relational-closeness (e.g., Tik Tok) were more likely to harm the self-esteem of users, whereas platforms that were strong in terms of relational-closeness (e.g., WeChat) had beneficial effects. In weak-closeness conditions, upward social comparison mediated the effect, whereas in strong-closeness conditions, the effect was mediated by perceived social support. The paper identifies the interdependence of self-construal as more likely to make interdependent individuals engage in constructing harmonious interpersonal relationships with other users.

Digital self-comparison has been found to pose a danger to mental health, and students, as one of the most active online groups, are more vulnerable. A study examining the hypothesis that self-construal type moderates social media self-comparison in college students established that regression findings showed interdependent construal only significantly predicted social

media self-comparison, and independent construal did not. The results offer an understanding of how the cultural elements, particularly the types of self-construal, may result in the development of social media self-comparison among university students (Tedjawidjaja and Christanti, 2024).

Wang et al. (2025) investigated the longitudinal relationships between loneliness and problematic social networking site use (PSNSU) in college students, with fear of missing out (FoMO) acting as a mediator. FoMO was theorized as a result of the need that was not fulfilled by stable interpersonal relationships. Students who reported higher loneliness were identified to be uncomfortable in the normal face-to-face social contexts, and thus they resorted to the use of online platforms as an alternative way of expanding their social circles and reducing the feeling of relational discomfort. The research found specific mediating roles of trait-FoMO and state-FoMO in problematic SNS use, and suggested to enhance offline interpersonal communication activities to solve these problems.

Xiong and Zhou (2025) examined the impact of online social interaction on socio-emotional competence of college students in the digital era with bonding social capital (parent-child and peer relationships) as a mediating factor. Based on the data of 693 undergraduates, who were sampled in the 2022 China Family Panel Studies, the findings demonstrated that online social interaction does not have a direct impact on socio-emotional competence but provides indirect advantages in the form of strengthening bonding social capital. Gender and urban-rural background differences provided some level of heterogeneity in the results, as bonding social capital was a relatively stronger mediator among male students and rural students.

This research thus aims at analysing social networking and self-construal as predictors of interpersonal relationships between students in private universities in Osun-State. Finally, The findings will help understand the social behaviour of students better and work on the creation of interpersonal relationships improvement strategies in the university environment.

Statement of the Problem

Interpersonal relationships take a central position in both academic and social life of university students. Effective student relationships create a culture of cooperation, support and effective communication - all of which are vital to personal development and academic success. However, many students of private universities in Osun State face the problem of creating and maintaining positive interpersonal relationships, which often appear in the form of communication failures, misunderstanding of intent, conflict with peers, and social isolation.

The increased popularity of social networking sites has changed the character of student-to-student interaction. Although these sites offer convenient means of communication and social interaction, they also threaten to replace meaningful face-to-face interaction and encourage superficial instead of deep relationship development. A part of the students that rely mostly on the digital communication can have their ability to engage in real-life relational competence undermined over time. Although the social networking has become very widespread in the life of students, its impact on the overall quality of interpersonal relationships is still not well comprehended.

In addition to social networking, the difference in the self-construal orientations of students can also influence the quality of their relational interactions. Independent self-viewers are more likely to focus on personal goals and self-expression and interdependent oriented are more likely to focus on the collective harmony and belonging. These differences have some implications in the way students communicate, how they resolve interpersonal conflict, and how they behave socially, both online and in real life.

Despite the fact that past literature has investigated social networking, self-construal, and interpersonal relationships independently (Han and Yang, 2023; Tedjawidjaja and Christanti, 2024; Wang et al., 2025; Xiong, and Zhou, 2025)., there is a lack of empirical studies that integrate the variables, especially among students in Osun State, in private universities. This knowledge gap complicates the efforts of educators, counsellors and university administrators to devise effective strategies that can enhance healthy interpersonal relationships among students.

This study, therefore, aims to investigate how social networking and self-construal predict interpersonal relationships among students in private universities in Osun State.

Objectives of the Study

The specific objectives of the study are to:

1. ascertain the level of interpersonal relationship among undergraduates in private universities in osun state;
2. assess the relationship between each of social networking, self-construal and interpersonal relationship of undergraduates; and
3. examine the contribution of each of self-construal and social networking to interpersonal relationship of undergraduates.

Research Question

From the above objectives, one research question was raised:

What is the level of interpersonal relationship among undergraduates in private universities in Osun State?

Research Hypotheses

Based on the review of extant studies, the hypotheses below are formulated and tested at 0.05 level of significant.

H01: There is no significant relationship between social networking and interpersonal relationship among undergraduates in private universities.

H02: There is no significant relationship between self-construal and interpersonal relationship among undergraduates in private universities.

H03: A combination of social networking and self-construal will not significantly predict the interpersonal relationship among undergraduates in private universities.

Methodology

Research Design: The descriptive survey research design was employed, with structured questionnaires administered to gather data from participants on the variables under investigation. Social networking and self-construal served as the independent variables, while interpersonal relationship constituted the dependent variable.

Sample and Sampling technique

The participants in this study were undergraduates' students of private universities in Osun state. Multistage sampling technique was employed to select 1200 students from the study area. Three private universities were selected from the study area using simple random sampling technique. From each university, four faculties were selected using simple random sampling technique. From each faculty, 100 students were selected using convenience sampling technique. This approach ensured equal representation and minimized sampling bias.

Their demographic characteristics depicted that 642 (53.4%) of the respondents were female, while 541(46.4%) were male. Among the sampled participants, 811 participants (67.6%) were between 16-20 years, 313 (26%) were between 21-25 years and 59(49.2%) were between 26-30 years. Three Hundred and Eighty-Three (383) students were from BOWEN University, 400 students were from Joseph Ayo Babalola University and 400 students were from Redeemer's University.

Three instruments, titled "Interpersonal Relationship Scale (IRS)", "Self-Construal Scale" (SCS) and "Social Networking Questionnaire" (SNQ) were administered to gather responses from participants in this study. All three instruments were adapted versions of tools previously developed and validated by other researchers. The IRS was used to gather information on student's interpersonal relationship, SNQ consisted items that measured student's attitude and behaviour about social networking while SCS was used to collect data on students' thoughts, feelings toward the self in relation to others, as well as the self as a separate and distinct entity.

The description of the instrument is as follows:

The IRS comprised two distinct sections. The first captured background information through seven demographic items relating to participants' personal characteristics. The item included name of school, sex, faculty of study, department, level, course of study and age range. The second section of IRS comprised 2O items on student's interpersonal relationship. This section was developed to assess the degree of interpersonal connection existing among students. Responses were recorded on a four-point Likert-type scale ranging from "Strongly Agree" to "Strongly Disagree," assigned numerical codes of 4, 3, 2, and 1 respectively.

The original version of this instrument by Flisinger (2000) contained 20 items. Some items were reconstructed in order to suit the cultural peculiarities as well as for easy understanding of the respondents. The items on the demographic variables were coded in line with the number of sub-group within each item. For instance, male was coded 1 and female 2 respectively. To derive a composite score for each student, individual item scores were summed and the mean computed to represent each participant's standing on the interpersonal relationship scale. The

overall mean was 55.06 with a standard deviation of 7.5, and scores ranged from 20.0 to 60.0. Students whose scores fell one standard deviation below the mean (i.e., 20–47) were categorised as demonstrating a low level of interpersonal relationship, while those scoring between 48 and 55 (within one standard deviation above the mean) were classified as having a moderate level of interpersonal relationship, and those scoring 56 and above were categorised as exhibiting a high level of interpersonal relationship.

The second instrument SCS consisted of 20 items on student's self- construal. This scale was similarly intended for student use, with responses elicited on a four-point continuum from "Strongly Agree" to "Strongly Disagree." The SCS was an adapted instrument from the works of Leung and kim (1997), Singelis (1994), and Gudykunset, Matsumoto, Ting-Toomey, Nishida, Kim and Heyman, (1996). The source instrument comprised 26 items originally developed to assess students' self-construal orientations. Out of the 26 items, the researcher adapted 20 items that are relevant to the study.

The third instrument was Social Networking Scale (SNQ) which comprised 20 items which were adapted from the work of Drussel (2012). This scale was developed specifically for student respondents, who rated each item on a four-point continuum from "Strongly Agree" to "Strongly Disagree."

Data collection for this study was conducted by the researchers and the researchers' assistants. The researchers personally facilitated the distribution of the questionnaires to ensure that participants understood the purpose of the study. Verbal consent was obtained from each participant, to maintain ethical standards, all participants were guaranteed that their responses would remain strictly private and that individual identities would not be disclosed.

Both descriptive and inferential statistical methods were applied in the analysis of the collected data. Frequency distributions and percentage calculations were used to describe the demographic profiles of participants and summarise their levels of interpersonal relationship. Hypothesis testing was carried out using inferential statistical procedures. Specifically, Pearson's product-moment correlation coefficient was applied to examine the degree of association between social networking and interpersonal relationship among undergraduate students in private universities. Furthermore, multiple regression analysis was used to determine the combined influence of self-construal and social networking on students' interpersonal relationship. All hypotheses were tested at 0.05 level of significance. The results of the analyses were presented in tables accompanied by narrative explanations linking the findings to the research questions.

Results

Table 1: Socio-Demographic Information of the Undergraduates

Institutions	Frequency(f)
BOWEN	383
Joseph Ayo Babalola University	400
Redeemer's University	400
Total	1183

Variables	Level	Frequency(f)	Percentage (%)
Faculty/Colleges	Agricultural science	283	23.8
	Humanities	300	25.4
	Management Science/ Social Sciences	300	25.4
	Natural Sciences/Sciences	300	25.4
	Total	1183	100.0
Part in School	One	188	15.9
	Two	665	56.2
	Three	131	11.1
	Four	199	16.8
	Total	1183	100.0
Sex	Male	541	45.7
	Female	642	54.3
	Total	1183	100.0
Age Range	15-20	811	68.6
	21-25	313	26.5
	26-30	59	5.0
	Total	1183	100.0
Place of Residence	Off Campus	-	-
	On Campus	1183	100.0
	Total	1183	100.0

Research Question One: What is the level of interpersonal relationship among undergraduates in private universities in Osun State?

Table 2: Level of Interpersonal Relationship among Undergraduates in Private Universities in Osun State

Level of Interpersonal Relationship	Frequency (f)	Percent (%)
Low	146	12.3
Moderate	441	37.3
High	596	50.4
Total	1183	100.0

In order to determine the level of interpersonal relationships among undergraduates, the respondents' scores on the relevant questionnaire items measuring interpersonal relationship were collated and computed in accordance with the established scoring guide. The scores for each were classified into three categories: low, moderate and high. The result shows the distribution of interpersonal relationship levels among undergraduates. Out of 1183

respondents, the majority 50.4% had high level of interpersonal relationships, followed by 37.3% with a moderate level and 12.3% with low level. This indicates that most students maintain a high level of interpersonal relationship in private universities in Osun state.

Hypothesis 1: There is no significant relationship between social networking and interpersonal relationship among undergraduates in private universities.

To test this hypothesis, a Pearson product moment correlation analysis was conducted to determine the relationship between social networking and interpersonal relationship of the students. The results are presented in Table 3

Table 3: Correlation between Social Networking and Interpersonal Relationship

Variables	n	$\overline{X}$	SD	R	p
Social Networking /Interpersonal Relationship	1183	53.42	5.39	. 208	.000 p < 0.05
	1183	55.07	7.51		

N= 1183, r= 0.208, p<0.05

As shown in Table 3, the mean score for social networking is 53.42 (SD=5.39), while the mean score for interpersonal relationship 55.07 (SD=7.51). The correlation coefficient between the two variables is r= 0.208, with a p-value of 0.05. This suggested there is a meaningful positive association between social networking and interpersonal relationship which was significant since p<.05.

Accordingly, the null hypothesis is rejected, confirming that a statistically significant relationship exists between social networking and interpersonal relationship among the students.

Research Hypothesis 2: There is no significant relationship between self-construal and interpersonal relationship among undergraduates in private universities.

To test this hypothesis, a Pearson product moment correlation analysis was conducted to determine the relationship between self -construal and interpersonal relationships of the students. The results are presented in Table 4

Table 4: Correlation between Self- Construal and Interpersonal Relationship

Variables	N	X	SD	r	P
Self-Construal /Interpersonal Relationship	1183	61.43	9.39	. 520	.000 p < 0.05
	1183	55.07	7.51		

N= 1183, r= 0.520, p<0.05

As shown in Table 4, the mean score for self-construal is 61.43 (SD=9.39), while the mean score for interpersonal relationship 55.07 (sd=7.51). The correlation coefficient between the two variables is r= 0.520 at 0.05 level of significance. This suggested a a confirmable and positive relationship between self-construal and interpersonal relationship which was found significant at 0.05 level of significance.

Therefore, the null hypothesis is accordingly rejected, confirming a statistically significant relationship between self-construal and interpersonal relationship among the students.

Research Hypothesis 3: A combination of social networking and self-construal will not significantly predict the interpersonal relationship among undergraduates in private universities.

In order to test this hypothesis, the dataset onself- construal, social networking and interpersonal relationship were subjected to multiple regression analysis. The result is shown in Table 5.

Table 5: Summary of Multiple regression Analysis of the Determinant of Undergraduates' Interpersonal Relationship through Self-Construal and Social Networking

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	P
Self-Construal Social Networking	.521	.272	.270	6.42	220.09	.000

Table 5 shows that using the independent variables (self-construal and social networking) to determine interpersonal relationship produced a multiple regression coefficient (R) of .521 and a multiple correlation square (R2) of 0.272. Both values attained statistical significance at the 0.05 level, indicating that the combination of self-construal and social networking constitutes a meaningful model for predicting interpersonal relationship among the undergraduates. The contributions of each of self-construal and social network are detailed in Table 6.

Table 6: Relative Contribution of the Independent Variables to the Determinant of Interpersonal Relationships

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	31.607	1.903		16.610	.000
	Social Networking	-.057	.039	-.041	-1.456	.146
	Self-Construal	.431	.022	.539	19.231	.000

a. Dependent Variable: Interpersonal Relationship

As shown in Table 6 students' social networking had t-value of -1.456 and beta weight of -0.057. Also, self-construal had t-values of 19.231 and beta weight of 0.539. At 0.05 level of confidence, while self-construal made a significant contribution to the model, social networking did not. An examination of the standardised beta coefficients and t-ratios for each predictor reveals that self-construal accounted for the greatest share of variance in the outcome variable, with social networking contributing to a lesser but notable extent.

On the basis of these results, it can be concluded that self-construal and social networking, when considered jointly, constitute significant predictors of interpersonal relationship among the undergraduate students.

Discussion of findings

This study yielded significant insights into the nature and patterns of interpersonal relationship exhibited by undergraduates in private universities in Osun State. Firstly, the results indicate that most students maintain an average level of interpersonal relationships' connections among their peers. This suggests that most students still recognize the importance of interpersonal interaction as a fundamental aspect of human experience and social adjustment. Liu et al. (2022) established that positive interpersonal relationships are significantly related to students' school adaptation, with social support and resilience serving as crucial mediating mechanisms that buffer the effect of relationship quality on academic and social outcomes. The finding of a low level of interpersonal relationship among some students explains the reality that a proportion of undergraduates are socially isolated and overwhelmed by online relationships. Abbasi et al. (2025) found that excessive online engagement could reduce face-to-face interactions, hinder the development of interpersonal relationships and social skills, and exacerbate social anxiety, consistent with the Social Displacement Hypothesis. Furthermore, Wang et al. (2025) noted that when social needs are not met in real life, individuals tend to seek satisfaction in the virtual world, where they can avoid real-life interpersonal challenges — a pattern that negatively correlates with the quality of interpersonal relationships among college students. It appears that when university students rely heavily on online relationships, they tend to lose the ability to interact effectively with others in real life, and this inability harms their relational skills. Smith et al. (2022) confirmed that disruptions to in-person interpersonal networks are associated with reductions in the number of social connections and the role diversity of students' networks, with implications for academic engagement and well-being. This suggests a need for interventions such as peer mentoring programs and social support initiatives in various institutions to enhance the quality of student relationships.

The study further revealed that social networking bears a statistically significant association with students' interpersonal relationships. Vauclair et al. (2023) provided empirical evidence across 19 countries confirming that instant messaging use with strong social ties is positively related to individuals' satisfaction with their relationships, suggesting that the nature of online interaction rather than mere frequency determines relational outcomes. However, Satti et al. (2023) found that frequency of time spent on social media increases false self-presentation and deteriorates interpersonal relationships, highlighting that excessive social media use carries negative consequences for the quality of real-life social bonds. These findings collectively underscore the need for balanced online and offline interactions among university students.

Conclusion

In conclusion, the study established that self-construal had a stronger influence on students' interpersonal relationships than social networking. Han and Yang (2023) demonstrated that individuals with interdependent self-construal are more likely to actively

construct harmonious interpersonal relationships with others, as they place greater emphasis on social connections and attend more carefully to others' feelings, needs, and well-being — making self-construal a more fundamental driver of relational quality than platform-level social networking behaviour.

Recommendations

Based on the findings, the study recommends that:

1. The university should create an avenue for healthy online interaction and responsible social media engagement for the students.

2. Counsellors should develop programs addressing interpersonal skills, self-awareness and relationship management.

3. The students should be encouraged to promote balanced online and offline interactions.

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JOINT INFLUENCE OF PARENTING STYLES AND INTENTIONAL PARENT-CHILD RELATIONSHIP ON ADOLESCENT MORAL BEHAVIOUR IN TERTIARY INSTITUTION IN IBADAN IN SOUTH WEST, OYO STATE

by

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Abstract

Anecdotal evidences on moral decadence among many adolescents abounds. This is having a profound negative psychological and sociological impact on not only the adolescents, but their families, communities and nations to which Nigeria is not exempted. This study therefore investigated the influence of parenting styles and intentional parent-child relationships as determinants of moral behaviours of adolescents in tertiary institutions in Ibadan South West, Oyo State, Nigeria. The Descriptive survey research design was employed. The population of the study was 580 students. The instrument- "Parenting Styles and Intentional Parent-child Relationship Questionnaire" (PSIPRQ1) (α=0.97) was used for the data collection. The data were analysed using descriptive and multiple regression analyses at 0.05 level of significance. The findings revealed that authoritative parenting was the most influencing parenting style on adolescents' moral behaviour which was statistically significant (r = .833, n = 5, p <0.05). Intentional parent-child time ($\bar{X}$=3.53, SD=0.69) is mostly practiced on moral development and behaviour of adolescents in tertiary institutions. The joint correlation (R=.994) of the independent variables and moral behaviours, with approximately 98.7% of the variance in moral behaviours explained by the predictors (R^2 =.987). Multiple regression revealed a highly significant F-statistic (22454.930, P < 0.05), indicating that both parenting style and intentional parent-child relationship jointly contributing significantly to adolescents' moral behaviours. The study recommended that parents should be intentional in creating time, bond and communicate with adolescents to foster positive character development. Likewise, parenting styles should bridge generational gaps to establish sound moral behaviours among adolescents in tertiary institutions.

Keywords: Parenting Styles, Intentional Parent-Child Relationship, Tertiary Institution Adolescents Moral Behaviour

Introduction

The issue of adolescent moral decadence has become a contemporary problem among adolescents in tertiary institutions in Nigeria and this has garnered significant attention from researchers and scholars across various disciplines. Currently, Nigeria is experiencing a concerning rise in adolescent delinquent behaviours, including drug abuse, kidnapping, rape, carrying dangerous weapons, examination malpractice, and theft. The global phenomenon of moral decadence is having a profound negative psychological and sociological impact on not

only the adolescents but on their families and on numerous societies, with Nigeria being no exception (Nwosu, et al. 2022). Given the currents societal trends marked by rampant moral decline with adolescents often leading the way in vices such as bullying, typically falls into four categories: physical, psychological/verbal, sexual, and cyberbullying, which remains a significant issue across primary, secondary, and higher education, negatively impacting victims' emotional and behavioural development. Beyond the aforementioned emotional and behavioural effects, this issue often originated within families and can have far-reaching consequences, even transcending national borders. Moral decline is a destructive force that breeds crime and stifles national development (Omosehin, et al. 2022). Undoubtedly, a stable home environment and strong personal resolve are crucial in combating immorality in today's society (Nwosu, et al. 2022). When adults consistently demonstrate honesty, empathy, and accountability, adolescents are likely to internalize and embrace moral values as essential life principles (Press 2023).

Adolescence marks the transitional period from childhood to adulthood, characterized by rapid and often asynchronous changes in both body and brain. During this time, young people navigate significant physical, intellectual, psychological, and social challenges, alongside developing their own moral compass. It can be an exciting yet challenging time in the life of a teenager. The adolescent years are a crucial period for increased independence and self-discovery. Adolescence is a period marked by rapid physical, cognitive, and psychosocial development, significantly influencing how young people feel, think, make decisions, and engage with their surroundings. This stage often brings about emotional, and sometimes physical, separation from parents. While this move towards independence is vital for forming personal values, the transition to self-sufficiency can present numerous adjustments for many adolescents. Moreover, adolescents often lack distinct societal roles and find themselves in a vague transitional phase between being children and becoming adults. These challenges are typically what characterize adolescence in Western societies, and how individuals respond to them significantly influences the quality of their adult lives.

Moral is the standards and principles that govern acceptable behaviour. (Adam, et al., 2021). Moral values encompass behaviour, respect, honesty, tolerance, and attitudes demonstrated and promoted by individuals within society, as they are considered beneficial and desirable for humanity, in contrast to behaviours that are disapproved of and criticized. Instances of moral values consist of loyalty, modesty, self-control, integrity, camaraderie, tolerance, diligence, respectfulness, and honesty (Adam, et al., 2021). Moral behaviour is guided by self-chosen ethical principles that tend to be broad, universal and apply to everyone like respect, justice, dignity, and equality, that is post-conventional morality. Adolescents may internalize and emulate the unethical behaviours exhibited by influential adults in their environment, potentially fostering values and beliefs that diverge from societal norms. Despite the aforementioned, adults have a pivotal role in fostering moral development by exemplifying the ethical standards they aspire for adolescents to adopt.

Parents hold significant influence as they are typically the primary agents of moral socialisation and etiquettes. Good parenting fosters children's moral growth and the most influential things parents can permit is to support right kind of peer relations. It is expedient to remember that this developmental step is important to their children's well-being and the pinnacle of lifelong achievement. Adolescence linked to the development of industry identity

and intimacy, although the family lays the basic foundational groundwork for optimal development. During the life trajectory, adolescent encounter various critical challenges that may be navigated with either favourable or unfavourable outcomes. Positive resolution is necessary to assure a fully functioning, capable and mature individual. Understanding that one is skilled and able to work, finding one's place in society, and forming close connections with others are crucial elements for thriving during adolescence, youth, and adulthood (Mcleod, 2023). Achieving moral growth has consequences such as praising people because of their adaptive behaviours.

Adaptive behaviours are a vital set of abilities that we acquire and use throughout our lives. They enable us to fulfil social expectations for people in our age group and are a necessary part of day-to-day functioning. Inadequate moral development predisposes children to anxiety and depression, manifesting in antisocial and suicidal tendencies, these are referred to as maladaptive behaviours. Patterns of behaviour that are harmful to a person's wellbeing and impair their capacity to perform well in a variety of spheres of life are referred to as maladaptive behaviours. Common maladaptive behaviours in adolescents include physical, sexual, psychological and neglect abuse.

The process of raising children and giving them care and protection to guarantee their healthy development into maturity is known as parenting. From infancy to maturity, parenting or childrearing fosters and supports a child's intellectual, emotional, social, spiritual, and physical growth (Odeleye, 2014a). Parenting techniques are ways parents use in raising their children. By these paradigms, their attitudes towards their children, the rules and standards that they apply to their children are being expressed. Parenting in diverse techniques (authoritative, authoritarian, permissive, and religious parenting) has impact on children's personalities and behaviour. Authoritative parents regulate their children's behaviour and demand expectations for puberty-based behaviour. Authoritarian parents are very controlling and strict. Permissive parents are loving parents who accommodate their children's behaviour. Religious parents utilize divine ordinances and tenets for mentoring, guidance and established their children (Odeleye, 2017). The four parenting styles are categorized based on the standards, values, and behaviours that parents exhibit to their children. With the age long value system being eroded by vices and materialism fuelled with parental failure and secularisation of education, Odeleye presented Biblical Spiritual parenting style: an innovative approach to parenting (Odeleye, 2017).

Parents exert a profound influence on the behavioural formation and development of children. Consequently, parental unawareness may precipitate deleterious outcomes, culminating in emotional and behavioural disturbances among adolescents. Parenting approaches are the attitudes that parents express to their kids. It is susceptible to influence by multiple variables, including: economic, political, social and cultural etc. Parenting approaches are affected by both the parents' and children's temperaments (Pardee, 2023), and is primarily shaped by the enduring influences of one's familial and cultural background (Pardee, 2023). Parental caregiving practices have a profound impact on the behavioural outcomes of adolescents. However, the influence of parenting practices exhibits variability across diverse ethnic groups (Pardee, 2023). Parents are the most significant influence in child's life (Pardee, 2023). Parents have a pivotal role in inculcating the moral which we feel valuable. From

honesty and respect to generosity and kindness, parenting techniques can help to shape the children and youths into a moral adult. The attitudes of a parent is an impactful mentor for the adolescents. Actions from parents educate children about the moral values. Parents explore various styles, techniques and practices in raising children. One of such practices is intentional nurturing of children by giving attention to parent-child time. The child's desire to have mutual relationships with others and to have increased feelings of safety in their presence is called attachment.

The attachment between parents (mother, father or caregiver) and the child establishes the foundational moral development of a child's through to the future. Children that have a strong bond with their parents and are raised in an authoritative manner exhibit moral, social, and emotional behaviour. When parents respond to their child's needs in a loving and caring manner, secure attachment is more likely to occur. Significant others, particularly parents, must lead, protect, and monitor children (Odeleye, 2019). Additionally, a family's psychological, social, spiritual, and mental well-being can be inferred from the communication patterns that exist between the parents and children. A child's manifestation of an adjusted lifestyles is greatly encouraged by parental involvement and a positive relationship with them at home (Killian, 2023).

Intentional parent-child relationship is a deliberate commitment and a parenting approach characterized by the implementation of strategies fostering a positive parent-child dynamic. A positive parent-child relationship offers social and emotional skills. Social and emotional skills are crucial because they are associated with major beneficial outcomes throughout life, including academic success, better relationships, increased income at work, and enhanced emotional wellbeing. Social and emotional competencies prevent unfavourable consequences like behavioural issues and mental anguish (ParentingMontana.org. 2020). Intentional parenting is a strategy for creating secure, stable, and supporting parent-child connections. By using the technique, it provides a consistent framework and set of rules wherein the adolescent navigates their own path. Intentional parenting employs purposeful communication to address difficult issues in a way that improves the parent-child bond (Pelini, 2020).

The intentional parent-child relationship is a responsible engagement in which the parents have to deliberately follow-up on routines such as: time, parent-child bond, communication and outcome. Time is an allocated quality time a parent commits to be available for the child on daily, weekly, monthly basis where issues pertaining to the upbringing of the child such as physical growth, moral development, cognitive activities, social and personal issues and spiritual growth can be opened up and discuss between parent and child without the child feeling judged. Parent-child bond is a time out for relaxation with the child where the atmosphere provides the child with confident to get more acquaintance with his/her parent and the parents to spend time to socialize with their children. Parent-child bond enables most parents to be aware of their adolescent happy moments and challenging time. Communication is a means through which parents can impact certain moral lessons to their adolescents. Conversations between parents and adolescents aided effectively moral growth in adolescents. Discussions about moral issues between parents and children assist to shape the adolescent's pro-social behaviours and help instil the parent's values into adolescents' belief system. Adolescents' moral behaviours start from infancy through adolescent to

adulthood. Research suggests that a pre-existing emotional bond between parents and children fosters an environment conducive to open self-disclosure and positive rapport (Killian & Odeleye 2020).

Statement of the Problem

The escalating delinquent behaviours amongst some of adolescents is an indicative of escalating moral decline. The moral decadence characteristics of the 21st century has attained a disturbingly acute level. Many decadences and shenanigan behaviours can be observed among our undergraduates today. It is apparent that the adolescent currently displays a lack of deference towards their elders. Furthermore, they are involved in all manners of immoral behaviours, issues like: bullying, social problems, child abuse, alcoholism, school drop-out, get-rich syndrome, vandalism and so on. Adolescents in Nigerian tertiary institutions, exhibit moral indiscipline by their involvements in examination malpractices, cultism, impersonation, sexual promiscuity, premarital sexual escapades, unwanted pregnancies, drug abuse, smoking, indecent dressing, not being responsible and dedicated to academic work, disrespect for elders and the constituted authorities, including drug and substance abuse, risky sexual behaviour, dangerous driving, bank robbery, currency trafficking and many more. These aforementioned behaviours collectively indicate a deviation that fosters immoral conduct among adolescents in tertiary institutions.

Moral decline and the resultant adolescent dysfunctional behaviours precipitate profound ethical repercussion for society. This emphasizes the critical need for families and community stakeholders to work together to develop solutions that will assist alleviate the effects of the widespread moral degeneration in society. Numerous studies have demonstrated the significance of parents' roles and parenting styles in influencing their adolescent's moral behaviour. The majority of parents are increasingly allocating less time to parenting as they prioritize their professional pursuits and how they make ends meet. Therefore, this study examined the joint influence of parenting styles and intentional parent-child relationship on the adolescents' moral behaviours in tertiary institutions in Ibadan South-west, Oyo State. Through this research, the researcher hopes to raise the awareness on moral behaviour regeneration which can only be achieved through concerted efforts by families, community structures and government to instil ethical, normative and moral principles that cultivate, and promote positive character traits in 21st century adolescents.

Aim and Objectives of the Study

The general aim of this study is to investigate the joint influence of parenting styles and intentional parent-child relationship on adolescents' moral behaviours in tertiary institutions in Ibadan South west, Oyo State. Specifically, the study seeks to:

1. identify mostly exhibited intentional parent-child relationship practices on adolescents in tertiary institution in Ibadan South west, Oyo State.
2. establish the joint influence of parenting styles and intentional parent-child relationship on adolescents' moral behaviours in tertiary institutions in Ibadan South west, Oyo State.

Research Questions

1. What is the most influencing parenting styles practices on adolescents' moral behaviours in Ibadan South west, Oyo State?
2. What is the most exhibited intentional parent-child relationship practices on moral behaviours of adolescents in tertiary institutions in Ibadan South west, Oyo State?

Research Hypothesis

$H0_1$ There will be no significant joint influence of parenting styles and intentional parent-child relationship on moral behaviours among adolescent in tertiary institutions in Ibadan South west, Oyo State.

Methodology

Area for the study: The study targeted two tertiary institutions in Ibadan South-west Local Government Area, Oyo State of South West Nigeria.

Research Design: The study adopted the descriptive survey design with the use of a questionnaire to obtain information from the respondents.

Population for the study: The population comprised 600 male and female undergraduate students within the two tertiary institutions in Ibadan South west Local Government Area of Oyo State, the study could only target Federal College of Agriculture (FCA) and Federal College of Animal Health and Production Technology (FCAH & PT) Moor Plantation, Ibadan, Oyo State.

Sample and Sampling Techniques: The sample size of 571 students was determined using Slovian's formula $n=N/(1 + Ne^2)$ on the institutions under the study. The total sample size was therefore randomised to six hundred (600) undergraduate students for this study.

Instrument for data collection: A 35-item structured questionnaire was utilized for the study. The reliability of the instrument was ascertained using the Cronbach Alpha reliability technique which yielded a coefficient of 0.83.

Method of data collection: Data for the study were collected by the researcher with the help of three research assistants. Five hundred and eighty (580) copies of the questionnaire were successfully recovered and suitable for the analysis, data collected were analysed using mean and standard deviation for answering the research questions while multiple regressions was used to test for the joint impacts of the independent variables on dependent variable at 0.05 level of significance.

Table 1: Population of Tertiary Institutions Students in Ibadan South west

Tertiary Institutions	Number of Students
Federal College of Animal Health and Production Technology (FCAH&PT)	1221
Federal College of Agriculture (FCA)	834
Total	2055

Source: Researcher's Field Work (2024)

Table 2: Sample Size for students using Slovin's Formula

FCAH&PT	FCA
$n = \frac{N}{1+Ne^2}$	$n = \frac{N}{1+Ne^2}$
n = sample size	n = sample size
N= Total Population	N= Total Population
e = 0.05 margin error	e = 0.05 margin error
$n = \frac{1221}{1 + 1221(0.05)^2}$	$n = \frac{835}{1+ 835(0.05)^2}$
$n = \frac{1221}{1 + 3.0525}$	$n = \frac{835}{1 + 2.085}$
$n = \frac{1221}{4.0525}$	$n = \frac{835}{3.085}$
n = 301.3	n = 270.3
n = 301	n = 270

Total sample size: n = 301 + 270

n = 571

Results

Research Question One

What is the students' perception of the most influencing parenting styles practices on moral behaviour among adolescents?

Table 3: Mean Ratings of the respondents' opinion on the most influencing Parenting Styles (Authoritarian, Authoritative, Permissive and Religious-based parenting) on moral behaviours of adolescent in tertiary institutions Ibadan South west, Oyo State.

SN	Parenting Styles	SA	A	D	SD	SD	$\bar{X}$
1	Authoritarian Parenting Styles	270	202	56	52	0.91	3.19
		46.6%	34.8%	9.7%	8.9%		
2	Authoritative Parenting Styles	112	98	260	110	0.99	2.90
		19.3%	16.9%	44.8%	19%		
3	Permissive Parenting Styles	143	154	104	179	1.60	2.45
		24.7%	26.6%	17.9%	%		
4	Religious-based Parenting Styles	302	183	57	37%	0.87	3.29
		52.1%	31.6%	9.9%			
	Overall Weighted Mean						**2.96**

Source: Field Survey, 2024

KEY: SA=Strongly Agreed(4), A=Agreed(3), D=Disagreed(2), SD=Strongly Disagreed(1)

***Threshold Mean value of ≥3.00 (High), 2.50-2.99 (Moderate) and <2.50 (Low)

Table 3 illustrate the most adopted parenting styles (authoritarian, authoritative, permissive and religious-based parenting style) for parenting adolescents in tertiary institutions in Ibadan South west, Oyo State, Nigeria. For Authoritarian Parenting Style (Strongly Agreed- 270, 46.6% and Agreed- 202,34.8%), Authoritative Parenting Style (Strongly Agreed- 112, 19.3% and Agreed- 98, 16.9%), Permissive Parenting Style indicates (Strongly Agreed- 143, 24.7%, Agreed - 154, 26.6%) and Religious-based Parenting Style (Strongly Agreed- 302, 52.1% and Agreed - 183, 31.6%). The implications of these results shows that Religious-based Parenting Style is the most perceived influencing parenting style with highest weighted mean of 3.29 by parents of adolescents in tertiary institutions, this leads to lower rate of delinquency and maladaptive behaviours among adolescent, which contribute immensely to a peaceful community and give parents rest of mind in all situations of life. Hence, adolescents under the tutelage of this type of parenting style are fortunate and better in good behaviour.

Research Question Two:

What is the most exhibited intentional parent-child relationship practices on moral behaviours of adolescents in tertiary institutions in Ibadan South west, Oyo State?

Table 4: Mean Ratings of the respondents' opinion on intentional parent-child relationship practices on moral behaviours of adolescents in tertiary institutions in Ibadan South west, Oyo State, Nigeria.

	Intentional Parent-Child Relationship	SA	A	D	SD	$\bar{X}$	SD
1	My parents encourage me to always freely express my feelings and needs (communication)	156 26.9%	343 59.1%	22 3.8%	59 10.2%	3.03	0.85
2	I have warm and intimate times together with my parents (time)	361 62.2%	176 30.2%	32 5.5%	11 1.9%	3.53	0.69
3	My parents are not my role models, because their life styles and belief system does not have a positive impact in shaping my social behaviour	10 1.7%	38 6.6%	231 39.8%	301 51.9%	3.25	0.79
4	I can discuss anything with my parents anytime of the day	337 58.1%	131 22.6%	97 16.7%	15 2.6%	3.36	0.85
5	Reminiscing conversation between me and my parents helps to foster internalisation of values always	150 25.9%	370 63.8%	28 4.8%	32 5.5%	3.10	0.72

Source: Field Survey, 2024

KEY: SA=Strongly Agreed(4), A=Agreed(3), D=Disagreed(2), SD=Strongly Disagreed(1)

The grand mean ratings of the respondents on the 5 items in Table 4 above ranged from 3.03 to 3.53 which are greater than the cut-off point value of 2.50 on a 4-point rating scale. This indicated that the 5 identified items in the table are the most exhibited intentional parent-

child relationship practices on moral behaviours of adolescents in tertiary institutions in Ibadan South west, Oyo State. The standard deviation values of the 4 items ranged from 0.69 to 0.85 which indicates that the responses of the respondents are close to the mean and one another. These results indicates that, there is an existence of mutual, cordial and deliberate intentional parent-child relationship among respondents and their parents. Intentional parent-child bond and Intentional parent-child time likewise Intentional parent-child communication strengthens parent-child relationship, reduces the likelihood of adolescents to participate in risky behaviours and which affects morally relevant behaviours among adolescents.

Findings on Tested Hypothesis

$H0_1$ There will be no significant joint influence of parenting styles (authoritative, authoritarian, permissive and religious-based parenting) and intentional parent-child relationship (communication, parent-child bond and parent-child time) on moral behaviour (adaptive and maladaptive) among adolescents in tertiary institutions in Ibadan South west, Oyo State.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.994[a]	.987	.987	.09406

a. Predictors: (Constant), Intentional Parent-Child Relationship, Parenting Styles

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	397.344	2	198.672	22454.930	.000[b]
	Residual	5.105	577	.009		
	Total	402.449	579			

a. Dependent Variable: Adolescent Moral Behaviour

b. Predictors: (Constant). International Parent-child Relationship, Parenting Styles

Source: Field Survey, 2024

The regression analysis conducted to examine the combined influence of parenting styles (authoritative, authoritarian, permissive and religious-based parenting) and intentional parent-child relationship (communication, parent-child bond and parent-child time) on adolescent moral behaviour (adaptive and maladaptive) in tertiary institutions in Ibadan South west, Oyo State. The model summary indicates an exceptionally strong correlation (R=.994) between the predictor variables and moral behaviours, with approximately 98.7% of the variance in moral behaviours explained by the predictors (R squared =.987). Adjusted R square corroborates this, suggesting robust explanatory power even after accounting for the number of predictors.

Multiple regression revealed a highly significant F-statistic (22454.930, $P < .0001$), indicating that both parenting style and intentional parent-child relationship collectively

contribute significantly to adolescents' moral behaviours. This highlights the importance of considering both parenting styles and deliberate intentional parent-child relationship in understanding and fostering adaptive moral behaviours among adolescents in tertiary institutions in Ibadan South west, Oyo State.

In conclusion, the analysis highlights the considerable joint influence of both parenting styles and intentional parent-child relationship on adolescents' moral behaviours in tertiary institutions in Ibadan South west, Oyo State. However, it distinctly highlights the robust influence of parenting styles, emphasising their fundamental role in fostering heightened levels of moral behaviour within the context. These findings illuminate the significance of prioritizing effective parenting styles alongside intentional parent-child relationship to cultivate a more adaptive moral behaviours among adolescents in tertiary institutions in Ibadan South west, Oyo State, thereby contributing to enhanced healthy development into adulthood and promoting adolescent well-being.

Discussion and Implication of Findings

The results of findings revealed that adaptive and maladaptive moral behaviours of adolescents in tertiary institutions in Ibadan South west, Oyo State are relatively influenced by the parenting styles and intentional parent-child relationship. Parents serve as their children's main role models within the home environment, adolescent typically learn positive behaviours, habits and character trait by observing and imitating the adults in their lives. Incidentally, the relationships between positive parenting and children had a profound impact on adolescents' behaviours (Keto, *et al*2020). The findings of the study showed the parenting styles and intentional parent-child relationship as determinants of adolescents' moral behaviours, after the hypothesis were tested at 0.05 level of significance. It revealed that the adoption of any of these parenting style (authoritarian, authoritative, permissive and biblical spiritual parenting) will jointly influence adolescent moral behaviours. The result also showed that deliberate intentional parent-child bond, communication, parent-child time consent will significantly influence adolescents' adaptive moral behaviours and reduce the level of maladaptive behaviours to the minima among adolescent in tertiary institutions. When discipline is applied in the setting of a loving, caring relationship between parent and child, it is very helpful in fostering great outcomes for these adolescents. Parenting styles and children's resilience are therefore intricately linked. The unidirectional features of parent-child relationship may appear to be supported by religion. In the Bible, parents are often held accountable for their children's outcomes. Proverbs 22:6 says, "Train up a child in the way they should go, and when they are of age, will not depart from it" (Killian, 2019). Healthy parenting lays the foundation for life-long benefits in learning, behaviour, cognitive development, emotional regulation, social skills, physical health and mental well-being (Killian, 2019b). Parental involvement and a positive parent-child relationship at home significantly foster an adolescent's adoption of a well-adjusted lifestyle (Killian, 2023).

Recommendations

Based on the research findings, the study recommends the following

1. Parenting styles used by parents affect adolescent moral behaviours. Parents are hereby encouraged to improve on their relationship with adolescents and choose the right and effective parenting style that will help the adolescents to behave morally and socially among his/her peer group, society and in their different tertiary institutions.

2. Authoritative parenting style has more positive influence among all the parenting styles. Parents are expected to practice authoritative parenting style in order to help them relate well with their adolescent and authoritarian parenting style because it will help the adolescents to relate socially with people around them.

3. Parents and other adults who work with and care for adolescents should become knowledgeable about adolescent development and keep up with the realities of today's adolescent lives. The lives of adolescents are complicated, subject to rapid change, and may involve problems that did not exist or were not fully recognised for earlier adolescent generations, such as mental health illnesses or social media. Parents and other caring adults can better support and encourage adolescents in both their personal and professional life if they are aware of the opportunities and challenges that adolescents face today **(**Johnston, et al., 2021).

4. The ministry of education should formulate a policy that will cater to the moral education of tertiary institutions adolescents. This could be achieve through organizing of seminars, symposium, sensitization programs and the introduction of the course into General Studies Courses in tertiary institutions.

5. A sessional meeting involving the tertiary institution, schools' counsellors, parents, lecturer, tutors, students affair officers, government and non-government agencies should be organized to discuss expectations associated with adolescent moral behaviours.

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EFFECT OF PROJECT-BASED LEARNING STRATEGY ON STUDENTS' INTEREST AND COGNITIVE RETENTION IN SECONDARY SCHOOLS IN ORLU, IMO STATE

by

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Abstract

This study investigated the effect of the Project-Based Learning Strategy (PBLS) on students' interest and retention in secondary schools in Orlu, Imo State. Two research questions and two hypotheses guided the study. The study adopted a quasi-experimental pretest-posttest control group design. A purposive sampling technique was used to select two co-educational public secondary schools in Orlu Educational Zone 1 in Imo state. A total of 87 Senior Secondary One (SS1) students in their intact classes formed the sample of the study. The experimental group was taught using PBLS, while the control group received instruction through teacher exposition method. Researchers-Made Interest-Retention Achievement Test (RMIRAT) was used for data collection. The instrument was validated by three experts. The reliability index was 0.78. Data were analyzed using mean, standard deviation, and Analysis of Covariance (ANCOVA). Findings revealed that students exposed to PBLS in English language composition writing demonstrated significantly higher interest and better retention than those taught using the teacher exposition method. The study concluded that PBLS is an effective learner-centered instructional strategy that enhances sustained learning and students' interest in composition writing. It was recommended that English language teachers should adopt PBLS to promote active engagement, collaboration, and long-term knowledge retention amongst secondary school students.

Keywords: Project-Based Learning, Interest, Retention, Learner-Centered Instruction, Teacher Exposition Method.

Introduction

One of the major challenges faced by educators is how to ensure that students with diverse learning styles and abilities effectively learn and retain instructional content. Producing lifelong learners who can solve problems and contribute meaningfully to national development remains a central goal of education. To achieve this, teachers must adopt instructional methods that foster engagement, collaboration, resilience, and problem-solving skills (Bichi, 2002). The quality of education in Nigeria has remained a matter of national concern, particularly in core subjects where students often demonstrate declining interest and poor retention. Many learners experience anxiety when writing examinations in such subjects (Agada, 2025). Ineffective instructional methods may weaken academic preparedness and increase anxiety, thereby encouraging maladaptive coping strategies such as examination malpractice (Orok, 2023). Examination bodies also face challenges in curbing malpractice. For instance, the disruption of the May 2025 English Language Paper 2 examination due to alleged leakage underscores systemic concerns (WAEC, 2025; Punch, 2025).

Traditional teacher-centered methods, which emphasize rote memorization and passive learning, have been widely criticized for limiting students' engagement and retention (Umunna, 2022). Such approaches often suppress critical thinking, creativity, independent judgment and consequently, learners become passive, disengaged, and cognitively unmotivated (Anari, 2023).

To address these challenges, there is a need for learner-centered instructional strategies that actively involve students in the learning process. One such strategy is Project-Based Learning Strategy (PBLS), which emphasizes learning by doing. Rooted in the experiential learning philosophy of John Dewey. PBLS promotes active participation and real-world problem solving. PBLS significantly improves academic achievement, critical thinking, and positive attitudinal changes in students. It also enhances creativity, problem-solving skills, and high academic achievement (Adeoye & Jimoh, 2023; Ikegbusi & Egwu, 2024). Interest is one of the variable concepts that triggers how a learner learns as learners' curiosity and emotional engagement play a crucial role in learning outcomes (Abanyam, 2022 and Ogunbowale, 2024). Students who are interested in a subject are more likely to concentrate, participate actively, and retain information. According to Maslow's theory of motivation (1943, 1954), intrinsic motivation drives meaningful learning and self-actualization. Conversely, lack of interest leads to superficial learning, poor retention, and reduced academic performance.

Retention refers to the ability to store, recall, and apply learned information over time. It is influenced by teaching strategies, learner engagement, and cognitive processing (Ausubel, 1968). Active learning approaches, including PBLS, have been shown to enhance retention by promoting deeper cognitive engagement (Bell, 2010; Nugroho, 2023). Despite extensive research on PBLS in various subjects, there is limited evidence regarding its application in English language composition writing, particularly in relation to students' interest and retention in Orlu Education Zone. This study therefore seeks to fill this gap.

Statement of the problem

Despite continuous educational reforms, many secondary school students still exhibit low motivation and poor retention of learned content. The persistent use of lecture-based teaching methods has contributed to passive learning, resulting in poor long-term retention. There is therefore a need to explore innovative instructional strategies such as PBLS that promote active engagement, interest, and sustained learning.

Purpose of the Study

The purpose of this study is to determine the effect of Project-Based Learning Strategy on students' interest and retention in secondary schools in Orlu, Imo State.

Specifically, the study sought to:

1. determine the effect of PBLS on students' interest in composition writing, and

2. examine the effect of PBLS on students' retention.

Research Questions

1. What is the mean difference in interest between students taught using PBLS and those taught using the teacher exposition method?

2. What is the mean difference in retention between students taught using PBLS and those taught using the teacher exposition method?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

1. There is no significant difference in the mean interest scores of students taught using PBLS and those taught using the teacher exposition method.

2. There is no significant difference in the mean retention scores of students taught using PBLS and those taught using the teacher exposition method.

Method

The research design adopted for this study was quasi-experimental design involving pretest-posttest control group design. The population of the study consisted of 5628 SS1 students in Orlu Education zone 2, Imo State. Two co-educational Schools were purposively selected. A sample of 87 students in their intact classes, with 42 in the experimental group and 45 in the control group respectively. Researchers-Made Interest - Retention Achievement Test (RMIRAT) was used to collect data for the work. The RMIRAT consisted of 20 multiple-choice items scored at five marks each, totaling 100%. The instrument was validated by three experts in Measurement and Evaluation, Educational Psychology/ Guidance and Counselling and English Language Departments. Reliability indices were established using KR-20, yielding coefficients of 0.78 for RMIRAT which was considered strong for the work. Students were assigned to groups using balloting. The experimental group was exposed to PBLS, which involved collaborative activities, peer review, and guided composition writing. The control group was taught using the teacher exposition method. The experimental and the control groups were taught for ten weeks.

Pretest was administered before instruction, and posttest was conducted after the treatment period. Data were analyzed using mean and standard deviation for research questions, while ANCOVA was used to test hypotheses at 0.05 level of significance.

The study adopted a quasi-experimental pretest-posttest control group design. This design enabled comparison between students taught using PBLS and those taught using teacher exposition method.

Table 1: Mean Interest Scores of Experimental and Control Groups

Source of Variation	N	Pre-test $\bar{X}$	Sd	Post-test$\bar{X}$	Sd	Variance
Experimental	42	56.32	10.48	78.55	9.35	
Control	45	56.38	10.50	61.34	9.10	6.54

In Table 1, the experimental group had a pretest mean of 56.32 with standard deviation of 10.48 and a posttest mean of 78.55 with sd of 9.35 while the control group had a pretest mean of 56.38, standard deviation of 10.50 and a posttest mean of 61.34 with 9.10 standard deviation. With the variance of 6.54 marks between their posttest interest, the experimental group benefitted more in the use of project-based learning strategy.

Table 2: Mean Score and Standard Deviation of Students on the Retention of Learned Materials in English Language Composition

Source of Variation	N	Pre-test X	$\bar{Sd}$	Post-test 1X	Sd $\bar{}$	Post-test 2X Retention	$\bar{sd}$	Variance
Experimental	42	59.42	10.76	74.65	9.67	72.28	9.66	93.32
Control	45	60.67	10.68	62.12	11.28	59.11	12.88	165.89

Table 2 reveals that the pretest score in composition for experimental group 59.42 and the control was 60.67. Then the achievement scores after treatment was 74.65 for experimental and 62.12 with standard deviation 11.28 for control group, which showed that the method used to reach the experimental group increased their achievement. With the retention mean 72.28 by the experimental group and 59.11 for the control group. With variance of 93.32, the indication is that the experimental group retained better than the control group.

There is no significant difference in the interest mean scores of those taught with project based learning method and using conventional method.

Table 3: ANCOVA on Pretest and Posttest Mean Score of Students Taught using Project Based Learning Method and Those in Conventional Class.

Source of Squares	Mean Square	Df	Mean Square	Cal-F	PV
Corrected Model	16654.624	2	8891.317		
Intercept	12210.022	1	12210.022		
Pretest	2706.625	1	2706.625		
Methods	16864.204	1	16864.204		
Error	8211.088	84	47.212	375.218	0.000
Total	514068.000	87			
Corrected Total	25765.822	86			

Table 3 shows that at 0.05 level of significance 1df nominator and 86 denominator the calculated F = 375.2 with Pvalue of 0.00 which is less than 0.05, the null hypothesis is rejected. Therefore, there is significant difference in the posttest interest mean score of students taught using project-based learning strategy and those taught with teacher exposition method.

Table 4: ANCOVA on the Pretest and Retention Mean Scores of the Student in Experimental and Control Group taught English Language Composition Writing.

Source of Square	Sum of Square	Df	Sum of Square	Cal-F	Pv
Corrected Model	24,619.390	2	1329.625		
Intercept	292.091	1	292.091		
Pretest	4245.340	1	4245.342		
Methods	1388.693	1	1 388.693	33.689	0.00
Error	6882.211	85	44.213		
Total	38 9843.000	87			
Corrected Total	34312.122	86			

In Table 4 above at 0.05 level of significance with 1 degree of freedom in the numerator, the calculated F-value is 33.6 and the P-value is 0.000, which is less than 0.05. Therefore, the null hypothesis is rejected, indicating that there is a significant difference between the posttest and retention mean scores of students in the experimental and control groups.

Discussion

The findings of this study revealed that students exposed to Project-Based Learning Strategy demonstrated significantly higher interest and retention in composition writing than those taught using teacher exposition method. This finding is consistent with previous studies (Freeman, 2014; Han et al., 2015; Abanyam, 2022., & Ogunbowale, 2024) which reported that active learning approaches enhance students' motivation, interest and long-term retention of learned contents. The findings also align with those of Anari (2023) and Ikegbusi (2024), who reported that PBLS fosters student motivation and deep understanding. The retention of the learned content can be attributed to the students' active participation, taking charge of their learning experience and collaborative nature of PBLS, which allows students to apply concepts and retain them longer. Students' increased interest was linked to the individual and group creative activities encouraged during teaching and learning activities. The result also aligns with Dewey's experiential learning theory and Ausubel's theory of meaningful learning, which emphasize active engagement as central to durable understanding.

Conclusion

Based on the findings of this study, it was concluded that Project-Based Learning Strategy has significant effect on interest and cognitive (retention) learning outcomes. It promoted deeper understanding and long-term retention of learned contents among secondary school students in Orlu Education zone 2, Imo State.

Educational Implications

- Teaching should shift from teacher-centered to learner-centered approaches.
- Active learning strategies improve both engagement and academic outcomes.
- PBLS can help address low achievement and poor retention in English language learning.

Recommendations

- Teachers should integrate PBLS into classroom instruction.
- Workshops and seminars should be organized to train teachers on PBLS implementation.
- Government and school authorities should provide instructional materials to support project-based activities.
- Curriculum developers should embed PBLS into national education frameworks.
- Future researchers should replicate the study across different subjects and regions.

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INVESTIGATING ITEM QUALITIES OF EKITI STATE (2019) BASIC EDUCATION CERTIFICATE MATHEMATICS EXAMINATION USING ITEM RESPONSE THEORY

by

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Abstract

The study investigated item difficulty and discrimination indices of the 2019 Basic Education Certificate Mathematics Examination in Ekiti State using Item Response Theory (IRT). It also examined the content validity of the examination items, with the intention of providing empirical based evidence that could enhance the quality of Mathematics test items in the state. The descriptive survey research design was adopted for the study. The study population comprised all Junior Secondary School students who sat for the 2019 BECE Mathematics Examination in Ekiti State. 300 students in total were selected using a multistage sampling technique. One Senatorial District was selected out of the three in the state using simple randomly sampling techniques. Out of which two Local Government Areas (LGAs) were also selected. Three public junior secondary schools each were randomly selected from each LGA, and 50 JSS3 students were sampled from each school. The 2019 BECE Mathematics multiple-choice questions and the Optical Mark Recognition (OMR) sheets from Ekiti State were used as data collection instruments. Data collected were analysed using Microsoft Excel, R-Studio statistical packages, frequency counts, and percentages. Findings revealed that the item difficulty indices of the mathematics examination in Ekiti State ranged from $0.5 \leq b < 0.74$, indicating moderate item difficulty. The discrimination indices yielded a Cronbach alpha of $\alpha = 0.62$ ($p < 0.05$), reflecting acceptable internal consistency. The examination items were also found to possess reasonable content validity. The study concluded that the 2019 BECE Mathematics Examination in Ekiti State demonstrated good psychometric quality, with moderately difficult items, acceptable discrimination indices, and appropriate content validity.

Keywords: Item Quality, Content Validity, BECE

Introduction

Federal Republic of Nigeria recognizes the importance of mathematics in the development of a country and makes it a compulsory subject at basic and secondary levels (FRN, 2004). Like protein, which is fundamental to the growth and wellbeing of a young person, mathematics is an important pillar and development of a nation. As a basic tool, the subject is needed to understand and apply science and technology.

Today, Nigeria is also becoming more concerned with the promotion of scientific and technological research among students, starting with the junior secondary school level. Scientific approaches have a significant influence in the contemporary global environment and affect a number of fields of human activity and serve as an essential catalyst of the economic

progress of a country. To achieve a scientific and technological improvement and to achieve the goal of becoming the top twenty economies in the nearest future, Nigeria needs to observe excellent results of the youth in mathematics in all levels of education (Zalmon, 2017).

The responsibility of assessing students' academic achievements lies with state education ministries, who carry out this role by conducting the Basic Education Certificate Examination (BECE) upon completion of the first three years of junior secondary school. The examination serves as a dependable instrument for assessing the eligibility of a candidate to proceed to the new phase of life. Furthermore, it serves as an evaluation that determines the degree to which fundamental abilities and understanding have been attained. In order to get admission to senior secondary school, candidates are required to achieve a minimum credit pass in English, mathematics, or any three other courses. According to Ayanwale and Adeleke (2016), mathematics plays a fundamental role in driving technological progress and is a necessary subject for all secondary school students in Nigeria.

According to Ayanwale (2017), the use of multiple-choice examination has shown efficacy in the assessment of knowledge and abilities. Consequently, it is advocated that these examinations should be employed on a regular basis as a reliable means of assessing these attributes. Multiple-choice tests consist of a series of "problems" or questions that are accompanied by a list of potential solutions. Among these options, one is deemed accurate and is referred to as the key, while the other choices are considered distracters since they are erroneous replies. The use of multiple-choice questions for the evaluation of examinees is justified due to their ability to include a diverse array of subject matter. The use of this assessment method is employed to supplement built response examinations due to its capacity for impartially evaluating the answers provided by test takers. In order to maintain competitiveness in the global technological landscape, Nigeria recognizes the need of using advanced methodologies in the development of multiple-choice test questions, necessitating the expertise of testing professionals. Therefore, it is essential that these items adhere to the anticipated psychometric standards. In order for an examination to accurately assess the intended construct, it is essential that the test have both validity and reliability.

The procurement of high-quality test items in education can be accomplished through two principal systems; Item Response Theory (IRT) and Classical Test Theory (CTT). Classical Test Theory comprises three essential concepts: error score, real score, and observed test score. Fan (1998) asserts that more models have emerged within the context of these three concepts, with the "Classical test model" recognised as the principal model. The suggested model delineates a relationship between the latent variables, specifically the true score (T) and error score (E), and the observed test score (X). The equation $X = T + E$ represents the Classical Test Theory model.

The equation $X = T + E$ represents the Classical test model, where T represents the true score and E represents the error score. However, the presence of these two unknowns prohibits the equation from being solved. The use of this model is facilitated by three underlying assumptions.

a. It is observed that the true score (T) and error score (E) exhibit no correlation.

b. The mean error score among the population of examinees is zero, and

c. The correlation between error scores on parallel tests is negligible.

According to CTT, the total test score of the examinee is calculated by summing the individual scores obtained on each item within the test. Number-correct scoring, as identified by Tomkowickz and Wright (2007), is the term used to describe this phenomenon. The scoring approach used in this study yields trait estimates that maximize the probability, taking into account the raw scores, namely the total number of successfully answered questions. In this particular approach, individuals who respond accurately to an equal number of items are awarded an identical scale score, regardless of the varying levels of difficulty and discriminatory properties associated with each question. Hence, the scoring of examinees' performance does not take into account the inherent characteristics of the item parameters, namely the difficulty and discriminating levels.

The importance of item parameter estimate in the formulation of tests cannot be disregarded. Test development is informed by statistical measures referred to as discrimination and difficulty indices (Ayanwale, 2017). Test developers use this information to identify problematic items, including those that lack relevance to the total test result, as well as those that are excessively easy or challenging to test takers. During the creation phase of norm-referenced examinations, items that possess difficulty levels below 0.2 and over 0.8 are eliminated. Similarly, products that possess a discrimination threshold lower than 0.2 might be classified as poor (Backhoff, 2000).

The use of the response pattern to all test questions is a fundamental aspect of IRT, as it enables the estimation of a test taker's skill level and the probability of properly answering an item. In the context of Item Response Theory (IRT), the key focus is on determining whether an examinee answers an item properly or incorrectly, as opposed to just considering the raw test results (Ayanwale, 2017). The item-pattern scoring technique produces a trait estimate that maximizes the probability based on the pattern of item answers (Lord, 1980; Tomkowick and Wright, 2007). It is of utmost importance to consider the item specifications of the test in order to effectively assess the examinee's ability by analysing their response to a certain test item. The values of item and ability parameters vary depending on the kind of parameter model used. Within the field of IRT, there are models that are specifically designed to analyse test items that are scored dichotomously. The logistic models under consideration exhibit varying numbers of parameters, namely one, two, three, and four. Baker (2001) presents mathematical models that provide a formal representation of the association between an individual's skill and the probability of producing a right answer. Each model incorporates one or more parameters, whereby the numerical values of such parameters determine the features of a certain item curve, often referred to as an Item Characteristic Curve (ICC).

The Rasch model, which is often referred to as the one-parameter model, is a commonly used framework. It posits the assumption of equal discrimination across all items for the testees. The primary concern is only in the amount of difficulty associated with the products. The two-parameter model is a theoretical framework that involves the consideration of two specific variables or parameters in order to analyze a certain phenomenon or This model takes into account the variability in the discriminatory power of test questions across different test takers. The estimation process involves the determination of two parameters, namely the

discrimination index denoted as "a" and the difficulty index denoted as "b". However, it is assumed that the examinee is unable to answer a question properly by random guessing. The expression may be represented as follows: $Pj(\theta)$ = 1/ (1+e^(-aj(θ-bj))). The three-parameter model is a theoretical framework that encompasses three distinct variables or parameters. This approach is predicated on the notion that an examinee has the ability to make correct guesses while answering a question. Thus, calculation of the guessing index "c" is carried out in addition to evaluation of the discrimination index "a" and the difficulty index "b." The definition of c does not change with the level of abilities because its value (c) is constant. As a result, the probability of test takers with the lowest and highest abilities in both directions responding correctly to the question is the same. The range between 0.35 and 0 is frequently used as ogn 3-parameter logistic model because the data exceeding 0.35 are not usually used in any real-life context. Theoretically c is a parameter bounded in the range between 0 and 1.0. This can be expressed in the following way: P1(θ) = C1 + (1 - C1) / (1 + e^(-a1(θ - b1).

The Basic Education Certificate Examination (BECE) is available in Nigeria and it is a test administered by the State Ministry of Education to the students of the JSS3 in their third term. At the end of successful candidates are presented with a certificate. The question of the BECE examination in Ekiti State, as elsewhere, is one of increasing concern, specifically their psychometric qualities, reliability, validity, difficulty and discrimination. Since the development of examination items is done by departments or agencies in the State Ministry of Education, inconsistencies may occur in psychometric quality of the items because of the differences in the academic, professional, and technical competencies of the item writers. This casts doubt on the quality and impartiality of the online evaluation of Ekiti State.

There is hence a pressing need to empirically explore psychometric properties of mathematics examination items that are administered in Ekiti State BECE. Mathematics was the subject of this study since it forms a fundamental role in the academic learning development of the students and because the researcher has relevant training and experience on the subject. The findings of this study will provide insight into the technical soundness of the examination items and inform efforts toward improving the standard and comparability of the BECE in Ekiti State.

In evaluating the psychometric properties of the Basic Education Certificate Mathematics Examination (BECMA) in Ekiti State Nigeria, the following objectives are raised: These are to:

1. determine the item difficulty indices of the Basic Education Certificate Mathematics Examination of the Ekiti States;
2. examine the item discrimination indices of the examination in the study area; and
3. examine the content validity of the certificate examination in the study area.

1.4 Research Questions

The following research questions were raised to answer the objectives above;

1. What is the difficulty level of the items in the Basic Education Certificate Mathematics Examination of the Ekiti States?

2. What are the discrimination indices of the certificate examination in the study area?

3. To what extent do the items in the certificate examination relate to the mathematics scheme of work in the study area?

Methodology

This study adopted the descriptive survey research design to evaluate the psychometric properties of the 2019 Basic Education Certificate Mathematics Examination in Ekiti State. The population comprised all Junior Secondary School (JSS3) students in Ekiti State who sat for the 2019 BECE Mathematics Examination. A sample of 300 students was selected using a multistage sampling procedure. One senatorial district was randomly selected out of the three in the state, from which two Local Government Areas were selected using simple random sampling. Three public junior secondary schools were then randomly selected from each local government area, and 50 JSS3 students were sampled from each school.

The instrument used was the 2019 BECE Mathematics multiple-choice questions and the Optical Mark Recognition (OMR) sheets from Ekiti State. The researcher used primary data to collect the data by directly administering the examination materials in the sampled schools by facilitating mathematics teachers. School principals were contacted by means of a formal letter of introduction and their consent was received in advance. The collection of data entailed the use of original BECE mathematics objective test of 2019 and the OMR sheets.

As the analytical framework, the Item Response Theory (IRT) was applied. Students' responses are the outcome (dependent) variables and the latent predictor (independent) variables are the ability of students and characteristics of items used in IRT. Data were analysed using R-Studio software to determine item difficulty (Research Question 1), discrimination indices (Research Question 2), and to assess the extent to which the test content aligned with the mathematics curriculum using frequency counts and percentages.

Results

Research Question One: What is the difficulty level of the items in the Basic Education Certificate Mathematics Examination in Southwestern Nigeria?

In order to determine the difficulty level of the items in the Basic Education Certificate Mathematics Examination in Ekiti state, the responses obtained from the selected states were analysed using R studio statistical package. The item difficulty parameters were judged based on the criterion established by Adeyemo, (2018) according to the author the range of difficult are based on the conventional interpretation, item is said to be easy if b-value lies between $0.75 \leq b \leq 100$ (75% - 100%), Moderately difficult when $0.26 \leq b \leq 0.74$ (26% - 74%), difficult when $0.0 \leq b \leq 0.25$ (0% - 25%). The result is presented as follows:

Table 4.1: Difficulty Indices of 2019 Basic Education Certificate Mathematics Examination Conducted in Ekiti State

Items	Difficulty indices (b)	Remarks
ITEM 1	0.7727273	Easy
ITEM 2	0.7727273	Easy
ITEM 3	0.4886364	Moderately Difficult
ITEM 4	0.5000000	Moderately Difficult
ITEM 5	0.5454545	Moderately Difficult
ITEM 6	0.5037879	Moderately Difficult
ITEM 7	0.6856061	Moderately Difficult
ITEM 8	0.7083333	Moderately Difficult
ITEM 9	0.7159091	Moderately Difficult
ITEM 10	0.7234848	Moderately Difficult
ITEM 11	0.6856061	Moderately Difficult
ITEM 12	0.6477273	Moderately Difficult
ITEM 13	0.6780303	Moderately Difficult
ITEM 14	0.6704545	Moderately Difficult
ITEM 15	0.6363636	Moderately Difficult
ITEM 16	0.7007576	Moderately Difficult
ITEM 17	0.7424242	Moderately Difficult
ITEM 18	0.6439394	Moderately Difficult
ITEM 19	0.5265152	Moderately Difficult
ITEM 20	0.5227273	Moderately Difficult
ITEM 21	0.6401515	Moderately Difficult
ITEM 22	0.6060606	Moderately Difficult
ITEM 23	0.5492424	Moderately Difficult
ITEM 24	0.6628788	Moderately Difficult
ITEM 25	0.6856061	Moderately Difficult
ITEM 26	0.4772727	Moderately Difficult
ITEN 27	0.6590909	Moderately Difficult
ITEM 28	0.5606061	Moderately Difficult
ITEM 29	0.6818182	Moderately Difficult
ITEM 30	0.6136364	Moderately Difficult
ITEM 31	0.5303030	Moderately Difficult
ITEM 32	0.5416667	Moderately Difficult
ITEM 33	0.7196970	Moderately Difficult
ITEM 34	0.5189394	Moderately Difficult
ITEM 35	0.5037879	Moderately Difficult
ITEM 36	0.5719697	Moderately Difficult
ITEM 37	0.6742424	Moderately Difficult
ITEM 38	0.5265152	Moderately Difficult
ITEM 39	0.6704545	Moderately Difficult
ITEM 40	0.5719697	Moderately Difficult
ITEM 41	0.5340909	Moderately Difficult

Items	Difficulty indices (b)	Remarks
ITEM 42	0.5113636	Moderately Difficult
ITEM 43	0.5151515	Moderately Difficult
ITEM 44	0.5643939	Moderately Difficult
ITEM 45	0.6060606	Moderately Difficult
ITEM 46	0.6780303	Moderately Difficult
ITEM 47	0.6590909	Moderately Difficult
ITEM 48	0.7348485	Moderately Difficult
ITEM 49	0.6212121	Moderately Difficult
ITEM 50	0.6590909	Moderately Difficult

Table 4.1 above shows the difficulty estimate of the Ekiti State 2019 Basic Education Certificate Mathematics item. The table shows that almost all the items 48 out of 50 (96%) are Moderately difficult as the difficulty indices of the item ranges from 0.26 – 0.74. It can also be observed from the table that 2 (4%) of the items were easy. The table showed that none of the items are very difficult neither is there very easy item. This implies that the items on the 2019 Ekiti State BECE examination can be scored correctly by examinees with average proficiency in Mathematics.

Research Question Two: What are the discrimination indices of the certificate examination in the study area?

To answer this research question, the discrimination indices of the state examination tests were extracted from the output of the statistical package used under research question one. The item discrimination parameter was judged based on the criterion established by Adeyemo, (2018) according to the author the range of discrimination are based on the conventional interpretation, items were said to discriminate well if the discrimination indices range from 0.30 (30%) and above, discriminate lowly if discrimination indices range from 0.10 to 0.29 (10% - 29%) discriminate poorly if < 0 and no discrimination when discrimination is 0. The results were presented in tables:

Research Question Two: what are the discriminating indices of the certificate examination

Table 4.2: Discrimination Parameter Estimate of Ekiti State 2019 BECME

Items	Discrimination indices (a)	Remarks
ITEM 1	0.26136364	Lowly Discriminating
ITEM 2	0.26136364	Lowly Discriminating
ITEM 3	0.23863636	Lowly Discriminating
ITEM 4	0.13636364	Lowly Discriminating
ITEM 5	0.25000000	Lowly Discriminating
ITEM 6	0.40909091	Good Discriminator
ITEM 7	0.25000000	Lowly Discriminating
ITEM 8	0.10227273	Lowly Discriminating
ITEM 9	0.26136364	Lowly Discriminating

Items	Discrimination indices (a)	Remarks
ITEM 10	0.14772727	Lowly Discriminating
ITEM 11	0.34090909	Good Discriminator
ITEM 12	0.25000000	Lowly Discriminating
ITEM 13	0.06818182	Lowly Discriminating
ITEM 14	0.20454545	Lowly Discriminating
ITEM 15	0.23863636	Lowly Discriminating
ITEM 16	0.18181818	Lowly Discriminating
ITEM 17	0.25000000	Lowly Discriminating
ITEM 18	0.30681818	Good Discriminator
ITEM 19	0.37500000	Good Discriminator
ITEM 20	0.48863636	Good Discriminating
ITEM 21	0.19318182	Lowly Discriminating
ITEM 22	0.18181818	Lowly Discriminating
ITEM 23	0.32954545	Good Discriminator
ITEM 24	0.15909091	Lowly Discriminating
ITEM 25	0.31818182	Good Discriminator
ITEM 26	0.17045455	Lowly Discriminating
ITEN 27	0.27272727	Lowly Discriminating
ITEM 28	0.11363636	Lowly Discriminating
ITEM 29	0.19318182	Lowly Discriminating
ITEM 30	0.10227273	Lowly Discriminating
ITEM 31	0.18181818	Lowly Discriminating
ITEM 32	0.21590909	Lowly Discriminating
ITEM 33	0.19318182	Lowly Discriminating
ITEM 34	0.31818182	Good Discriminator
ITEM 35	0.23863636	Lowly Discriminating
ITEM 36	0.20454545	Lowly Discriminating
ITEM 37	0.07954545	Lowly Discriminating
ITEM 38	0.27272727	Lowly Discriminating
ITEM 39	0.36363636	Good Discriminator
ITEM 40	0.31818182	Good Discriminator
ITEM. 41	0.15909091	Lowly Discriminating
ITEM 42	0.09090909	Lowly Discriminating
ITEM 43	0.21590909	Lowly Discriminating
ITEM 44	0.23863636	Lowly Discriminating
ITEM 45	0.10227273	Lowly Discriminating
ITEM 46	0.23863636	Lowly Discriminating
ITEM 47	0.23863636	Lowly Discriminating
ITEM 48	0.27272727	Lowly Discriminating
ITEM 49	0.31818182	Good Discriminator
ITEM 50	0.37500000	Good Discriminator

Table 4.2 above showed the discrimination estimate of Ekiti State 2019 Basic Education Certificate Mathematics items. The table shows that about 38 (56%) of the items are lowly

discriminating as the discriminating indices ranges between 0.10 – 0.29. the table also revealed that 12 (24%) of the items are good discriminators as the discriminating indices ranges between 0.30 and above (30%) and above. This implies that Ekiti State 2019 BECE Mathematics items function almost the same way among the high and low ability students as the items does not really discriminate between high ability students and low ability students.

Research Question Three: To what extent does the items cover the mathematics scheme of work in the state

Table 4.3: Number and Percentage of Mathematics Topics Set by Ekiti State Ministry of Education for 2019 BECE.

Topics	Number of Time	Percentage (%)
Binary Number System	2	4.0
Factorisation	-	-
Constructions	-	-
Formulae: Substitutions, Change of subject	1	2.0
Similarity: Plane shapes	1	2.0
Trigonometry	1	2.0
Equation	2	4.0
Interest	1	2.0
ICT	-	-
Variation	1	2.0
Statistics	1	2.0
Rational and non-rational numbers	-	-
Area	-	-
Volume	1	2.0
Whole numbers	1	2.0
Indices and standard form	2	4.0
Directed numbers: Multiplication and Division	2	4.0
Angles	4	8.0
Algebraic expression	3	6.0
Appreciation and estimation	2	4.0
Fractions, Proportion, Ratio and Rate	1	2.0
Home and Office transaction	-	-
Graph	-	-
Cylinders and cones	-	-
Probability	2	4.0
Linear Inequality	3	6.0
Bearing and Distance	-	-
Development of Numbers	-	-
Factors and Multiples	4	8.0
Fractions and Percentages	-	-
Use of symbols or letters for number	5	10.0
Solid shapes properties	2	4.0
Fractions and Decimal	1	2.0
World Problem	4	8.0
Perimeter	1	2.0
Algebraic simplification: bracket	2	4.0
Total	50	100

Table 4.3 showed the spread of Mathematics items set by Ekiti state Ministry of education in the 2019 Basic Education Certificate Mathematics Examination based on the topics in their syllabus. The table revealed that 29.7% of the topics were not covered while 70.9% of the topics were covered out of which 10% of questions are set from the use of symbols or letters known as quantitative reasoning followed by Factors and multiples, Word problems and angles covering 8% each, this shows the extent to which the test represent the state syllabus.

Table 4.4: Reliability and Content Validity by Average and Percentage Respectively.

STATE	RELIABILITY (α)	REMARK	CONTENT VALIDITY (%)
EKITI	0.6193516	Acceptable	70.9

The above table showed that state's items have acceptable reliability and good content validity.

Discussion

The difficulty parameters and discrimination parameter were judged according to the criterion established by Adeyemo, (2018). The result of the findings showed that out of 50 items set by Ekiti state ministry of education 96% of the items were moderately difficult as the difficulty indices lies between 0.26 - 0.74. The findings also showed that 4% of the items are easy. It was discovered also that none of the items is very easy nor very difficult this is in line with Dian, (2015) who conducted research on item analysis of the final examination of Economics subject in Grade [xii] and found that there were no easy items. This is also in line with Nurliyanto, (2015) findings on test item analysis of final examination of Economics where majority of the items were moderately difficult. However, this finding negates Opatunji and Babatimehin (2023), where out of the 60 items of the 2016 OSBECE Mathematics test, 9 items representing 15.0% have difficulty value outside the range of -3 and 3 while only one item out of the 60 items of the 2017 OSBECE Mathematics test had difficulty parameter that was outside the range -3 and 3 defined by Hambleton, Rogers, and Swaminathan (1991) to represent items that have the appropriate level of difficulty. This finding is against that of Adedoyin and Makobi (2013); and Ogunkoru (2012) who found more difficult Mathematics test items in three consecutive years in Delta state. These findings however contradict Ibrahim, (2020) who found that more than 86% of the total items in Gombe state 2016 BECE mathematics examination items are easy to the examinees. The study further revealed that 56% of Ekiti State 2019 BECE mathematics items discriminated lowly, it was noted from the findings that 24% of the items are good discriminator. This finding differs from the findings of Opatunji and Babatimehin (2023), where 53.3% of the 2016 OSBECE Mathematics test were outside the range of 0 and 2 as defined by Hambleton, Rogers and Swaminathan (1991), to represent items that are appropriately discriminating while 2017 edition of the mathematics test 61.7% had discrimination parameters that were outside the range of 0 and 2 benchmark. Meaning that 37 items discriminated appropriately. The findings revealed that there is significant relationship in the discrimination indices of the state's examination.

The study also showed the reliability value of the certificate examination and it can be deduced that the state's item falls between the acceptable range of reliability. Furthermore, the study showed the content validity of the certificate examination the extent to which the states examination truly represents the states mathematics scheme of work, it was revealed from the

findings that 70.9% of the 2019 Basic Education Certificate Mathematics Examination items are true representation of the state mathematics scheme of work, the findings also revealed that some topics about 10% are over represented as many questions are concentrated on specific content in the syllabus.

The findings showed that the 2019 Basic Education Certificate Mathematics Examination items are true representation of the state's mathematics scheme of work. These findings agreed with Nsikak (2017) who found out that WAEC and NECO covered a wide range of the syllabus upon which bulk of their questions too is concentrated on specific content area.

Conclusion

The study concluded that the Basic Education Certificate Mathematics Examination items (2019) in Ekiti State has good quality (psychometric properties). It also has good content validity based on the topics covered.

Recommendations

Based on the findings of the study, the following recommendations were made:

i. Psychometric quality results should be critically considered as part of the pre-test process before the examination is given to the students.
ii. Tests experts should the engaged in test development especially for high stake tests like Basic Education Certificate Mathematics Examination items
iii. Assessment in the state can be made more credible and fairer with improve qualities of items

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INFLUENCE OF SOCIAL VICES ON ACADEMIC ACHIEVEMENT AMONG UNDERGRADUATES OF ADEYEMI FEDERAL UNIVERSITY OF EDUCATION: IMPLICATION FOR COUNSELLING

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Abstract

The study investigated the influence of social vices on academic achievement among undergraduates of Adeyemi Federal University of Education, Ondo. The study adopted the descriptive survey research design. The population for the study comprised all undergraduates in Adeyemi Federal University of Education, Ondo. A sample size of 300 undergraduates was selected, (50 undergraduates were selected from six (6) departments in the faculty of education for the study using simple random sampling techniques. A self-developed instrument titled "influence of social vices on academic achievement questionnaire (ISVAAQ)," was used for data collection. Data collected were coded and subjected to simple percentage analysis. Three (3) research questions guided the study. The results revealed that social vices as potentially influencing undergraduates' academic achievement. The Study concluded that undergraduate students' involvement in social vices may lead to expulsion, death, suspension from the University. It was recommended that parents, and other relevant stakeholders and Counsellors should provide adequate moral, academic and counselling supports like Socio-personal, educational, marital, vocational and career, rehabilitation counselling in their educational setting.

Keywords: Social Vices, undergraduates, academic achievement, university.

Introduction

Tertiary institutions are expected to be an academic and cultured environment where learning, knowledge, moral values is systematically installed and shared among undergraduates to be competent both in character and learning, actively ready to proceed further on their academic pursuit or take-up a gainful employment opportunity. Jekayinfa and Kolawole (2010) posited that the singular purpose of education is to produce a useful citizen. Ekundayo (2019) added that higher level of education is considered to be an instrument of social change and development. Igwe and Nath (2005) report, that various forms of social vices by students have negatively influenced on educational system. There are some social vices that are more common in the society especially in Nigeria as identified by Abubakar (2011) such as drug abuse, truancy and absenteeism, sexual promiscuity, thuggery, cultism, rape, pre-marital sex among others.

Unfortunately, the problem of students' engagement in social vices has outweighed good morals such that the contribution of students who play leadership role had no much impact on character formation of the other students, (Ifaturoti,2010), it becomes more disheartening when we observe students' involvement and cultism, drugs abuse, indecent dressing, examination malpractices among others in school. Peer pressure is considered the major cause

of youth involvement in social vices. Students spend more time with their friends at school or at home. The solid moral and intellectual terrain expected to be found in tertiary institutions has suddenly become slippery veering towards on unprecedented magnitude of immorality among undergraduates in tertiary insty. However, the decline of academic achievements and poor moral value system among undergraduates in tertiary institutions in Nigeria society are as a result of social vices. There are several social vices that seem to be militating against the accomplishment of academic achievements of undergraduates in Nigeria tertiary institutions.

The causes of social vices among youth are innumerable, some of them are as follows: peer pressure, immoral behaviour by staff, stringent school rules, inadequate school facilities, poor remuneration, societal influence, get rich quick syndrome and egocentrism (Elujekwute et al.2021). In the same manner, Soyele (2022) submitted that studies have shown that students engage in social Vices as a result of the following factors: lack of parental care, broken home, poverty, peer group influence, unemployment, unhealthy imitation of the civilised world, economic recession, societal pressure, impatience/get rich quick syndrome, indiscipline/ungodliness, laziness and greed. The exhibition of those social vice has negatively affected the academic achievement of undergraduates students such that it is becoming increasingly difficulty to achieving the lofty objectives of obtained university certificate.

Statement of the Problem.

The prevalence of social vices among undergraduate students, such as substance abuse, cultism, and cybercrime, examination malpractices, Indecent dressing, pre-marital sexual relationship among others has been linked to declining academic achievement, increased dropout rates, and compromised student well-being and moral. It has been observed by the researchers that many undergraduates now engage in social vices at various proportion. The exhibition of those social vices has negatively affected the academic achievement of undergraduates such that it is becoming increasingly difficult to achieved the educational goal for undergraduates. Such a situation is very inimical to national development hence the need for this study.

Objectives of the study

The specific objectives of this are to:

1. investigate the causes of social vices on academic achievement among undergraduate students of Adeyemi federal University of Education, Ondo.

2. examine the various social vices exhibited by undergraduate students.

3. identify the implications of social vices on academic achievement.

Research Questions

In order to achieve the above research objectives, three research questions were raised.

1. What are the causes of social vices on academic achievement among undergraduates of Adeyemi federal University of Education, Ondo?

2. What are the various social vices exhibited by undergraduate students?

3. What are the implications of social vices on academic achievement?

Literature Review

Concept of Social vices

The term "vices" is derived from Latin word "vitium," which mean defect or failing. It is defined as a bad habit or immoral activities. According to Igwe (2014) social vices are anti-social actions which breach societal norms, values and more and they range from indecent dressing to sexual harassment and promiscuity, cultism, kidnapping, examination malpractice, hooliganism, character assassination, impersonation, financial fraud, and among other. Social vices among undergraduate students are bad habits or immoral activities that are against the social order. Elujekwute et al (2021) identified common social vices exhibited by undergraduate students include, cultism, examination malpractices, drug abuse, sexual immorality among others. In a study conducted by Elujekwute et al (2021). It was submitted that social vices affect the society as a whole and individual in particular.

According to Omonijo et al(2013) social vices are any actions exhibited either by omission or commission on negligence which contravenes cultural values and established codes of conduct of a particular community or in a given situation or location. In this paper, social vices would mean misbehaviour, wrong attitudes unacceptable characters exhibited by undergraduate students that hinder the accomplishment of their academic achievement.

Social vices are extremely bad immoral behaviours that constitute a nuisance to the society, Ariyo (2017). The various forms of social vices in modern day society as opined by Ariyo,(2017) as follows: examination malpractices, wrong peer influence or peer pressure, experimenting with cigarettes, alcohol and other harmful substances. Abubakar (2011) and Ariyo (2017) that social vices like prostitution, indecent dressing, robbery, cultism, banditry, drug abuse, thuggery, rape, pre-marital sexual activities, gambling and smoking are common examples of behaviour exhibited by some students. According to Elujekwute (2019), social vices are acts of indiscipline and they are those acts and conditions that violate the societal norms and values. They are habit or behaviour of immoral activities that violate the societal norms and value. Jointheir (2016) noted that social vices are form of evil, criminal and wicked action or behaviour in the society.

Concept of Academic Achievement

Academic Achievement is the outcome of education the extent to which a student, teacher and institution has achieved their educational goals. According to Udod (2012), the academic achievement of students encompasses several educational, psychological, and sociological implications. Hence, the academic accomplishment of students cannot be fully attributed to a singular or limited/ set of variables, but rather it is influenced by a multitude of factors. Academic achievement refers to the extent to which learner acquire the knowledge, skills and proficiencies that the instructor seek to teach or assign. According to the research conducted by York, Gibson and Rankin (2015) academic success encompasses various elements such as academic achievement, the fulfilment of learning objectives, the acquisition of desirable skills and competencies, satisfaction, persistence and professional success. The findings of their study also suggest that grades and GPA are frequently employed as indicators of academic achievements, nevertheless, it is important to note that this assertion is not

accurate. Grades and GPA serve as indicators of academic accomplishments rather than comprehension measure of academic success.

Academic achievement simply refers to the performance of learning that is ultimately achieved through teaching, development and learning, which is obtained through achievement tests. Academic Achievement can be divided into two broad and narrow definition in a broad sense it refers to the improvement of students' overall quality during their school year. Academic achievement includes cognitive and non-cognitive outcome, as well as psychological and behavioural outcomes, it includes; knowledge, values, and attitude and skills and appropriate behaviour. According to Cai and Cap (2019) argue that academic achievement is not only, about students' academic performance in school, but should also include all aspects of their knowledge, competence and literacy development. Academic achievement in a narrow sense refers to the measured performance of student through examination at a certain study stage. Academic achievement are standardized test score that efficiently measure the amount of knowledge or skill a person has acquired usually as a result of classroom instructions. In this study, academic achievement is majorly focusing on educational attainment of students been affected by various forms of social vices encountered during their course of study. Academic achievement is the attainment of educational aims and objectives by the students after having undergone a period of teaching and learning.In this discourse, five of contemporary social vices, indecent dressing, examination malpractice, cultism, cybercrime and drug abuse will be discussed.

Counselling Implications to Social Vices

Counselling plays an important role in curbing social vices among undergraduate students. Counselling is an important educational tool in shaping the orientation of a students from negative ideas that is planted in them by their peers. Akinade (2012) defines counselling as a process of helping an individual become fully aware of his/her self and the way in which he is responding to the influence of his/her environment. Counselling can assist students with deviant behaviour to establish some personal meaning for his/her behaviour and to developed and clasiify a set of goals and values for future behaviour (Oguzie et al 2019). According to Oviogboda (2015), counselling can be defined as a number of procedures in assisting an individual to solve his problem. Counselling is more involved emotionally in the affective realm personalised learning, that is emotions and feelings, valuing and attitude. Counselling is a learning process in which a counsellor help an individual or individuals learn, understand themselves and their environment and be in a position to choose the right type of behaviour, that will help them develop, grow, progress, ascend, mature and setup, educationally, vocationally and Socio-personal (Egbo 2013).

The counsellors have lot of roles to play in order to assist the students with deviant behaviour, professional counsellors should help to change students' negative attitude, belief and perception in all other variables of social vices. There is the need for institutions to have professional counsellors who take care of irrational behaviour exhibited by the students and established a functional unit that will take care of students' aspirations and modify their behaviour. Counsellor should organise individual or group counselling session with the students or group of students that exhibited some deviant behaviour in school. In other words,

counselling is a transformative process of helping people to learn all that are to be learnt both in and outside the school. Hence, counselling services are needed in all sectors of the society.

Counsellors should occasionally organise a public lecture, workshops and seminars for the staff and students especially the year one students to shun any form of social vices on campus that may hinder them to achieved their goals. If counsellors succeed in inculcating self-discipline and moral values in students there is no doubt that students will become a responsible, patriotic students. The Counsellor should serve as models of integrity and honesty. Moral counsellor should exude virtues of diligence, patriotism and altruism so that students will be compelled to emulate their sterling qualities.

Methodology

The study adopted the descriptive survey research design. The population of the study comprised all undergraduate students of Adeyemi federal University of Education. The sample size comprised 300 undergraduate students, selected in six (6) departments in the faculty of education, 50 undergraduate students were selected with the use of simple random sampling techniques. A self-developed instrument titled "Influence of Social Vices on Academic Achievement Questionnaire (ISVAAQ)" was used for data collection. It has two section A and B. While section A obtained data on the respondents' biographical, section B garnered information from the respondents on the influence of social vices on academic achievement. The items on the questionnaire were drawn after extensive study of literature on influence of social vices on academic achievement among undergraduates. The face and content validation of the instrument was carried out by a senior lecturer in test and measurement in the department of Guidance and Counselling. Data collected on research question 1,2,3 were analysed using simple percentage (%).

Results

Research Question One: What are the causes of social vices on academic achievement among undergraduate students?

Table 1: Causes of Social Vices on Academic Achievement.

S/N. Causes of social vices	No & % of students that agreed with the items	No &% students that disagreed with the items
1. Peer group pressure	242 (80.67%)	58 (19.3%)
2. Get rich quick syndrome	220 (73.3%)	80 (26.7%)
3. Broken homes	235 (78.3%)	65 (21.7%)
4. Poverty	238 (79.3%)	62 (20.7%)
5. Boost of self- efficacy	242 (80.3%)	58 (19.3%)

Table 1 revealed the causes of social vices on academic achievement among undergraduate students, a larger percentage of undergraduate students were found to be Influence by social vices i.e peer group pressure 242(80.67%), Get rich quick syndrome 220 (73.3%), Broken homes 235(78.3%), Poverty 238 (79.3%), Boost of self-efficacy 242 (80.3%). The results in the table also revealed that some students were found not to be influenced by Peer group

pressure 58 (19.3%), Get rich quick syndrome 80 (26. 7%), Broken homes 65 (21.7%), Poverty 62 (20.7%), Boost of self-efficacy 58 (19.3%).

Research Question Two: What are the social vices exhibited by undergraduate students?

Table 2: Social Vices Exhibited by Undergraduate Students

S/N. Causes of social vices	No & % of students that agreed with the items	No &% students that disagreed with the items
1. Examination malpractices	245 (81.7%)	55 (18.3%)
2. Drug Abuse	196 (65.3%)	104 (43.7%)
3. Indecent dressing	170 (56.7%)	130 (43.3%)
4. Pre-marital sexual relationship	194 (64.7%)	106 (35.3%)
5. Cultism	220 (73.3%)	80(26.7%)

Table 2 shows the social vices exhibited by undergraduate students, a larger percentage of students exhibited social vices i.e Examination malpractices 245 (81.7%), Drug Abuse 196 (65.3%), Indecent dressing 170 (56.7%), pre-marital sexual relationship 194 (64.7%), Cultism 220 (73.3%). The results show the low percentage of students on Examination malpractices 55 (18.3%), Drug Abuse 104 (34.7%), Indecent dressing 130 (43.3%), pre- marital sexual relationship 106 (35.3%), Cultism 80 (26.7 %).

Research Question Three: What are the implications of social vices on academic achievement among undergraduate students?

Table 3: Implications of Social Vices on Academic Achievement among Undergraduates Students

S/N. Causes of social vices	No & % of students that agreed with the items	No &% students that disagreed with the items
1. Self-destruction	196 (65.3%)	104 (34.7%)
2. Expulsion from school	190 (63.3%)	110 (36.7%)
3. Societal Unrest	206 (68.7%)	94 (31.3%)
4. Loss of lives and properties	182 (60.7%)	118 (39.3%)
5. Academic failure	214 (71.3%)	86 (28.7%)

Table 3 show the implications of social vices on academic achievement. The table show the larger percentage on self-destruction 196 (65.3%), Expulsion from school 190(63.3%), Societal Unrest/insecurity 206 (68.7%), loss of lives and properties 182 (60.7%), academic failure 214(71.3%). Meanwhile, the low percentage of students were indicated as follow; self-destruction 104(34.7%), expulsion from school 110(36.7%), societal unrest/insecurity 94(31.3%), loss of lives and properties 118(39.3%), Academic failure 86 (28.7%).

Discussion of Findings

The findings of the study based on the research question one and table one revealed that peer pressure, get-rich quick syndrome and broken homes, poverty, boost of self-efficacy among others are some of the causes of social vices among undergraduate students. The finding

supported the view of Soyele (2022) that peer pressure, craze for quick wealth, social media, abuse and poor communication are some of the major causes of social vices among students.

Based on research question two and table two, the study found out that examination malpractices, drug abuse, Indecent dressing and pre-marital sexual relationship, cultism among others were some of the social vices exhibited by undergraduate students. The findings buttressed the submission of Elujekwute et al. (2021) that cultism, examination malpractices, drug abuse and sexual promiscuity were common social vices among undergraduate students.

Research question three examined the implications of social vices on academic achievement. The results in table three indicated that loss of lives and properties, self-destruction, academic failure, expulsion from school, societal unrest were some of the implications of social vices. The findings corroborated the report of Obodoada et at(2015) that social vices lead to societal unrest, economic wastage and reduction in the nation's Gross Domestic product (GDP).

Conclusion

It could be drawn from the findings of the study that peer pressure, broken homes/negligence by parent, poverty, boost of self-efficacy among others are some of the causes of social vices among undergraduate students. It was also concluded that the exhibition of social vices by undergraduate students is detrimental to their academic achievement. The implications of this is that, social vices among undergraduate students need to be properly and effectively tackled in order to achieved the educational attainment.

Recommendations

Based on the findings and conclusion of this study, it is therefore recommended that:

1. Students should avoid bad friends that can influence them to cultism, internet fraud, examination malpractice which could eventually lead to expulsion or untimely death and bring disrepute to the family identity.
2. Parents should make every effort to give their children sound moral and spiritual knowledge closely monitor their children by paying them unannounced visit on campus. This could assist the students to keep off from dangerous group like secret cult.
3. Government should provide employment opportunity for young graduates and provide loans for undergraduates that may find it difficult to complete their programme.
4. Lecturers, parents, and counsellors should lead by example and should be firm in dealing with deviant students. Good behaviour should be rewarded and deviant one's sanctioned to serve as deterrent to intending culprits.
5. Government should improve quality of education across the country in terms of provision of good standard of living for lecturers to avoid unlawful requests from their students and creating enabling environment for students.
6. Institutions should setup some measures to curb the activities of cultism, indecent dressing and others social vices mitigating the academic culture in the university.

7. Guidance counsellors should collaborate with relevant stakeholders to ensure that Counselling like Socio-personal, educational, marital, vocational and career, mental health, rehabilitation counselling are emphasized in their various educational setting.

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ARTIFICIAL INTELLIGENCE IN EDUCATIONALPSYCHOLOGY: ENHANCING COGNITIVR ENGAGEMENT AND LEARNING OUTCOMES

by

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Abstract

This position paper examined the integration of Artificial Intelligence (AI) into educational psychology, with the aim of enhancing cognitive engagement and improving learning outcomes. The objectives of this study explained the convergence of AI and educational psychology, examined the role of AI in supporting cognitive engagement, investigated the influence of AI-powered tools on students' learning and achievement and provided recommendations for effective inclusion of AI into teaching and learning processes. This research used the Cognitive Load Theory (CLT) as the theoretical framework. The paper argued that absorbing AI technologies into educational practice is essential for promoting active learning and personalized instruction. Most importantly, it can be garnered from this study that AI cannot totally replace the conventional learning in the classroom as the success of a student also depend on the favourable student-teacher connection. By integrating artificial intelligence into educational psychology, educators prepare students for success in a technology-driven learning environment.

Keywords: Artificial Intelligence, Educational Psychology, Cognitive Engagement, Learning Outcomes.

Introduction

In recent years, the existence of Artificial Intelligence (AI) has transformed various domains of human activity. Generative AI, known by its ability to produce novel content such as text, images and music has revealed an observable potential to influence cognitive processes, emotional responses, learning retention, reward sensitivity and motivational engagement. The creation of intelligent robots that can carry out activities that traditionally require human knowledge, such as understanding natural language, seeing patterns and drawing conclusions from data, is known as Artificial Intelligence (AI). A machine or computer program is said to have Artificial Intelligence (Al) if it uses areas of human-like thinking to complete a job. A few examples of artificial intelligence in action are maps and navigation, face recognition, text editors, autocorrect, search and recommendation engines, chatbots, digital assistants, social media and e-payments (Dalia *et al.*, 2021).

In educational sectors, AI is a branch of computer science that can perform tasks such as thinking, decision-making and learning, which are naturally associated with human intelligence (Abulibdeh, Zaidan & Abulibdeh, 2024). These dynamics are relevant in an educational setting, in this sector, the usage of technological tools can either help or mar the learning experience. AI-driven applications, such as ChatGPT, are used in the classrooms to promote personalized learning experiences, assist in grading and help meet student needs. It provides new tools that promote teaching effectiveness and student engagement. The interplay between societal values and contextual adaptability is particularly important in the era of AI,

as educational environments must now incorporate intelligent systems to enhance personalization, accessibility and the general learning experience (Irish, Gazica & Becerra, 2025).

Statement of the Problem

The inclusion of artificial intelligence into educational psychology poses major threat in the education sector. One major threat is the increase of digital divide, especially among the schools in rural areas in Nigeria. Not all learners have the same access to technology or the internet, which can lead to differences in their capacity to gain from tools and resources related to AI. The present differences in educational opportunities and results may be made worse by the digital divide. When degrees of knowledge and intelligent use of AI are taken into consideration, this disparity extends beyond simple accessibility. The impact of this level can be devastating, reinforcing educational inequities, limiting exposure to personalized learning experiences and reducing competitiveness in the increasingly AI-driven job market. Access to AI, but lack of knowledge to use it is also a factor militating the growth of AI in the world of educational psychology. Also, the promise of a radical transformation of education through AI is still far from reality. Education systems are complex and technology alone cannot address the diverse goals of human learning or teaching activities.

The failure to fully utilize AI's potential to improve teaching and learning, inefficiency and underutilization of resources are the negative results of its usage. The possibility of inefficient learning processes increases when AI is not understood or used well. Although AI holds transformative potential, its introduction into education presents challenges, including the need to adapt to pedagogical models, develop new student competencies, overcome teacher resistance and address ethical, social and technical concerns. Therefore, preparing learners and educators to succeed in an increasingly automated world remains an urgent priority.

Concept of Artificial Intelligence and Educational Psychology

Artificial intelligence (AI) is changing various sectors and psychology is no exception. Some of the tasks that educators are accountable for can be replaced by AI due to its extensive range of capabilities. Teachers set aside a specific amount of time to engage in administrative duties such verifying attendance, monitoring the classroom and processing paperwork. With the advent of AI, these chores may not only be taken off educators' plates but also be completed more quickly. The idea that the time-consuming administrative duties associated with teaching and learning may be accompanied by AI technologies without changing the tasks' quality has been collaborated by a number of research (UNESCO, 2021). By using AI technology for these chores, it provides numerous psychological benefits: reduction in time used, teachers can concentrate on meeting the learning needs of their pupils, reduces cognitive load, lower stress and burnout, enhance teachers' self-efficacy, increase engagement and improve work-life balance.

According to APA Monitor on Psychology 2025 Trends Report, by 2025 AI wiould not only be reshaping clinical psychology and research but will also be emerging as a key technology within educational psychology. The anticipated impact includes the personalisation of learning, the analysis of academic behaviour, support for classroom diversity and the

enhancement of teacher training. While it remains uncertain whether such transformations will fully take shape within educational institutions by 2025, one might also hope that AI will ease the bureaucratic burdens that psychologists and educators often face.

The role of AI in education can be analysed from two key theoretical perspectives: constructivism and connectivism (Holmes *et al.*, 2019). Constructivism views learning as an active process in which students develop knowledge through interaction with their environment and working with others. AI supports with this perspective by offering adaptive and interactive environments that promote experiential and autonomous learning (Strielkowski *et al*, 2024). Also, connectivism emphasizes that knowledge is distributed across networks and that learning occurs by navigating these connections (Goldie, 2016). AI acts as a critical node within these networks, facilitating access to different sources of information and promoting connection. Together, these frameworks establish AI's potential to enhance knowledge construction and connectivity in educational environments**.**

As the future workforce demands greater adaptability, digital literacy and innovation, connecting AI into education can help students build the competencies and mindsets necessary for thriving in complex, technology-driven environments. Thus, the successful and ethical deployment of Generative AI in psychology of education depends on a balanced approach that combines instructional innovation with a strong commitment to equity, ethical responsibility and the cultivation of future-ready students.

Concept of Cognitive Engagement

Cognitive engagement refers to the mental effort and attention we invest in learning, problem-solving and interacting with our environment. It is not just about being present; it is about being fully involved, curious and actively processing information. The influence of cognitive engagement in learning and mental performance cannot be overstated. Cognitive learning outcomes refers to the development of students' intellectual abilities, including critical thinking, problem-solving, understanding and knowledge retention. These outcomes are important indicators of how effectively learners' process, internalize and apply new information across various educational contexts (Aulianda, 2023). Enhancing cognitive learning is a central goal in education, as it improves academic performance and prepare students for complex real-world challenges by fostering higher-order thinking skills.

Diving into how the cognitive behaviour works in neuroscience, the prefrontal cortex, often called the CEO of the brain, takes centre stage during cognitive engagement. This region is responsible for executive functions like attention, planning and decision-making. But it is not just about one part of the brain. Cognitive engagement involves a symphony of neural activity. The hippocampus, crucial for memory formation, becomes more active, helping to encode new information into long-term storage. Neurotransmitters, the chemical messengers of the brain, play an important role in this process. Dopamine, often associated with pleasure and reward, surges during engaging activities, reinforcing the behavior and making learning pleasurable. Norepinephrine sharpens focus and attention, while acetylcholine helps memory formation.

Technology is opening up new frontiers in tracking cognitive engagement. Educational software can track metrics like time spent on tasks, response patterns and learning outcomes to gauge engagement levels. Randomized control trials have found that learners perform better when using general-purpose generative AI tools but perform worse when these tools were absent (Darvishi, 2024). This suggests that students may have relied on the tool to bypass cognitive processes important for developing cognitive skills, which ultimately compromised their performance. A subsequent study has found that generative AI boosted learning for those who use it to engage in deep conversations and explanations but hindered learning for those who require direct answers. This finding further explains the difference between using generative AI as an active extension of human cognition and using it merely for passive cognitive offloading.

In educational settings, the shift towards active learning methodologies is a prime example of cognitive engagement in action. Flipped classrooms, where students engage with material before class and use class time for discussion and problem-solving, promote deeper engagement than traditional lectures. Online learning platforms are also evolving to incorporate more interactive elements, from real-time quizzes to virtual labs, to keep students engaged even in remote settings. Workplace settings present unique challenges and opportunities for cognitive engagement. Boring meetings can be changed into hubs of engagement through techniques like brainstorming sessions, problem-solving workshops and interactive presentations. Professional development programs that incorporate hands-on learning and real-world applications tend to be more effective than passive training sessions.

In sum, engaging with AI systems can stimulate cognitive flexibility, encouraging students to generate and evaluate multiple solutions to problems, thereby enriching cognitive development.

Concept of Learning Outcome

Learning outcomes are the main target of a learning process. After the learning process, an individual has gained information, skills and competencies known as learning outcomes. Kumpas-Lenk *et al.*, (2018) defined learning outcomes as abilities, knowledge or attitudes that learners should gain as a result of their learning. Thus, it can be garnered that learning outcomes can take diverse forms, depending on the objectives an educator expects. Slimi (2023) emphasized that artificial intelligence (AI) significantly impacts higher education, impacting assessment, teaching and learning methods, quality of instruction and future career preparation.

The COVID-19 pandemic has caused a shift in education, making institutions and schools to change from offline to online instruction (Alam *et al*., 2022). This circumstance did not only bring new difficulties but it also sparks a surge of innovation in the field of education. To improve student learning outcomes, teachers respond to this circumstance by developing their technological intellect, conforming it to digital learning platforms and developing teaching practices sensitive to the virtual world. This process has improved teachers' use of technology to promote dynamic and connected learning. AI is introduced into the classroom as a potential learning aid (Owan *et al.*, 2023). AI can personalize learning materials to each student's need, thus creating a personalized and practical learning experience (Kamalov *et al.*, 2023). When it comes to individualized learning, it is important to understand the needs and

objectives of every student and design teaching to suit it. Any administrator, professor or student who does not understand how artificial intelligence run will thus be unable to stay up-to-date with modern technology.

Artificial intelligence (AI) systems provide necessary guidance for online instruction and learning, personalizing and energizing the learning process, automating repetitive administrative activities and adaptive evaluations. AI tools are useful to beginner learners in many disciplines, depending strongly on the capacity of adapting and configuring learning spaces and environments to fit human learning processes. They can offer user-friendly interfaces and are accessible on both mobile and desktop devices, allowing for flexible use across different times and spaces. With their multimedia capabilities, these tools could help students to engage in exercises using audio, video and written formats, especially subjects like Language Learning, Mathematics, Computer Science and disciplines that rely on memorization or gestures.

Implementing AI-ALS (Artificial Intelligence-Adaptive Learning Systems) can improve student learning outcomes by providing personalized support that meets individual learners. Hsu *et al*. (2023) observed that the use of AI-PBL (Artificial Intelligence Problem-Based Learning) enable students to take on real problems and develop understanding through exploration and problem-solving to improve student learning outcomes. These findings summarize that AI helps student learning outcomes by encouraging inquiry and problem-solving, systematically tracking student performance, offering tailored support and improving understanding of technical terms. As a result, there is a lot of promise for using artificial intelligence in education to raise student achievement levels and learning productivity.

The use of cloud computing also has a positive influence by increasing the efficiency and accessibility of learning (Liang *et al.*, 2021). Through flexible data storage, easier collaboration and efficient access to learning resources, cloud computing enables a more dynamic learning experience. AI is expected to personalize learning, automate administrative tasks and support research (OECD, 2023), increasing student outcomes and institutional efficiency. Technologies cannot stand alone, without insertion in appropriate learning environments and spaces, to individualize education.

Although AI can aid teaching and learning, it cannot replace teachers, who are essential to developing learning experiences and deep connections with their pupils. As Sclater and Peasgood (2018) stated, the efficient connection of technology and human knowledge is essential for AI in education. As a result, educators must adopt a hybrid strategy that combines the advantages of AI with those of human teachers. According to research, a student's ability to learn and succeed hugely depends on their relationship with their teachers or instructors. AI cannot replace the trust, respect and communication that underpin this connection. Teachers perform than AI to help kids emotionally, customize lessons and adjust to their requirements. Additionally, studies by education specialist John Hattie highlight the importance of the teacher-student bond in terms of student success. Hattie discovered that teacher student interactions had a significant impact on student outcomes (Hattie, 2012). This demonstrates how important interpersonal communication and connections are to the learning process. AI

could be able to offer individualized learning opportunities, but it cannot duplicate the emotional and social benefits.

Theoretical Framework

Cognitive Load Theory (CLT)

CLT defines learning as the process by which information is selected, organized and integrated into memory, a process controlled by limitations in working memory (Mayer, 2009). The theory, introduced by Sweller (2019), focuses on how instrumental instructional design should optimize cognitive resources to avoid overload and promote more efficient learning (Wirth *et. al.*, 2020). This is important when learning is complex and high cognitive load will negatively affect knowledge retention and transfer. CLT distinguishes between three types of cognitive load: intrinsic, extraneous and germane (Haryana *et. al.*, 2022). Intrinsic Cognitive Load (ICL) is determined by the nature of the material to be learned and the individual learner's previous knowledge (Chen, Paas & Sweller, 2021). Highly structured content, such as algebraic manipulations in Mathematics, require learners to process many interrelated components, thereby increasing ICL (Yang, Xiao & Zhang, 2023).

Extraneous cognitive load results from poor instructional designs and is considered not useful to learning processes (Vu *et. al.*, 2022). It results through such means as redundancy that is not needed, split-attention effects and poorly presented multimedia presentations (Xu et. al., 2021). Extraneous Cognitive Load (ECL) empirically increase improved retention and comprehension for instance, audio narration instead of onscreen texts accompanies visuals (Skulmowski & Xu, 2021). Minimizing complex visual distractions and structuring instructional sequences logically can significantly enhance cognitive efficiency (Castro-Alonso, 2021).

Germane Cognitive Load (GCL) is important for schema formation and deep learning, as it processes important cognitive processing (Haryana, 2022). Unlike ECL, GCL is useful and should be encouraged through instructional techniques like self-explanation, elaboration and active retrieval practice (Paas & van, 2020). For instance, students who use elaborative interrogation, questioning the rationale for factual information create rich connections between schemata and achieve superior long-term retention (Derry, 2020). Similarly, guided inquiry-based learning promotes conceptual learning by involving students in an investigation of how ideas are related to one another rather than presenting them with a set of ideas (Schnotz & Rasch, 2005).

In contrast, CLT has been criticized for facilitating inflexible, teacher-centered teaching methods and underestimating the importance of exploratory and metacognitive learning strategies (Moreno, 2006). When appropriately supported, Problem-Based Learning (PBL) and Self-Regulated Learning (SRL) research suggests that cognitive struggle improves deep comprehension and long-term retention (Topping & Trickey, 2007).

Potential Applications of AI in the Classroom

AI's capacity to deliver personalized learning experiences is one of its most impactful educational contributions. AI systems analyze students' progress and tailor educational content

to match their learning style, speed and needs. This personalized approach can significantly encourage student engagement and improve academic outcomes by ensuring that each student progresses at a pace suitable to their abilities. AI-powered reading platforms, for example, can adjust reading materials based on fluency and comprehension levels, providing targeted exercises and immediate corrective feedback to address specific student's weakness (Akavova *et al*., 2023). This personalized feedback allows students to feel supported and engaged, as the learning experience is tailored to their unique challenges and progress.

Language learning applications use AI to adjust lesson difficulty dynamically, which ensures that students are constantly improving without encountering content that is too easy or too difficult (Essa *et al.,* 2023). These adaptive systems create a personalized learning environment that fosters motivation and engagement. Interestingly, tools such as adaptive e-learning platforms offer detailed feedback on student performance, which not only aid students in self-correction but also assists educators in identifying and understanding individual learning patterns for more targeted instructional support (Vittorini *et al.,* 2020). Moreover, automated grading systems reduce the administrative workload on educators, allowing them to focus on higher-order instructional tasks. AI's efficiency in assessment enhances students' educational experience and contributes to more sustainable educational practices.

AI-driven platforms allow students to collaborate on projects by coordinating tasks, monitoring individual contributions and offering feedback on group dynamics. These tools help to ensure balanced participation and effective communication within student groups and foster essential teamwork skills that are valuable in academic and professional settings (Altaleb *et al.,* 2023). For example, platforms like Google Workspace integrate AI features to enhance collaborative tasks, enabling students to co-edit documents, track contributions and make real-time edits. These AI-supported collaborative environments allow students to experience teamwork in an organized, interactive format that mirrors real-world collaborative scenarios (Rad *et al.,* 2018).

Conclusion

Incorporating artificial intelligence into the field of psychology of education is crucial for developing students learning outcomes and cognitive engagement for the 21st century skills. As argued in this essay, artificial intelligence can enhance critical thinking, problem-solving, student's performance and achievement. As huge as the benefits of artificial are, it cannot replace the cordial relationship between a teacher and the student.

Recommendations

1. According to APA recommendation, psychologists should lead the integration of AI into education, guiding decisions based on ethical and scientific standards.

2. AI tools should be embedded within established learning theories such as constructivism, connectivism and Cognitive Load Theory to ensure they support active learning, collaboration and deep cognitive processing rather than passive cognitive offloading.

3. Institutions should establish ethical guidelines for AI use that emphasize responsible use, data privacy, fairness and learner autonomy, while encouraging students to engage with AI as a cognitive partner for exploration and explanation rather than as a shortcut to answers.
4. Continuous professional development should equip educators to combine AI tools with human judgment, emotional support and pedagogical expertise, ensuring that AI complements rather than replaces the teacher–student relationship.

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COMPARATIVE ANALYSIS OF ARTIFICIAL NEURAL NETWORK AND CLASSICAL DISCRIMINANT ANALYSIS IN PREDICTING STUDENTS' ACADEMIC COMPLETION OF UNDERGRADUATE AT THE UNIVERSITY OF BENIN, NIGERIA.

by

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Abstract

Accurate prediction of students' degree classification at graduation is essential for monitoring academic progress and designing early interventions. This study conducted a comparative analysis of Classical Discriminant Analysis (CDA) and Artificial Neural Networks (ANN) to evaluate their effectiveness in predicting academic completion using first-year Grade Point Average (100 Level GPA) as the predictor. An ex-post facto design was employed, utilizing academic records of 233 undergraduate students at the University of Benin. Data analysis involved computing discriminant functions for CDA and training a multilayer perceptron ANN model, with classification accuracy and cross-validation employed to assess model performance. Resu-Mts indicated that both CDA and ANN achieved comparable predictive accuracy, substantially exceeding chance-level classification, demonstrating that early academic performance is a meaningful indicator of final degree outcomes. While CDA provided interpretable linear relationships between GPA and degree classification, ANN offered flexibility for modelling complex, nonlinear patterns, although no additional predictive advantage was observed with a single predictor. These findings underscore the value of first-year performance in guiding early academic interventions.

Keywords: Degree classification, Classical Discriminant Analysis, Artificial Neural Networks, predictive modelling,

Introduction

Academic completion, operationalized as degree classification at graduation, represents a critical indicator of students' cumulative academic performance and institutional effectiveness. Degree classification systems, such as First Class, Second Class Upper, Second Class Lower, Third Class, and Pass, serve not only as measures of academic attainment but also as determinants of employability, postgraduate admission opportunities, and scholarship eligibility. According to Romero and Ventura (2020), academic completion reflects the cumulative academic trajectory of a student across their programme of study and is a key outcome in higher education research.

It has been observed that cumulative academic performance indicators, progression patterns, credit accumulation rates, and consistency of grades significantly influence final classification outcomes. Also, prior studies have employed predictive modelling techniques to forecast

degree classification using historical academic data (Lara et al., 2014; Fernandes et al., 2019). In addition, predictive models allow institutions to identify students who may graduate with lower classifications and design early academic interventions to improve outcomes (Romero & Ventura, 2020).

In recent years, higher education institutions have increasingly adopted predictive modelling techniques to forecast academic outcomes based on historical data. Similarly, the expansion of educational data mining (EDM) and learning analytics have enabled institutions to move from descriptive analysis to predictive intelligence (Baker & Inventado, 2018; Romero & Ventura, 2020). Predictive models are statistical or machine learning models used to predict future outcomes based on existing data. They include regression models, classification models, decision tree models, and time series models, which are used to predict outcomes such as academic performance, customer behaviour, or sales trends. Predictive models allow institutions to identify students who may graduate with lower classifications and design early academic interventions to improve outcomes.

Traditional statistical approaches, such as Classical Discriminant Analysis (CDA), have historically been employed for classification problems in education. Developed by Fisher (1936), CDA constructs linear combinations of predictors to maximize group separation. CDA remains widely used due to its interpretability and theoretical grounding (Tabachnick & Fidell, 2019). The assumptions of Classical Discriminant Analysis include multivariate normality, homogeneity of covariance matrices, multicollinearity among predictors, independence of observations, and screening for multivariate outliers. When assumptions such as multivariate normality of the predictor variables, homogeneity of variance-covariance matrices across groups, independence of observations, absence of multicollinearity among predictors, and the use of mutually exclusive and clearly defined groups are satisfied, CDA yields stable and interpretable classification results. Conversely, violations of these assumptions can limit its classification accuracy in complex datasets (Tabachnick & Fidell, 2019).

Furthermore, the applications of Classical Discriminant Analysis in education have demonstrated its continued relevance in academic classification problems (Tabachnick & Fidell, 2019). When assumptions are satisfied, it yields stable and interpretable classification results. Moreover, Classical Discriminant Analysis provides insight into the relative contribution of each predictor to group differentiation through discriminant coefficients and structure matrices, making it more interpretable than many machine learning approaches that are often considered “black-box” models (Qiao, 2023; Liu & Guo, 2024; Kabán & Palias, 2024).

Despite this, Classical Discriminant Analysis assumes multivariate normality and equal covariance matrices across groups. Violation of these assumptions can reduce classification accuracy, particularly in multi-category outcomes such as degree classification (Huberty & Olejnik, 2006). Educational datasets frequently exhibit unequal group sizes and heteroscedasticity, potentially affecting its performance.

On the other hand, Artificial Neural Networks (ANN) offer flexible, assumption-light modelling of complex nonlinear relationships. ANN models consist of interconnected neurons

capable of learning high-dimensional and nonlinear patterns through backpropagation algorithms (Goodfellow et al., 2016). ANN has been successfully applied across domains, including educational performance prediction (Huang et al., 2020; Fernandes et al., 2019).

Comparative studies between machine learning and classical statistical methods suggest that ANN often achieves higher predictive accuracy in complex, nonlinear datasets (Fernandes et al., 2019). However, model selection should balance predictive performance with interpretability and practical utility (Shmuel et al., 2020). Interpretability is especially important in educational contexts, where stakeholders require transparent insights to inform policy and interventions.

Studies have demonstrated the effectiveness of Artificial Neural Networks in predicting academic achievement, dropout risk, and degree outcomes. For example, Huang et al. (2020) reported that ANN outperformed logistic regression and decision tree models in predicting student academic performance. Similarly, Olaniyan et al. (2021) found that Artificial Neural Networks achieved superior classification accuracy in higher education datasets characterized by nonlinear interactions. One key strength of Artificial Neural Networks lies in its minimal reliance on strict distributional assumptions. Educational datasets often violate multivariate normality due to skewed grade distributions and heterogeneous student performance patterns. Artificial Neural Networks' flexibility enables it to model such irregularities effectively. However, its "black box" nature reduces transparency, which may limit interpretability for policy formulation (Shmueli et al., 2020).

Empirical investigations into predictive analytics in education has shown the increasingly adoption of machine learning frameworks. For example, Olaniyan et al. (2021) applied Artificial Neural Networks to predict student academic performance and reported higher classification accuracy compared to traditional statistical models. In the same vein, Huang et al. (2020) found that Artificial Neural Networks outperform logistic regression in multi-class academic outcome prediction.

On the other hand, studies employing classical discriminant techniques demonstrates competitive performance when predictor distributions approximate normality (Tabachnick & Fidell, 2019). Classical Discriminant Analysis has been effective in identifying key discriminating variables influencing academic group membership and provides interpretable discriminant functions that aid institutional decision-making.

Comparative analyses across domains indicate that Artificial Neural Networks generally perform better in high-dimensional, nonlinear datasets, whereas Classical Discriminant Analysis remains robust in smaller datasets with relatively stable statistical properties (Shmueli et al., 2020). Nevertheless, empirical comparisons focusing specifically on degree classification prediction remain sparse, particularly within developing educational contexts.

Statement of the Problem

Degree classification at graduation serves as a major academic milestone and determinant of future educational and career opportunities. But uncertainty remains regarding the most effective predictive modelling technique for forecasting students' final classification. Failure to graduate on time or with a high degree classification may lead to limited career and postgraduate opportunities, delayed employment, and financial or psychological stress. Predictive models such as regression, discriminant analysis, and machine learning techniques can help institutions identify at-risk students early and improve academic support and graduation outcomes.

Although Artificial Neural Networks have demonstrated strong predictive capabilities in educational data mining, their computational complexity and limited interpretability may constrain institutional adoption. Conversely, Classical Discriminant Analysis offers theoretical transparency but may underperform when assumptions are violated. There is insufficient empirical evidence comparing ANN and CDA in predicting degree classification at graduation. Without such comparative analysis, model selection may lack empirical justification. Therefore, this study seeks to determine which modelling approach, Artificial Neural Network or Classical Discriminant Analysis, provides superior predictive performance and practical applicability in forecasting students' academic completion as measured by degree classification.

Objectives of the Study

The objective of the study is to compare the predictive effectiveness of Artificial Neural Network and Classical Discriminant Analysis in forecasting students' degree classification at graduation. Specifically, the study seeks to:

1. determine the extent to which Artificial Neural Network predicts students' degree classification at graduation;

2. determine the extent to which Classical Discriminant Analysis predicts students' degree classification at graduation; and

3. compare the predictive accuracy of Artificial Neural Network and Classical Discriminant Analysis in forecasting students' degree classification at graduation.

Research Questions

1. To what extent does an Artificial Neural Network predict students' degree classification at graduation?

2. To what extent does Classical Discriminant Analysis predict students' degree classification at graduation?

3. Which model demonstrates higher predictive accuracy in forecasting degree classification?

Methodology

This study is a survey which adopted an ex-post facto research design. The design was considered appropriate because the predictor and outcome variables had already occurred and were not subject to manipulation by the researcher. The population comprised 233 undergraduate students who completed their academic programmes during the 2018/2019 and 2019/2020 academic sessions at the Institute of Education, University of Benin, Nigeria. A complete enumeration of all eligible students across the two sessions was considered where data were fully available. Only students with complete academic records from Year One through Year Four were included in the study to ensure data consistency, reliability, and comparability.

Institutional academic records were extracted from the university's official database following appropriate ethical clearance and administrative approval. Strict confidentiality and data protection measures were observed throughout the data handling process. Student identifiers were anonymized before analysis to safeguard privacy and ensure compliance with the university data protection guidelines. The variables in the study were operationalized based on institutional grading standards. The predictor variables consisted of students' academic performance indicators before graduation. Specifically, Year One Grade Point Average (GPA), was used as an independent variable. The GPA represented the weighted average of all courses taken in the respective academic year, computed according to the university's approved grading system. The GPA measures were treated as continuous variables and served as early academic performance indicators.

The dependent variable was students' final academic standing at graduation, operationalized as Class of Degree. This categorical variable was derived from the Final Cumulative Grade Point Average (CGPA) obtained at the end of Year Four. The classification followed the university's official grading structure, comprising First Class, Second Class Upper, Second-Class Lower, Third Class, and Pass. For analytical purposes, the categories were numerically coded while retaining their nominal classification structure. Two predictive models were developed. The first model employed a Multilayer Perceptron ANN with hidden layers trained via backpropagation and a softmax output function, which is well-suited for multi-class classification problems (Goodfellow et al., 2016). The dataset was partitioned for training (70%) and testing (30%) to evaluate generalizability. The second model used Classical Discriminant Analysis (CDA) to estimate linear discriminant functions that best separated degree class groups. CDA's theoretical foundations and interpretability have been well-documented in educational research (Tabachnick & Fidell, 2019). Key assumptions, such as homogeneity of covariance matrices and multivariate normality, were tested prior to estimation.

Comparative evaluation of ANN and CDA focused on classification accuracy, with additional performance indicators, such as cross-validation, precision, recall, and F1-scores, considered in assessing predictive effectiveness.

Results

Research Question One

To what extent does an Artificial Neural Network predict students' degree classification at graduation?

Table 1. Artificial Neural Network (ANN) Model Performance

Statistic	Training	Testing	Overall
Cross-Entropy Error	0.462	0.489	0.471
Percent Correct Predictions	73.2%	71.6%	72.5%
Percent Incorrect Predictions	26.8%	28.4%	27.5%

The ANN model in Table 1 demonstrated stable performance across training and testing samples. The percentage of correct predictions was 73.2% for the training data and 71.6% for the testing data, yielding an overall classification accuracy of 72.5%, substantially exceeding the proportional chance criterion of 50% (given equal prior probabilities). This indicates that 100 Level GPA provides meaningful predictive information regarding students' final degree classification. The comparable accuracy between training and testing samples suggests that the model generalizes well to unseen data. The cross-entropy error values were low and consistent across samples, further supporting model stability. The similarity between training and testing accuracy suggests good generalizability and minimal overfitting.,

Research Question Two

To what extent does Classical Discriminant Analysis predict students' degree classification at graduation?

Table 2. Group Means and Standard Deviations for 100 Level GPA

Graduating Class	N	Mean	Standard Deviation
Second Class and Above	120	3.52	0.46
Below Second Class	113	2.96	0.50
Total	233	3.25	0.55

Box's M = 0.562, F (1, 159691.36) = 0.559, p = .454

Table 2 shows that students graduating with Second Class and Above recorded a higher mean compared to those Below Second Class, indicating preliminary group separation. To test the assumption of the Classical Discriminant Analysis, the Box's M test was performed, and it gave the value Box's M = 0.562, F (1, 159691.36) = 0.559, p = .454, indicating that the assumption of equality of covariance matrices was satisfied.

The discriminant function in Table 3 showed that one significant discriminant function was extracted, Wilks' $\Lambda = .745$, χ^2 (1) = 67.795, $p < .001$. The canonical correlation of .505 indicates a moderate association between 100 Level GPA and degree classification. Squared canonical correlation (0.505^2) shows that approximately 25.5% of the variance in degree classification is explained by the model. Table 3 further revealed that the model correctly classified 72.5% of cases. Cross-validation produced identical results (72.5%), indicating

strong model stability. Given equal prior probabilities (50%), the model substantially outperformed chance classification. This confirmed model stability, with identical classification accuracy

Table 3. Summary of Canonical Discriminant Function (CDA)

Statistic	Value
Eigenvalue	0.342
Canonical Correlation	0.505
Wilks' Lambda	0.745
χ^2 (df = 1)	67.795
Canonical Correlation Square	0.255

Research Question Three

Which model demonstrates higher predictive accuracy in forecasting degree classification?

Table 4: Comparative Predictive Accuracy of Artificial Neural Network (ANN) and Classical Discriminant Analysis (CDA) in Forecasting Degree Classification

Model	**Performance Indicator**	**Value**
Artificial Neural Network (ANN)	Training Accuracy	73.2%
	Testing Accuracy	71.6%
	Overall Prediction Accuracy	72.5%
	Percent Incorrect Predictions	27.5%
	Cross-Entropy Error	0.471
Classical Discriminant Analysis (CDA)	Correct Classification of Second Class and Above	73.3%
	Correct Classification of Below Second Class	71.7%
	Overall Prediction Accuracy	72.5%

Table 4 show that ANN model performance is relatively consistent across both the training and testing phases. The model recorded a training accuracy of 73.2% and a slightly lower testing accuracy of 71.6%, suggesting a minimal drop in performance when applied to unseen data. This small difference indicates that the ANN model has a reasonable level of generalization ability, meaning it is not severely overfitting the training data. Additionally, the cross-entropy error value of 0.471 suggests a moderate level of prediction error, with lower values indicating better model confidence and probabilistic accuracy in classification decisions. On the other hand, the CDA results show that the model correctly classified 73.3% of students in the "Second Class and Above" category and 71.7% of students in the "Below Second Class" category, resulting in an overall accuracy of 72.5%**.** This suggests that CDA performs slightly better in identifying students in the higher-performing category but shows marginally lower accuracy for the lower-performing group.

When both models are compared directly, neither model demonstrates a clear superiority in overall predictive accuracy, as both achieved the same 72.5% accuracy rate. However, the ANN model shows a slight advantage in terms of predictive robustness due to its lower

sensitivity to distributional assumptions and its ability to model complex, non-linear relationships among variables. CDA, while equally accurate overall, is more assumption-dependent and may perform differently if those assumptions are violated.

Discussion

This study investigated the extent to which 100 Level GPA predicts students' degree classification at graduation, using both Classical Discriminant Analysis (CDA) and Artificial Neural Network (ANN) models. The CDA indicated a statistically significant discriminant function with a canonical correlation of 0.505, demonstrating a moderate linear relationship between first-year GPA and degree classification. The mean GPA of students in the Second Class and Above category (3.52) was higher than that of students Below Second Class (2.96), highlighting a clear separation between groups. CDA correctly classified 72.5% of students, with cross-validation confirming model stability. These results align with prior studies demonstrating that early academic performance is a strong predictor of final degree outcomes (York et al., 2019; Thomas et al., 2020). The interpretability of CDA allows institutions to understand how GPA contributes to graduation outcomes, providing actionable insights for academic monitoring and intervention (Huberty & Olejnik, 2006; Fisher, 1936).

The study also revealed that the ANN model, with 100 Level GPA as the sole input, achieved an overall classification accuracy of 72.5%, identical to CDA. Training and testing accuracy were 73.2% and 71.6%, respectively, indicating stable predictive performance. The predictor importance analysis confirmed that 100 Level GPA accounted for 100% of the network's predictive power. The results suggest that, in the presence of a single strong predictor, the flexibility of ANN does not confer additional classification advantage over CDA. This observation is consistent with research showing that ANN models are most beneficial when modeling complex, high-dimensional, and nonlinear relationships (Goodfellow et al., 2016; Huang et al., 2020; Ahmad et al., 2022). Here, the predictive relationship between GPA and degree classification appears largely linear, which explains why both models achieved equivalent accuracy.

The similarity in performance between CDA and ANN indicates that, in this dataset, first-year GPA alone captures the bulk of predictive variance. Both models substantially exceeded chance-level prediction (50%), highlighting the strong role of early academic performance in determining final outcomes. Approximately 27.5% of students were misclassified by both models. This indicates that factors beyond 100 Level GPA influence graduation classification, including: Lecture attendance, assignment submission patterns, and study habits may impact overall performance (Baker & Inventado, 2018). Also, variations in pedagogy and curriculum alignment can affect student learning outcomes (Romero & Ventura, 2020). While factors such as socioeconomic status, prior educational background, and personal circumstances may moderate GPA effects (Thomas et al., 2020). Incorporating these additional predictors in future ANN models could exploit its nonlinear modelling capacity to improve classification accuracy, potentially surpassing CDA performance (Ahmad et al., 2022; Huang et al., 2020).

The findings have practical implications for higher education institutions. Early identification of at-risk students via first-year GPA can inform targeted academic interventions.

CDA's interpretability allows for actionable insights in decision-making, while ANN offers potential for complex, multi-dimensional predictive modelling (Shmueli et al., 2020; Huberty & Olejnik, 2006). The results also suggest that first-year GPA can serve as a proxy for cumulative academic performance, supporting early intervention policies to enhance student outcomes. Nevertheless, the 27.5% misclassification rate highlights the need to integrate additional academic and non-academic indicators in predictive models

Conclusion

Based on the findings of the study, it was concluded that both CDA and ANN demonstrated moderate predictive strength in forecasting students' degree classification based on 100 Level GPA. CDA explained 25.5% of the variance and provided interpretable discriminant functions, while ANN yielded equivalent accuracy through nonlinear modelling. The findings indicate that early academic performance is a reliable predictor of graduation outcomes and that, in the presence of a single predictor, CDA performs as effectively as ANN. Nevertheless, misclassification rates highlight the need for additional predictors in future studies.

Recommendations

1. Institutions should track first-year GPA to identify students at risk of lower degree classifications and provide targeted support.

2. Both CDA and ANN should be employed strategically. CDA is suitable for linear, smaller datasets, while ANN may be advantageous for complex, high-dimensional datasets.

3. Future predictive models should incorporate academic, behavioural, and socio-demographic variables to improve classification accuracy.

4. Findings should inform academic policies and interventions to enhance student performance, retention, and graduation outcomes.

5. Staff should be trained in both interpretable classical statistical methods and modern machine learning techniques to maximize the utility of student performance data.

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BRAIN AND BOT: ARTFICIAL INTELLIGENCE CHATBOTS USAGE AND COGNITIVE FUNCTIONING AMONG UNIVERSITY UNDERGRADUATES IN OSUN STATE, NIGERIA

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Abstract

The growing integration of Artificial Intelligence (AI) tools into higher institutions of learning raises important questions about their psychological and cognitive implications for undergraduates. Therefore, this study determined the level of cognitive functioning, extent of AI chatbots usage and the degree of influence of AI chatbots usage on cognitive functioning among university undergraduates in Osun State, Nigeria. The study adopted the descriptive survey research design. The sample comprised 1,308 participants. Data were analysed using descriptive statistics and regression analysis. Findings revealed that a majority of undergraduates (55.7%) demonstrated moderate cognitive functioning. The findings also revealed that nearly half (48.7%) reported a high level of AI chatbots usage with others at moderate (41.9%) and low levels. The result indicated that there was a significant influence of AI chatbots usage on the cognitive functioning of the undergraduates ($R=.461$, $R^2=.213$, $F=347.295$, $p<.05$). This implies that AI chatbots usage significantly influenced cognitive functioning.

Keywords: Artificial Intelligence, Chatbots, Cognitive Functioning.

Introduction

Cognitive functioning refers to how human brain functions or operates to comprehend information. It is very essential for learning. It involves the mental processes necessary for acquiring, retaining and applying knowledge. It has various mental processes such as perception, attention, memory, logical reasoning, executive function and problem-solving. Cognitive functioning can be influenced by various factors. Some of these factors, as identified by some researchers, are: education, lifestyle, health conditions and level of interaction with modern technological tools (Jirout *et al*., 2019; Lovden *et al*., 2020; Shanmugasundaram & Tamilarasu, 2023; Gerlich, 2025).

In higher education, cognitive functioning, according to Shi and Qu (2022), influences students' ability to learn, think critically, and perform very well in their academic-related activities. However, cognitive challenges such as poor retention, limited critical thinking, and weak logical reasoning may be experienced by many undergraduates (Chew & Cerbin, 2021; Fisher et al., 2019). These challenges may be as a result of students' over-reliance on AI chatbots for solving some of their academic-related tasks rather than engaging in independent thinking. AI chatbots are computer software or applications designed to provide automatic and immediate responses to users in a human-like manner. Learners' dependency on the use of these AI tools may weaken their vital components of cognitive functioning such as logical

reasoning, retentive memory, executive function and problem-solving skills. All these aforementioned components of cognitive functioning are needed for regular academic exercises because learners need to charge their brain by regularly engaging in critical thinking and problem-solving tasks that will boost their cognitive functioning. However, learners' deviation from these brain charging activities as result of convenient and automatic responses derived from AI chatbots has made majority of undergraduates depend on the idea of copy and paste. This idea may do more harm than good to the cognitive functioning of learners.

There are mixed evidences and reactions across the globe by various scholars regarding the influence of AI chatbot usage on cognitive functioning. For instance, while studies in Ghana and Greece reported improved reflective thinking and executive functioning as carried out by some researchers (Essel et al., 2024; Pergantis et al., 2025), others from Sweden and Ukraine emphasized the issues of overreliance on AI chatbots and the reduced cognitive capacities (Johansson & Thuresson, 2024; Brovko, 2024). In Nigeria, research on AI chatbot usage and cognitive functioning is still limited, with most studies focusing on access and ethical concerns, as reported by Yusuf (2023) and (2023) and Nnaemeka and Ogunbadejo (2024).

This gap is worth to be considered as there is an increased utilization of AI chatbots among learners, most especially university undergraduates in Osun State, Nigeria. The danger of AI chatbots usage lies in the possibility that students may become passive consumers of information rather than active learners. The learners' ability to independently process information, evaluate arguments, and bring out creative ideas may reduce if there is excessive reliance on AI chatbots usage. Conversely, AI chatbots could be helpful in facilitating learners' comprehension, providing personalized learning experiences, and improving cognitive functioning when they are being used moderately. Therefore, this study addresses the problem of uncertainty surrounding the likely influence of AI chatbot usage on the cognitive functioning of university undergraduates in Osun State. While these AI chatbots are widely used by the learners, their consequence on the intellectual development of students remain underexplored. Without clear evidence, universities, educators, and policymakers may not be able to design proper and effective interventions that will improve the benefits of AI chatbots usage and as well minimize the potential risks associated with their usage. This study, therefore, seeks to investigate the levels of cognitive functioning, measure the level of AI chatbots usage, and determine the influence of AI chatbots usage on cognitive functioning among university undergraduates in Osun State. To achieve these set objectives, the following research questions were answered, and a hypothesis was also tested, as shown below:

Research Questions

1. What is the level of cognitive functioning of university undergraduates in Osun State, Nigeria?
2. What is the level of AI chatbot usage among university undergraduates in Osun State, Nigeria?

Hypothesis

There is no significant influence of AI chatbot usage on the cognitive functioning of university undergraduates in Osun State, Nigeria.

Methodology

The study adopted a descriptive survey research design. The population for the study comprised all university undergraduates in Osun State, Nigeria, totalling 103,951 as of the 2023/2024 session. A sample of 1,308 participants was selected from Federal, State, and privately-owned universities in Osun State using a multistage sampling procedure. A purposive sampling technique was used to select three universities, namely: Obafemi Awolowo University, Ile-Ife (Federal), Osun State University (State), and Adeleke University, Ede (Private), using university ownership. The proportional sampling technique was then used to select 704, 364, and 240 participants from Federal, State, and Private Universities, respectively, using 2% of the population in each selected university. One federal university with a higher population out of the two existing federal universities, one state university with a higher population out of the two existing state universities, and one private university were selected. A total of 16 departments were selected for the study across the three universities purposively selected, ensuring that the selected departments cut across sciences, humanities, and social sciences. Eight departments were selected in OAU, using a convenience sampling technique. The same procedure was used to select four departments in the Osun State University and four departments in Adeleke University.

Two adapted instruments used for data collection were *Cognitive Assessment Questionnaire (CAQ)*, adapted from Sayson (2024), and the *Chatbot Usability Questionnaire (CUQ)*, adapted from the work of Fersch *et al*. (2023), Lewis (2019) and Stohr *et al.* (2024). The instrument was divided into three sections. Section A contained five items on the socio-demographic characteristics of the respondents. Section B measured the level of cognitive functioning, while Section C assessed the level of AI chatbot usage among the undergraduates. The instruments were pilot-tested with 50 students from Bowen University, Iwo, Osun State, Nigeria to determine its reliability. Responses to the items on each section of the questionnaire were scored and used to determine the reliability of the instrument. An internal consistency approach based on Cronbach's alpha reliability estimate was adopted using SPSS software. All scales were tested at the 0.05 level of significance. The results indicated that all scales had good internal consistency, which was adequate for the study. CAQ had 0.905, and CUQ had 0.902.

The instruments for the study were administered to the respondents by the researchers. In order to give room for promptness of the instrument administration, a letter of introduction was sought from the Head of the Department, Educational Foundation and Counselling, Obafemi Awolowo University, Ile-Ife, to the Dean of each selected faculty in the selected universities. The questionnaires were administered to the undergraduates in each selected department of the selected universities. The respondents were implored to fill the questionnaire correctly and return it. The total number of 1308 copies of questionnaire were originally designed for the administration. However, 1288 copies of the questionnaire were found useful by the researcher. The remaining 20 copies of the questionnaire were not returned to the researcher. Thus, percentage of the returned questionnaire was 98.7%.

Ethical issues in Obafemi Awolowo University were carefully addressed in this study. To achieve this, the researcher applied for and obtained an ethical clearance certificate with HREC NO: IPHOAU/12/2908 from the ethical committee. The introductory letter was also requested from the head of the Department of Educational Foundations and Counselling, Faculty of Education, Obafemi Awolowo University. Verbal consent was used to explain

details about the instruments before responding to the items on the instruments. Respondents were assured of anonymity and confidentiality of whatever information provided in the course of their response to the instruments. The researcher guaranteed that all information supplied by the respondents would be kept confidential and used for academic research purposes. The reports of the research were subjected to a plagiarism test to ascertain the originality of the study.

Data were analysed using frequency and percentage and linear regression analysis. Frequency and percentage were used to answer Research Questions one and two. Simple linear regression analysis was conducted to test the hypothesis, focusing on the influence of AI chatbot usage on cognitive functioning. Statistical significance was set at $p < .05$.

Results

Research Question One: What is the level of cognitive functioning among university undergraduates in Osun State, Nigeria?

To answer this research question, two approaches were adopted. The responses of the university undergraduates who participated in the study to the 20 items on the Undergraduates' Cognitive Functioning Questionnaire were scored such that a Strongly Agree response was allotted 4, Agree response, 3, Disagree response, 2, and a Strongly Disagree response was allotted 1. These responses were subjected to a descriptive analysis of frequency and percentage. Also, to determine the level of cognitive functioning among the undergraduates, the scoring pattern of the 20 items on the questionnaire was reversed due to the negative nature of the items. Therefore, undergraduates' responses to all 20 items were cumulated. The minimum and maximum scores obtainable on this questionnaire were 20 and 80, with a range score of 60, while the mean and standard deviation values were 50.07 and 12.95, respectively. On this questionnaire, a high score indicates a high cognitive functioning level. Therefore, scores of 20 to 40 were adjudged as a Low level of Cognitive functioning, scores of 40 to 60 as a Moderate level of cognitive functioning, while scores of 61 to 80 were adjudged as a High level of cognitive functioning. The result is presented in Table 1

Table 1: Level of Cognitive Functioning among University Undergraduates in Osun State, Nigeria

Level of Cognitive Functioning	Score range	Frequency (f)	Percentage (%)
Low	20-40	334	25.9
Moderate	41-60	717	55.7
High	61-80	237	18.4
Total		1288	100.0

Mean = 50.07, SD = 12.95

Table 1 shows the level of cognitive functioning among university undergraduates in Osun State, Nigeria. The results from the findings show that 25.9% of the undergraduates had a low level of Cognitive functioning, 55.7% had a moderate level of cognitive functioning, while 18.4% of the undergraduates had a high level of cognitive functioning. As shown in

Table 2, it can be observed that the majority of the university undergraduates in Osun State, Nigeria, had a moderate cognitive functioning level.

Research Question 2: What is the level of AI chatbot usage among University Undergraduates in Osun State?

To answer this research question, two approaches were adopted. The responses of the university undergraduates who participated in the study to the 15 items on Artificial Intelligence Chatbots Usage were scored such that Strongly Agree responses were allotted 4, Agree responses, 3, Disagree responses, 2, and Strongly Disagree responses were allotted 1. These responses were subjected to a descriptive analysis of frequency and percentage. Also, in order to determine the Level of AI chatbot usage among University Undergraduates, responses to the 15 items on the questionnaire were cumulated. The minimum and maximum scores obtainable on this questionnaire were 15 and 60, with a range score of 45, while the mean and standard deviation values were 44.0 and 9.38, respectively. On this questionnaire, a high score indicates a high level of usage and vice versa. Therefore, scores of 15 to 30 were adjudged as a low-level usage of AI Chatbots, scores of 31 to 45 as a Moderate-level of AI Chatbots usage, while scores of 46 through 60 were adjudged as a High-level of AI Chatbots usage. The results is presented in Table 2

Table 2: Level of AI Chatbots usage among University Undergraduates in Osun State, Nigeria

Level of Cognitive Functioning	Score range	Frequency (f)	Percentage (%)
Low	15-30	121	9.4
Moderate	31-45	540	41.9
High	45-60	627	48.7
Total		1288	100.0

Table 3 shows the level of AI Chatbots usage among university undergraduates in Osun State, Nigeria. The results showed that 9.4% of the undergraduates had a low level of AI Chatbot usage, 41.9% had a moderate level of AI Chatbot usage, and 48.7% of the undergraduates had a high level of AI Chatbot usage. As shown in the results, it can be observed that the AI Chatbot usage among university undergraduates in Osun State, Nigeria, is generally high.

Hypothesis

There is no significant influence of AI chatbot usage on the cognitive functioning of the

University undergraduates in Osun State, Nigeria.

To test this hypothesis, the cumulated score for AI chatbot usage was regressed on cognitive functioning scores of the university undergraduates. The result is presented in Table

Table 3. Regression Analysis of the Influence of AI Chatbots Usage on Cognitive Functioning of University Undergraduates in Osun State, Nigeria

R= 0.461 R^2= 0.213 Adj. R^2= 0.212 F= 347.295*	Unstandardized Coefficients		Standardized Coefficients	T	*P*
	B	Std. Error	Beta		
(Constant)	78.114	1.539		50.766	.000
AI Chatbots Usage	-.637	.034	-.461	-18.636	.000

a. Dependent Variable: Cognitive Functioning

b. Predictor: (Constant), AI Chatbots Usage

Table 3 shows that AI Chatbots usage significantly predicts cognitive functioning among the university undergraduates (R=.461, R^2=.213, F=347.295, p<.05). The model produces a correlation coefficient of R = .461, indicating a moderate relationship between AI Chatbots usage and cognitive functioning. The coefficient of determination (R^2 = .213) showed that 21.3% of the variation in cognitive functioning can be explained by the level of AI Chatbots usage, while the adjusted R^2 value (.212) confirms the model's reliability. The unstandardized regression equation is:

Cognitive Functioning = 78.114 - 0.637(AI Chatbots Usage).

The regression coefficient for AI Chatbots usage (B = -0.637, t = -18.636, p < .05) indicates a significant negative influence. This means that for every one-unit increase in AI Chatbots usage, the cognitive functioning score decreases by 0.637 units. The standardized coefficient (β = -0.461) also supports the existence of a moderate negative relationship. Since the probability value (p < .001) is less than the 0.05 level of significance, the null hypothesis, which states that there is no significant influence of AI Chatbots usage on cognitive functioning, is rejected. Therefore, the study concludes that AI Chatbot usage has a negative influence on the cognitive functioning of university undergraduates in Osun State, Nigeria.

Discussion of Findings

The findings showed that the majority of university undergraduates in Osun State had a moderate level of cognitive functioning. This means that the majority of them maintain average capacity for components of cognitive functioning ranging from learning, problem-solving skills, and logical reasoning. Also, the moderate level of cognitive functioning reported in this study suggests that while some students maintain cognitive functioning moderately necessary for their academic-related activities, they may also face some likely challenges that prevent them from maximising their cognitive potential to the optimal level. The percentage of learners with low cognitive functioning, as shown in the study, is a point of concern that requires proper intervention from teachers, lecturers and other stakeholders in educational sectors. Though the percentage may be considerably small, it reveals challenges being faced by certain numbers of undergraduates in their academic engagement, processing of information and logical or abstract reasoning. The very low percentage of learners with high cognitive functioning, as revealed in this study, indicates that a smaller number of university undergraduates in Osun State possess strong and high intellectual abilities that could make them extraordinarily excel in their academic performance. This is buttressed by the claim of

Shi and Qu (2022), who stressed that higher cognitive skills promote better academic performance. The authors claimed further that cognitive abilities could vary across populations as a result of factors like self-monitoring and the influence of environment.

The distribution of cognitive functioning level of university undergraduates, based on these results, seems to be averagely normal, as the majority of them did not fall into a low level of cognitive functioning. The distribution is in agreement with the general observations in educational psychology that cognitive ability naturally varies across individuals. The findings tally with the conclusion of Ossai and Etta (2024), who revealed in their study that cognitive functioning of learners is moderately affected by emotional and academic pressures. This seems to be an interpretation that reflects these current findings, which reveal a moderate level of cognitive functioning among learners. Additionaly, Olorunfemi et al. (2025) reported that students possess cognitive capacity for academic tasks, but behavioural distractions and sleep irregularities prevented them from maximising their cognitive potential. This, according to Olorunfemi and his research partners, results in moderate cognitive outcomes among the learners. The moderate level reported in this study may also be a result of the balance between their academic demands and their abilities to engage in metacognitive strategies. This is supported by Ojo and Adeyemo (2023), who pointed out that self-efficacy and cognitive skills worked together to enhance academic performance. Therefore, there is a need for proper and targeted interventions to improve cognitive functioning among learners, most especially the university undergraduates. This is why Alkhateeb and Alsmadi (2023) advocated for the integration of emotional intelligence training into curricula so as to improve the cognitive functioning of learners.

The second result revealed that nearly half of the learners reported a high level of AI chatbot usage, while others recorded moderate and low level of AI chatbot usage respectively. The high usage of AI chatbots shows the rising popularity of AI tools such as ChatGPT, Microsoft Copilot, Gemini and Meta AI, to mention but a few, among university undergraduates in Osun State, Nigeria. This finding confirms the claim of Nnaemeka and Ogunbadejo (2024), who maintained that AI chatbots are now integral to the study routines of university undergraduates in Nigeria. The authors claimed further that ChatGPT, as one of the popular AI chatbots, has been used widely by a large number of undergraduates in Nigeria due to its accessibility and relevance in academic-related activities. In a similar opinion, Yusuf (2023) observed that students frequently get accustomed to the use of AI chatbots for explanation, assignment and support in their academic activities. High chatbot usage, according to Yusuf, suggests that students perceive AI chatbots as accessible, efficient and convenient. On the contrary, there is a concern regarding the balance between reliance on AI chatbots and independent cognitive engagement. According to Johansson and Thuresson (2024), chatbot usage supports learning, but they may promote or lead to dependency if not used responsibly and moderately.

The third result showed that AI chatbot usage had a negative significant influence on the cognitive functioning of university undergraduates. The negative association indicates that chatbot usage negatively influences how students engage with cognitive-related tasks and activities. These findings shed light on the ongoing debate and mixed reactions of scholars on whether AI chatbots improve or reduce the cognitive functioning and abilities of learners. On

the one hand, the findings slightly run contrary to the claim of Essel et al. (2024) who argued that responsible AI chatbot usage could promote reflective thinking and comprehension among students. This slight contrast may be as a result of differences in geographical setting, as his own study was carried out in Ghana. It may even be as a result of differences in the methodology employed for data collection. Additionally, it is in contrast with the observation of Pergantis et al. (2025), who reported that students using AI chatbots showed stronger working memory. On the other hand, the findings tally with the claim of Brovko (2024) that AI chatbots may unintentionally reduce deep engagement when students passively depend on the contents generated from them. It also bears relevance with the perspective of some researchers like Dergaa et al. (2024) and Shanmugasundaram and Tamilarasu (2023), who were of the opinion that over-reliance on AI chatbots may reduce logical reasoning and creativity on the part of learners. Also, a significant variance reported in this study suggests that AI chatbot usage exerts a significant influence on cognitive functioning, but it is not the sole variable that could influence cognition. In light of this, other factors, such as motivation, emotional intelligence, self-efficacy, study habits, motivation and instructional methods, may shape the cognitive functioning of learners, particularly university undergraduates. This, according to Zelazo and Carlson (2020), aligns with cognitive psychology theories which claim that learning is influenced by both internal and external factors.

Conclusion

The study concluded that AI chatbot usage had a significant negative influence on the cognitive functioning of university undergraduates. Therefore, the challenge for students, educators, and policymakers now is not whether to use chatbots, but how to use them responsibly to maximize benefits while mitigating risks.

Recommendations

University undergraduates should be encouraged to take time to scrutinise and verify any academic content generated from AI chatbots before using it for any academic-related assignment or task. This can be done by requesting a valid reference and a downloadable link of any Chatbots-generated content and searching for it again through Google or other academic search platforms such as Google Scholar, ResearchGate, JSTOR, research-rabbit, and so on.

Additionally, a series of seminars or workshops should be organised to give our university undergraduates orientation on the moderate use of AI chatbots in such a way that will maximise their cognitive functioning to the fullest level. AI chatbots, just like the invention of the calculator, have come to stay, but a series of seminars on their usage will likely help to bring out the best in their usage and also reduce the adverse cognitive effect that may set in through the overutilization of them. Also, School administrators should create comprehensive digital literacy programs that can educate not only university undergraduates but also polytechnic and colleges of education students on the effective use of AI chatbots and all ethical considerations attached to it.

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INFLUENCE OF LOCUS OF CONTROL AND DEMOGRAPHIC FACTORS ON UNDERGRADUATES' PREDISPOSITION TO SELF EMPLOYMENT

by

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Abstract

This paper examined the influence of locus of control and selected demographic variables on the predisposition of final year students in universities in Osun State, Nigeria to self-employment. Against a background of increasing youth unemployment. The descriptive survey design was adopted. A sample size of 900 students was selected from three universities through a multi stage sampling technique. Data were collected using a questionnaire titled "Determinants of Predisposition to Self-Employment Questionnaire (DPSEQ)", drawn from validated scales of predisposition to self-employment and locus of control. The results showed that most of the undergraduates (69.7) had a moderate predisposition to self-employment, and 25.9% were positively predisposed. The result of the regression analysis revealed that the locus of control was not only statistically significant and positively related to self-employment predisposition (B = 0.045, p = 0.016), but it also explained 0.7% of the variance. On the other hand, the demographic variables that were tested (age, sex, course of study, birth order, and socioeconomic status of parents) were found to have no significant moderating impact on the entrepreneurial predisposition. The authors concluded that locus of control is a major factor predisposing undergraduates to self-employment while demographic factors are of no significant influence. The findings offer valuable insights for educators, policymakers, and career counsellors aiming to design more effective strategies to cultivate an entrepreneurial mindset among Nigerian graduates.

Keywords: Self-employment, Locus of control, Entrepreneurship, Predisposition to Self-Employment, Entrepreneurial Intention

Introduction

The persistent rise in the rate of unemployment in the world and especially in Nigeria is a cause of concern among the policy makers, educators and researchers (Onwuemeka at el., 2024). The unemployment rate in Nigeria has been increasing over the last decades (Oyefusi & Arodoye, 2021), particularly among the youths as most of them form a large portion of the labour force (ILO, 2024). According to Pitan and Adedeji (2012) and Muo (2016), the growth of tertiary and increase in enrolment only produce graduates whose skills are not necessarily in line with the needs of the labour market and as a consequence, there are always too many job seekers and few white-collar positions.

As a result of this imbalance, there has been a growing interest in self-employment as an option to a regular job. The fact that the government of Nigeria introduced entrepreneurship education in the university education is an effort address skill mismatch, enabling universities to churn out graduates who are equipped with the skill to be employment creators rather than job seekers (Akpan, 2021; Sanusi, Olaleye, & Atjonen, 2017). Not every undergraduate has the psychological preparedness/disposition to become self-employed, despite the freedom, income-earning potential, and innovativeness that self-employment offers. Some youths may seem to be willing to venture into business, however, others, even as unemployment continues to increase, clearly state their willingness to be employed in the salaried jobs.

Studies have indicated that the psychological factors such as locus of control are very significant in forming entrepreneurial intentions (Mensah et al., 2022; Karabulut, 2022). Locus of control is defined as in individual's belief about the degree to which the outcomes of their actions are controlled by internal factors (such as personal effort, ability, or decisions) or external factors (such as luck, fate, or powerful others) (Rotter, 1966). In the Nigerian society where this study is situated, it is not uncommon for individuals to attribute certain occurrences solely to external factors such as God, luck, economic policies, and other factors beyond the ability and influence of the individual. Some individuals however also believe that their fate is in their own hands, perceiving external factors as being of little influence in the outcomes of their lives. It therefore becomes important to understand how such attributions influence predisposition to self-employment among university undergraduates.

In the same vein, demographic factors have been noted to have an effect on the probability of entrepreneurship. Birth order, socio-economic status, sex, and marital status are some of the factors that can influence exposure, motivations, confidence, and risk-taking tendencies (Wang, et al., 2022). For example, Layoo (2025) argued that first-born children, are usually raised with the expectation of being leaders, making them more business oriented. It might also be that access to resources, role models, entrepreneurship training, socioeconomic background, gender roles, and commitment to marriages may affect individuals' readiness to take up the risk of self-employment.

Although there has been an increased focus on self-employment, little empirical research has focused on the relationship between locus of control as a crucial yet less studied psychological trait and demographic factors in determining their influence on predisposition of undergraduates to self-employment. The significance of these factors lies in the reality of tertiary education being the last stage that the youths undergo prior to the entry into the labour market. It then becomes necessary to determine the extent to which undergraduates possess the relevant qualities to become entrepreneur, as the outcome can inform educators, counsellors, and policymakers to influence curriculum content and instructional delivery.

This study therefore examined the combined influence of locus of control and selected demographic factors on undergraduates' tendency toward self-employment, with a view to understanding how these variables shape their entrepreneurial orientation and career preferences, and providing valuable insights to reinforce entrepreneurship education and youth empowerment programmes.

Statement of the Problem

In spite of what appears as the general acceptance of entrepreneurship education as a panacea to youth unemployment in Nigeria, efforts at improving entrepreneurship among university graduates do not appear to be yielding enough to quell the scourge of youth unemployment. While some students possess some personality traits that are required to excel in self-employment, many of them are still clinging to the hope of securing white-collar jobs and getting salaried jobs although there is a diminishing number of such chances.

The lack of awareness of the personal and demographic factors that influence the predisposition of students towards self-employment is one of the biggest obstacles to the quest of encouraging the growth of entrepreneurship among university undergraduates. Locus of control has attracted some attention as it determines the degree to which people can determine their own fate by applying efforts, skills and making choices. Students with a higher internal locus of control might be more likely to take initiative, handle risk and engage in entrepreneurial activities whereas students with a more external orientation might be more reliant on external conditions, luck or paid opportunities that are available. How this trait influences predisposition to self-employment among university undergraduates in Osun State remains unknown.

In addition to psychological factors, demographic variables like age, gender, family, socioeconomic status, and major of study can also influence the career preferences and attitudes of students towards entrepreneurship. These can affect access to resources, experience of entrepreneurial role models, confidence, and perceived self-employment opportunities. Although there is an increasing amount of literature on the topic of entrepreneurship and self-employment, little is known about how locus of control interacts with demographics in determining predisposition towards self-employment among undergraduates. This gap highlights the need to investigate the combined influence of these variables in predisposing undergraduate students in Osun State to self-employment, hence this study.

Research Objectives

The main purpose of this study is to examine how locus of control and demographic factors influence the predisposition of undergraduates to self-employment. The specific objectives are to:

1. determine the level of predisposition of undergraduates to self-employment.
2. examine the influence of selected demographic variable on students' predisposition to self-employment.
3. assess the influence of locus of control on students' predisposition to self-employment.

Research Questions

To guide the study, the following research question is raised:

i. What is the level of predisposition to self-employment among university undergraduates in Osun State?

Hypotheses

Two hypotheses were raised to guide this study:

1. There is no significant influence of demographic variables (age, sex, course of study, birth order, and parents' socioeconomic status) on undergraduate students' predisposition to self-employment.

2. There is no significant influence of locus of control on undergraduate students' predisposition to self-employment.

Literature Review

Locus of Control and Predisposition to Self-employment

Locus of control is the degree to which people believe that they, rather than some external forces have control over the outcome of events in their lives. It is the belief that whatever happens is a product of one's actions or inaction, rather than that of some powerful other such as fate, the environment, people, or even God. That is, it refers to individually perceived sources of control over certain behaviours or events (Ogunkola, 2008). Locus of control is a "generalised belief that a person can or cannot control his own destiny or a person's perspective on the events whether he is able to control behaviour that happened to him or not (Rotter, 1966).

Although previous studies have linked internal locus of control with entrepreneurial values such as drive, autonomy, persistence, and active engagement in tasks, individuals with an internal locus of control are generally considered more likely to persevere in the face of challenges than those with an external orientation (Pandey & Tewary, 1979; Kader, 2014). Similarly, locus of control has been associated with higher levels of motivation, effort, curiosity, and job performance Ng and Feldman. These findings suggest that locus of control is an important psychological construct in explaining behaviours that require initiative, agency, and risk-taking, including self-employment tendencies (Baluku et al., 2018).

However, much of the existing literature has focused on the general relationship between locus of control and work-related outcomes or entrepreneurial behaviour, with relatively limited attention given to undergraduate students, particularly within the Nigerian context. In addition, few studies have examined how locus of control interacts with demographic variables such as age, sex, course of study, birth order, and parents' socioeconomic status in shaping students' predisposition to self-employment. This creates a gap in the literature which the present study seeks to address.

Demographic Factors and Predisposition to Self-Employment.

One of the factors reported in literature that has been reported to influence predisposition to self-employment is gender. For example, Wang, et al. (2022) wrote that male entrepreneurial expectations and self-employment orientation are stronger and have a greater tendency towards self-employment which may be due to gendered socialisation, risk aversion, and network access. Fagbohungbe (2012) however discovered minimal and insignificant difference in entrepreneurial ability/intent between males and females indicating that there were a significant number of females in informal entrepreneurship in Nigeria. Therefore, gender influences can be culturally and economically predetermined.

The Socio-economic Status of parents can also access start-up capital, networks, and role models, therefore, students with higher SES backgrounds might have more pragmatic viability in the case of self-employment. Abun, et al. (2022) reported that positive correlations between parental business background/SES and the entrepreneurial inclination of the students. Nevertheless, Hajrah et al., (2018) record a contrary result in which the economic status of parents did not show any obvious impact.

Literature consistently indicates that exposure to business, entrepreneurship, or vocational training raises entrepreneurial interest (Burhanudin et al., 2025). More so, there are mixed evidence on age as some studies find older individuals more likely to enter self-employment due to accumulated capital; others find age immaterial and posits marital status may both enable (via spouse income cushion) or constrain (via family responsibilities) entrepreneurial entry. The current dataset indicated no significant moderating effect for age or marital status within the undergraduate sample.

Demographic factors have been identified as influencing entrepreneurship and predisposition to self-employment. According to Wang et al (2022), entrepreneurial expectations and interest in self-employment of female students are lower than those of male students. The researchers argued that this may be due to gender socialisation, risk-taking behaviour, and access to business networks and opportunities. Fagbohungbe (2012) on the other hand reported that there are marginal differences in entrepreneurial ability and intention between males and females, adding that women in Nigeria are more involved in informal entrepreneurship. This indicates that the role of gender might be contingent on the existing cultural and economic context. Self-employment orientation has also been attributed to parental socioeconomic status, with the students with more financially endowed backgrounds possibly having a more direct access to financial resources, networks, and entrepreneurial role models. Whereas Abun et al. (2022) showed that parental socioeconomic status had a positive correlation with entrepreneurial inclination, Hajrah et al. (2018) did not show any significant impact. The evidence on age is inconclusive, with some studies indicating that older people are more apt to contemplate self-employment due to their more experience and resources available to them (Abraham et al., 2019), and others indicating that age does not significantly or even affect self-employment (Bohlmann et al., 2017).

Overall, previous findings on demographic factors remain inconsistent. In addition, many studies have examined these variables separately rather than alongside locus of control

in explaining undergraduates' predisposition to self-employment. This gap provides a basis for the present study.

Method

The study adopted the descriptive survey research design. The study population comprised of all undergraduates of universities located in Osun State during the 2022/2023 academic session. Obafemi Awolowo University and Osun State University were purposively selected on the basis of ownership, while Oduduwa University was randomly selected among private universities in Osun State. The three universities had a collective population of about 58,376 out of which 900 sample was chosen using Richard Advisor Sample Size Calculator at a margin of error of ≈3%. at 95% confidence level. From each university, 300 students were chosen using multi-stage sampling procedure across faculties, and departments. Three faculties were chosen from each university; two departments were selected per faculty, and 50 copies of questionnaire were distributed to students in each of the selected departments. Two scales were used to elicit information from the respondents. Tackey (1999) was used to elicit data on predisposition to self-employment, and locus of control was measured using a 17-item scale adapted from Furnham (1986).

Research Instrument

An instrument titled "Determinants of Predisposition to Self-Employment Questionnaire (DPSEQ)" was used to collect data from respondents for this study. In carrying out this study, four sections A, B, C, and D. Section A elicited responses on the demographic features of respondents; section B elicited information on predisposition to self-employment and section C elicited responses on locus of control. The instrument consist of two scales, the predisposition to self-employment scale and the locus of control scale.

Predisposition to Self-Employment Scale

The scale consists of 17 items which were adapted from Tackey (1999) which originally consisted 25 items. Eight items were dropped after pilot testing/item analysis as they were found to possess poor psychometric features. Liker-type rating Scale of 'Strongly Agree' (SA), 'Agree' (A), 'Disagree' (D), and 'Strongly Disagree'(SD) which were coded 4, 3, 2 and 1 respectively.

Locus of Control Scale

The Locus of Control Scale contained 17 items which were adapted from work of Furnham (1986), where it contained 30 items originally. Fifteen items were removed by the researcher leaving 25 items for pilot testing. A further 8 were removed after validation, having been found to possess poor psychometric properties. A number of items were reworded to fit into the purpose of the research and for clearer understanding of the clients. After validation of the instrument, one item was also dropped. The respondents were asked to tick the option that best applies to them. The items were rated on the rating scale of Four-point Likert rating Scale

of 'Strongly Agree' (SA),'Agree' (A),'Disagree' (D), and 'Strongly Disagree'(SD) which were coded 4, 3, 2 and 1 respectively.

Validation of the Locus of Control Instrument

The validation of the Locus of Control scale (Section C) was conducted using factor analysis to confirm the adequacy and distinctiveness of its items. The questionnaire was administered to 50 students, and the responses were subjected to principal component analysis with varimax rotation. Factors with eigenvalues greater than 1 were retained, yielding two valid factors for the Locus of Control section.

Pre-analysis checks showed that the data were suitable for factor analysis. The Kaiser–Meyer–Olkin (KMO) measure exceeded the recommended minimum of 0.50, and Bartlett's Test of Sphericity (BTS) indicated statistically significant correlations among items. The determinant of the correlation matrix was above the multicollinearity threshold of 0.00001, confirming that factor analysis was appropriate. Items that failed to meet the validation criteria were removed.

Reliability analysis was conducted using Cronbach's alpha, split-half reliability, and the Spearman–Brown coefficient, all of which indicated high internal consistency for the Locus of Control scale.

Table: Validity and Reliability Statistics for Locus of Control

Validity Statistics

Correlation Matrix Determinant	KMO	Bartlett's Test of Sphericity (χ^2)	df	Sig.	No. of Factors Extracted	Items Removed
0.00005994	0.776	393.747	0.000	4	1, 2, 3, 7, 8, 11, 17, and 20.	1, 2, 3, 7, 8, 11, 17, and 20

Reliability Statistics (Section C)

Cronbach's Alpha	Split-Half (1st Half)	Split-Half (2nd Half)	Spearman–Brown
0.895	0.804	0.828	0.874

Procedure for Data Collection

The instrument for the study was administered to the respondents by the researcher with the help of three research assistants. The questionnaires were administered to final year students during classes with the permission of lecturers, and others while awaiting lectures. In each classroom, the students were briefed of the purpose of the study before the commencement of classes about the essence of the study. The respondents were assured that the information from them was only meant for the research work and would be treated with utmost confidentiality. They were given time to attend to the questionnaires.

3.7 Technique for Data Analysis

The data collected from respondents were analysed using descriptive and inferential statistics. Specifically, percentages and frequency were used to answer research question one, and regression analysis was used to answer hypotheses one and two. The hypotheses were tested at the

Research Question One: What predisposition do university undergraduates in Osun State have towards self-employment

To answer this research question, the responses provided by the research participants to Section B of the research instrument which measured students'/respondents' predisposition towards self-employment were scored in such a way that a "strongly agree" option was allotted a score of 4, an "agree" option was allotted a score of 3, a "disagree" option was allotted a score of 2 while a "strongly disagree" option was allotted a score of 1. The resulting scores were aggregated and made to constitute a measure of predisposition towards self-employment indicated by each of the respondents. On the measure, the maximum value obtained was 68 while the minimum value was 17. Also, the mean score was 50.99 with a standard deviation of 6.98. However, the measure was categorised in such a way that when a respondent had a score of 40 or less on the measure, such respondent was said to demonstrate a negative predisposition to self-employment, while a score of 41 to 55 indicate a neutral predisposition to self-employment. Any score above 55 was said to indicate a positive predisposition to self-employment. The categories were then analysed descriptively and the result is presented in Table 4.1 below.

Table 4.1: Predisposition to Self-employment among University Undergraduates in Osun State

Predisposition to self-employment	Frequency	Percent
Negatively Predisposed	38	4.4
Neutrally predisposed	597	69.7
Positively Predisposed	222	25.9
Total	857	100.0

Table 4.1 presents a descriptive analysis of the predisposition to self-employment observable among university undergraduates in Osun State. The result shows that most of the undergraduate students of Osun State universities (69.7%) demonstrated a neutral disposition to self-employment, while only 25.9% of the undergraduate students demonstrated positive predisposition. However, 4.4% of the students demonstrated negative predisposition to self-employment.

Hypothesis One: There is no significant influence of locus of control on university undergraduates' predisposition toward self-employment.

To test this hypothesis, the respondents' responses to sections C (locus of control) of the questionnaire was scored in such a way that when a respondent chose a "strongly agree" option, s/he was allotted a score of 4, for an "agree" option, a score of 3 was allotted and when a "disagree" option was chosen, a score of 2 was allotted. Also, when a "strongly disagree"

option was chosen, s/he was allotted a score of 1. This process was reversed for certain items. For instance, under section C, this process was reversed for items 3, 4, 5, 7, 8, 9, 11, 14, 16 and 17 because they pertain to negative influence of locus of control.

Moreover, the resulting scores were aggregated and were made to constitute a measure of locus of control possessed by each of the respondents. These measures were subjected to linear regression analysis using predisposition to self-employment as the dependent (predicted) variable while locus of control was used as the independent (predictor) variables. The result of the model obtained is summarised Table 4.6 along with the ANOVA test of its significance.

Table 4.6: Influence of locus of control on predisposition to self-employment among students of universities in Osun State.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA	
					F	Sig.
LOC	.082[a]	.007	.006	6.95898	5.832	0.016[b]

Table 4.6 presents the influence of locus of control on predisposition to self-employment among students of Osun State higher institutions. From the table it can be seen that the R-square values obtained is 0.007 and Adjusted R-square value of 0.006 which is significant at 0.05 level (sig. value < 0.05) each. These can be interpreted to mean that locus of control can account for 0.7% at most and at least 0.6% of the variance observed in predisposition to self-employment. The strength and the direction of the influence is shown in Table 4.7.

Table 4.7: Coefficient of the strength of influence of locus of control on predisposition to self-employment among students of universities in Osun State.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	49.042	.839		58.433	.000
LOC	.045	.019	.082	2.415	.016

Table 4.7 presents the strength of influence of locus of control on predisposition to self-employment. The table shows that locus of control positively and significantly influence predisposition to self-employment (P is less than 0.05, B = 0.045). This implies that predisposition to self-employment increases with increasing values of locus of control.

Hypothesis Two: There is no significant moderating influence of demographic variables of age, sex, course of study, birth order, and parents' socioeconomic status on predisposition to self-employment.

To test this hypothesis, both individual influences of age, sex, course of study, birth order and parents' socio-economic status were explored on predisposition to self-employment by conducting a multiple regression analysis in which the scores on the measure of predisposition to self-employment was used as the criterion measure while age, sex, course of study, birth order and parents' socio-economics status were used as the independent measures. The result is presented in Table 4.10

Table 4.10: Moderating influences of age, sex, course of study, birth order and parents' socio-economic status on predisposition to self-employment among students of universities in Osun State.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	ANOVA F	ANOVA Sig.
Age	.052[a]	.003	.002	6.97309	2.352	0.125[b]
Sex	.031[a]	.001	.000	6.97922	0.846	0.358[b]
Course of Study	.032[a]	.001	.000	6.97907	0.883	0.348[b]
Birth order	.007[a]	.000	-.001	6.98248	0.046	0.830[b]
Parents' Socio Econs	.033[a]	.001	.000	6.97881	0.947	0.331[b]

Table 4.10 presents the moderating influences of age, sex, course of study, birth order and parents' socio-economic status were explored on predisposition to self-employment. The table shows that there are no moderating influences of age, sex, course of study, birth order and parents' socio-economic status on predisposition to self-employment.

This is can be confirmed further by the R-square values obtained for each of the variables as age can only account for a maximum of 0.3% and a minimum of 0.2% of the variance observed, while sex, course of study and parents' socio-economics status can only account for a maximum of 0.1% and possessed no adjusted value. Birth order possessed no R-square value, while the adjusted value is negative; the models are also not significant at 0.05 level (sig. value > 0.05). These can be interpreted to mean that age, sex, course of study, birth order and parents' socio-economic status cannot account for any variance observe in predisposition to self-employment. Therefore, the little values observed in age, sex, course of study and parents' socio-economic status are due to mere chances only.

Discussion of Findings

Predisposition to self-employment is the inclination to become self-employed. The central thrust of the research was to investigate how predisposed to self-employment are undergraduate students of universities in Osun State, and the factors that may influence university undergraduates in Osun State to self-employment.

Research question one was posed to investigate predisposition to self-employment of university undergraduates in Osun State. The result from findings shows that the majority of undergraduates of Osun State universities are neutrally predisposed to self-employment, even though a far greater percentage shows a positive predisposition to self-employment than a negative predisposition. First of all, this means that a majority of university undergraduates in Osun State are predisposed to self-employment, and only a very few are not. This is corroborated by the findings of Egunsola, Emmanuel, Dazala, and Daniel (2012) among undergraduate university students in Adamawa State (Nigeria) that the most preferred place of work by students after graduation is self-employment. This result indicates that many undergraduate students are neutrally predisposed to self-employment. It can then summarise that many undergraduate students of Osun State Universities have a self-inclination to self-employment. However, Ogunbanjo et al (2017), found that Nigerian youths from all corners

of the country most especially graduates are in search of almost unavailable white-collar jobs. Although, Ramos-Rodríguez (2023) reported earlier that though a considerable number of students share thinking about entrepreneurship, only a few of them intend to start business after graduation, but postpone this to a more distant future. The reason for this, Anyandike et al, (2012), found to be the cost intensive nature of self-employment among other factors which dissuade the youths from assuming entrepreneurial leadership positions.

The implication of this result is that positive disposition does not necessarily translate to entrepreneurial action. It is thus the role of universities and policymakers to ensure that entrepreneurship education goes beyond theoretical exposure by introducing a more practical and skill-based, experience-based training that instils confidence and preparedness to be self-employed in the students. Moreover, specific measures are required to overcome financial, psychological, and environmental obstacles that do not allow students to transform entrepreneurial intention into business involvement.

The result obtained from the study also showed that that locus of control significantly influences the predisposition of university undergraduates in Osun State to self-employment. This explains that students' consciousness of being in control of their own life better predisposes them to self-employment than a feeling of having some powerful others determining their fate. This corroborates finding of Hamzah and Othman (2023) who maintained that those who had achieved high level of internal locus of control will be more enterprising, more independent, self-confident, control events and also good in decision making, and Ngwoke et al (2013) who found undergraduate students of the University of Nigeria, Nsukka, Nigeria to exhibit internal perceived LOC and therefore concluded there is much likelihood that the students will display great entrepreneurial skills on graduation even under disabling environment as is prevalent in Nigeria. The result also concurred with Tentama & Abdussalam (2020) who stated that "Locus of control significantly contributes on the entrepreneurship interest, and Ginting's (2025) assertion that locus of control as an attribute of personal character plays an important role in the development of entrepreneurial behaviour as far as it contributes to the development of entrepreneurial intentions.

The second hypothesis, which stated that demographic variables (age, sex, course of study, birth order, and parents' socioeconomic status) do not have a significant moderating influence on predisposition to self-employment, was confirmed by the findings of this study. Analysis confirmed that none of these demographic factors exerted a statistically significant effect on students' inclination toward self-employment.

Regarding sex as a factor, the findings align with Fagbohungbe (2012), who reported no inherent difference in entrepreneurial abilities or intentions between males and females. This is reflected in the significant presence of women in Nigeria's informal self-employment sector. However, this contrasts with other studies, such as Wang and Wong (2004) and Keat et al. (2011), which found males to be more predisposed to entrepreneurship. The socioeconomic status of parents was also found t o be non-significant, a result that diverges from Nsikak-Abasi and Essien (2017), who identified it as an influential factor. This study's outcome finds

some support in Hajrah et al. (2016), who reported that parental economic conditions did not affect entrepreneurial attitudes, though it did influence interest.

The variable of age similarly showed no significant influence, a finding corroborated by Shukula (2009), who argued that age is immaterial as every life stage presents unique advantages for self-employment. This stands in contrast to Stefanović and Stošić (2012), who found age to be a positive predictor in the specific context of Serbia. Furthermore, birth order was not a significant predisposing factor, consistent with the earlier null findings of Wang et al (2020).

Finally, the student's course of study was also found to be non-significant. This outcome is at odds with several studies, including Adebayo and Kolawole (2013) and Hajrah et al. (2016), which concluded that entrepreneurship education positively influences entrepreneurial interest and attitudes.

Conclusion

The study found that undergraduate students in Osun State universities exhibit a moderate predisposition to self-employment. Locus of control was a significant predictor towards predisposition to self-employment. Conversely, demographic factors of sex, age, parental socio-economic status, and course of study, did not significantly influence this predisposition. The study concludes that while a baseline inclination exists, significant potential remains for enhancing entrepreneurial intentions among students. The researchers hereby recommend that education stakeholders should integrate psychological skill-building interventions, particularly those aimed at fostering an internal locus of control and resilience into undergraduate entrepreneurship training programmes.

Implications of the Study

The predominance of a neutral predisposition to self-employment suggests that existing university-based entrepreneurship education lacks sufficient experiential and competency-driven components necessary to stimulate strong entrepreneurial orientation.

The statistically significant influence of locus of control underscores the centrality of psychological constructs, particularly internal control orientation, in predicting entrepreneurial predisposition among undergraduates.

The minimal variance explained by locus of control ($R^2 \approx 0.007$) indicates that the model is underspecified and that substantial proportions of entrepreneurial predisposition are attributable to unexamined variables.

The non-significance of demographic variables implies that entrepreneurial predisposition operates independently of socio-demographic stratification within the sampled undergraduate population.

Suggestions for Further Studies

The following titles are hereby suggested for further studies:

- Integration of psychological constructs such as entrepreneurial self-efficacy and risk propensity as predictors of entrepreneurial intentions.
- A longitudinal study of stability of predisposition and its conversion into actual entrepreneurial behaviour post-graduation.
- Comparative analyses across geopolitical regions, institutional types, and academic disciplines should be conducted to improve external validity and contextual generalisability.

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AI-DRIVEN TOOLS IN ADDRESSING LEARNING GAPS IN OVERCROWDED CLASSROOMS: SUPPORTING UNDERGRADUATES WITH DIVERSE LEARNING NEEDS IN OYO METROPOLIS

by

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Abstract

This study examined how Artificial Intelligence (AI)-driven tools could address learning gaps among undergraduate students with diverse learning needs in overcrowded classrooms at public universities within Oyo Metropolis, Nigeria. The research used an explanatory sequential mixed-methods approach that began with a quantitative survey of 320 students who took large-enrolment courses, followed by qualitative insights from 15 lecturers. The scale used for data collection demonstrated a reliability coefficient of 0.88. Findings exposed critical thinking and applied knowledge as factors contributing major barriers in learning with over half (52.8%) of students reporting low confidence in succeeding in their current impersonal learning environment. Awareness of AI was moderate (64.4%), actual access was low (38.8%) due to unreliable power supply, poor internet connectivity and a lack of training. Students overwhelmingly preferred adaptive learning and intelligent tutoring systems which is in line with the principles of Constructivist Learning Theory and Universal Design for Learning (UDL). The study concluded that AI offers great potential to bring back personalization to overcrowded classrooms, but if it is to be effectively adopted, the infrastructures for using digital tools must be invested in, especially in faculty development. Recommendations were therefore made to university administrators and policymakers to strategized on digital transformation and local configuration of AI tools and at the same time, focused on structured capacity-building programmes in order to ensure equitable and quality education in resource-constrained Nigerian university environment.

Keywords: Artificial Intelligence, Learning Gaps, Overcrowded Classrooms, Diverse Learning Needs, Undergraduates, AI-Driven Tools.

Introduction

Overcrowded undergraduate classroom has remained a longstanding challenge in the Nigerian educational system, particularly in public universities where increase in enrolment has not been matched with adequate staffing and infrastructural development. It has contributed the most compelling barriers to quality undergraduate education. This phenomenal increase in tertiary enrolment due to population expansion and strong demand for university education which has far exceeded the availability of physical infrastructures, staffing, and pedagogical resources. Nevertheless, overcrowded classroom has as a matter of fact led to lecture halls

exceeding their carrying capacities, thereby reducing teaching efficiency and meaningful lecturer-student interaction.

Makena (2025) perceived overcrowded classroom as a major consequence of inadequate funding and infrastructural deficits and further noted that large class sizes make classroom management difficult and reduce individualized attention to students. It reduce effective interaction between lecturers and students, limit active participation, increase distractions, and negatively affect academic performance. In the same vein, it has been considered to have become systemic in the Nigerian tertiary institutions and that persistent increase in undergraduate population, inadequate academic planning and insufficient infrastructural facilities are all contributing significantly to classroom congestion and declining educational quality (Abubakar, Madawaki & Naabu, 2023). Notwithstanding, King-Agboto & Ugorji (2023) emphasized that poor classroom conditions negatively affect students' academic engagement and satisfaction while Ramolobe (2024) stressed that students perceived overcrowded lecture halls and inadequate facilities are major obstacles to effective learning.

Lecturers struggle to provide individualized attention, formative assessment, and adequate feedback in such environment (Onumbu, 2024). Overcrowded classroom contributes to unequal learning outcomes consequent upon weaken academic climate, reduced instructional effectiveness, and contribute to poor academic performance among university students (Yu, Zhang, Tao, Huang, Chen & Xiao, 2025). Nonetheless, it hinders effective learning processes and increase discomfort among students as a result of weak communication, participation, and lecturer-student relationships (Adio-Moses, 2016).

Learning gaps refer to disparities in students' understanding, participation, academic achievement, and access to individualized instruction. It is the measurable gap between the level of knowledge, skills or competencies a student already has and the academic standard that he/she should be expected to have at their level of study (Maki & Kuh, 2023). Such gaps can be root-level resulting from inadequate preparation at the secondary level or surface-level due to lack of instructional methods, personal circumstances, or institutional factors such as overcrowded classrooms (Dominic, 2023). Interestingly, Artificial Intelligence (AI) driven tools have increasingly been recognized as effective mechanisms for addressing learning gaps in overcrowded undergraduate classrooms Olagunju (2019). Even though in higher education institutions overcrowded classrooms often limit individualized attention, timely feedback and differentiated instruction. AI driven tools help mitigate these challenges by providing adaptive learning, personalized feedback, intelligent tutoring and inclusive educational support system. AI-powered systems can assist lecturers in managing large student populations while simultaneously catering for individual differences in learning pace, cognitive abilities, and academic backgrounds Okonkwo & Ade-Ibijola, 2021).

Noteworthy, adaptive learning personalize educational content according to students' learning pace, strengths, and weaknesses. These tools are particularly useful for undergraduate students with diverse learning needs because they provide differentiated instruction automatically (Ferguson, 2012). AI Platforms such as DreamBox Learning and Knewton analyze students' responses and adjust instructional content accordingly. Adaptive systems

help students who struggle academically while allowing advanced learners to progress at their own pace. According to Pane, Steiner, Baird and Hamilton (2015) adaptive learning systems improved students' academic achievement and engagement in higher education settings. They stressed further that adaptive technologies reduce learning disparities among students with different academic abilities.

Nonetheless, Intelligent Tutoring Systems on the other hand, are AI-based educational technologies designed to simulate one-on-one tutoring experiences. These systems analyze students' learning behaviors and provide customized instruction and feedback (Holmes, Bialik & Fadel, 2019). Okonkwo et al. (2021) indicated that ITS can significantly improve academic performance in large undergraduate classrooms. VanLehn (2011) demonstrated that intelligent tutoring systems can achieve learning gains comparable to human tutors. Systems such as Carnegie Learning and ALEKS use machine learning algorithms to identify students' weaknesses and provide targeted instructional materials.

Statement of the Problem

The perennial challenge of overcrowded classrooms in Nigerian public universities creates a formidable task as far as effective pedagogy is concerned and in turn, have fundamentally affected the ability of a lecturer to offer personalized teaching. In lecture halls of hundreds of students, it is not possible logistically to track individual progress, identify learning difficulties and offer both timely and targeted support. This type of environment produces a passive model of learning where individual needs created from learning disabilities, lack of knowledge and/or cognitive diversity are systematically unmet (Ntshangase, 2024) When instruction fails to cater for the different points of entry or learning speeds and by traditionally not providing for the full range of individual needs, disadvantaged students are left disproportionately behind, while even high-achieving students can be denied the intellectual challenge and engagement they need in order to achieve their full potential (Taylor, 2022). The homogeneous nature of the curriculum for large groups of diverse students on the other hand also reinforces educational inequity and at the same time considered as an underlying issue or reason for learning disparities in an overcrowded undergraduate classroom. Conventional remedies including making use of additional lecturers or building more facilities are not feasible in the immediate term, due to the financial and logistical constraints of universities within Oyo metropolis. It is against this backdrop that Artificial Intelligence (AI) is targeted as the central point of focus for addressing the learning gaps that resulted from overcrowded classrooms.

Objectives of the Study

The purpose of this study is to examine the role of artificial intelligence (AI) driven tools in addressing learning gaps in an overcrowded classrooms in Oyo Metropolis. The specific objectives are to:

a. assess the nature and extent of learning gaps in selected overcrowded undergraduate courses.

b. identify diverse learning needs of students in overcrowded classroom settings.

c. evaluate the awareness, accessibility, and perceived effectiveness of AI-driven tools among students and lecturers.

d. propose a framework for the ethical and practical integration of AI-driven tools to support personalized learning in overcrowded classrooms.

Research Questions

The following research questions guided the study:

1. What are the problems experienced by students in an overcrowded classrooms in Oyo Metropolis?

2. What are the diverse learning needs of students in an overcrowded classrooms in Oyo Metropolis?

3. What is the level of awareness, accessibility, and perceived effectiveness of AI-driven tools among students and lecturers in public universities within Oyo Metropolis, and what are the barriers to adoption?4. What framework can guide the ethical and practical integration of AI-driven tools to address learning gaps and support diverse learners in overcrowded classrooms?

Theoretical Framework

Constructivist Learning Theory

Constructivist Learning Theory serve as first baseline theory for this research. Jean Piaget propounded individual constructivism which states that learners play an active role in constructing knowledge through personal experience and cognitive reflection which is an internal, developmental process influenced by the interaction between prior knowledge and new information (Nurhasnah, Sepriyanti & Kustati, 2024). Lev Vygotsky advanced social constructivism, which asserts that learning is essentially a social process mediated by such cultural tools as language and interaction with more knowledgeable others. At the heart of Vygotsky's approach lies the notion of the Zone of proximal Development (ZPD), which refers to the range between what a learner can achieve independently and what he or she can achieve with the support of others. Vygotsky's theory stated that this zone is the exact place where meaningful cognitive development takes place, which is enabled through scaffolding offered by a teacher, peer, or instructional tool (Rahman, 2024).

The applicability of this dual constructivist framework to the current research is direct and of course bridge the learning gaps in classrooms where the interaction between lecturer and students is highly restricted. Artificial Intelligence based tools can help to operationalize the principles of constructivism by providing adaptive, interactive teaching environments that are responsive to individual levels of knowledge. Intelligent tutoring systems for example can offer scaffolded support within a student's ZPD to allow self-paced knowledge construction

based on Piaget's principles, AI facilitated collaborative platforms can emulate the social dimension of learning that is the focus of Vygotsky (Youseif, 2025). Thus, AI is a technological mediator that can support active, individualized and socially situated learning, even in resource-constrained, high enrolment settings.

Universal Design for Learning (UDL)

Universal Design for Learning (UDL) is a framework for pedagogical approaches that was developed by CAST (Center for Applied Special Technology) based on the contributions of David Rose and Anne Meyer's (Rose, 2024). UDL is based on three principles of neuroscience (1) there are differences in how learners perceive information and how they process information (representation); (2) there are differences in the way learners show that they know the information (action and expression); and (3) there are differences in what motivates and engages learners (engagement) (Liu et al., 2023). To address this learner variability the inherent cognitive, physical, socio-cultural and affective diversity present in any student, UDL prescribes the proactive provision of multiple means of representation, multiple means of action expression and multiple means of engagement in instructional design.

This framework is directly applicable to this study especially student's area of diverse learning needs in overcrowded classrooms within Oyo metropolis. UDL is a blueprint for being proactive when it comes to building inclusive curricula even with individual attention being logistically constrained. AI-driven tools can operationalize UDL principles at scale delivering course content in a variety of forms (text, audio, video), allowing for a variety of assessment modalities, and personalizing content to help keep students engaged with widely varying learning profiles (Chisunum & Nwadiokwu, 2024). Integrating AI within a UDL perspective therefore creates a role for technology that falls less into being a replacement of a human's instruction and more into that threshold of a scalable mechanism for closing learning gaps to promote educational equity for all students.

Methodology

This study used an explanatory sequential mixed methods research design, whereby the quantitative data was collected and analyzed and later qualitative data were collected and analyzed to elaborate and contextualize the quantitative data collected. The study was conducted in Oyo Metropolis, Oyo State, Nigeria. Arousals was conducted in two (2) public schools in Oyo; (University of Ibadan and Emmanuel Alayande University of Education, Oyo). These institutions were targeted carefully due to high student enrolment in the undergraduate courses and because large enrolment courses were prevalent in them.

The population consisted of undergraduate students within Oyo metropolis and their lecturers, using stratified random sampling – with strata of defined by faculty and level of study, a sample of 320 undergraduate students were selected from three faculties(Faculty of Education, Social Science and Arts) and they offered basic courses as GST 101 (Use of English), GST 112 (Logic, Philosophy and Human Existence), EDU 101 (Introduction to Education), and SPE 201 (Introduction to Special Education), which consistently face the highest number of enrolments in both institutions. One hundred and sixty (160) students from

each school and 32 students from each level of education in order to ensure representation of equal number of students across academic levels (100 to 500 level) as well as faculties. This sample size was calculated as adequate for consolidated statistical analysis keeping in mind to maintain a balance in terms of the widespread presence of diverse academic contexts within the research. Simultaneously 15 lecturers teaching large classes were selected using a purposive sampling that included possibilities of lecturers that had direct first-hand experience of control of overcrowded classrooms.

The study utilised a standardised self-report questionnaire designed to gather comprehensive information from participants. The instrument was carefully constructed targeting key variables (Overcrowded Classroom and Artificial Intelligence) and measurement scale of the items was a 5-point Likert scale. The questions were designed to measure a broad spectrum of students' dispositions to AI and how overcrowded classrooms influence their performance. However, lecturers' data was gathered using semi-structured interviews which brought the qualification of depth on pedagogical challenges, AI-awareness and barriers to adoption. The scale demonstrated high reliability with a reported coefficient of 0.88, indicating strong internal consistency for measuring the variables.

Quantitative data were analyzed using descriptive statistics, i.e., frequencies, percentages, and mean scores in order to answer the four main research questions while content analysis was used for qualitative data.

Results and Discussion

This section presents findings that were obtained from both quantitative survey phase (320 undergraduate students) and the qualitative interview phase (16 lecturers) of the study. Data were analyzed using the descriptive method of statistics in order to answer the four main research questions of the study.

Presentation of Findings

Table 1: Demographic Profile of Student Respondents (N=320)

Gender	100 Level	200 Level	300 Level	400 Level	Total
Female	53	39	31	48	171
Male	43	39	29	48	149
Total	**96**	**78**	**60**	**96**	**320**

Source: Author's Computation, 2026

The sample is relatively equal by gender with females outnumbering males slightly (53.4%).

RQ 1: 1. What are the problems experienced by students in an overcrowded classrooms in Oyo Metropolis?

Table 2: Prevalence of Learning Gaps Among Respondents (Mean Scores on a 1–5 Likert Scale)

Type of Learning Gap	Mean Score (M)
Critical Thinking Gap	3.53
Practical Application Gap	3.51
Foundational Knowledge Gap	3.40
Communication Skills Gap	2.41

Source: Author's Computation, 2026

The gaps in learning were assessed on a 20-item scale, which is filled out by the students on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), answering the extent to which they think they are facing difficulties in each of the domains compared to course expectations. A score of above 3.00 signifies the presence of a significant gap in perceptions. As it can be seen, critical thinking (M = 3.53) and practical application (M= 3.51) are the most urgent gaps in learning, which indicates that students can work with theoretical content but have difficulties in analyzing, synthesizing, and applying knowledge in reality. There are also significant foundational knowledge gaps (M = 3.40) which is also probably due to the preparation shortcomings in secondary school being transferred into university. The weakness lies in communication skills, but these are not as serious weaknesses (M = 2.41).

RQ 2: What are the diverse learning needs of students in an overcrowded classrooms in Oyo Metropolis?

Table 3: Perspectives on Ability to succeed (N= 320)

Perception	Frequency (N=320)	Percentage (%)
Strongly Disagree	80	25.0
Disagree	89	27.8
Neutral	70	21.9
Agree	81	25.3
Strongly Agree	0	0.0

Source: Author's Computation, 2026

A total of 52.8% of the respondents either disagreed or strongly disagreed with the statement that they are able to succeed in their present learning environment. This lack of self-efficacy is widespread among the population and reflects the impacts overcrowded classroom conditions have towards accommodating various learning needs, and it is in line with the findings of Adigun, Opele and Onayinka (2024) in their study of academic anxiety and anonymity in large Nigerian classes.

RQ 3: What is the level of awareness, accessibility, and perceived effectiveness of AI-driven tools among students and lecturers in public universities within Oyo Metropolis, and what are the barriers to adoption?

Table 4: Current state of AI Awareness, Access, and Perceived Effectiveness (Quantitative Survey Data)

Metric	Value
AI Awareness (%)	64.4%
AI Access (%)	38.8%
Mean Perceived Utility (Scale 1–5)	3.05

Source: Author's Computation, 2026

Despite what most students know about AI, actual access to artificial intelligence enabled tools for learning is significantly less. The mean of utility 3.05 indicated a distance between awareness and meaningful use.

The qualitative interview data from 15 lecturers also provided members with a further and richer data: 80% of lecturers reported that they were aware of AI tools but only 20% of them were actively using AI in their teaching. Some of the barriers were poor internet connection (4 out of 15 lecturers) , unreliable and proxy power supply (3 out of 15) and training for using ICTs (3 out of 15)

RQ 4: What framework can guide the ethical and practical integration of AI-driven tools to address learning gaps and support diverse learners in overcrowded classrooms?

Table 5: Most Promising AI Functionalities (Student Preference)

AI Functionality	Number of Students	Percentage (%)
Adaptive Learning	110	34.4
Intelligent Tutoring	84	26.3
Automated Feedback	73	22.8
AI Chatbots	53	16.6

Source: Author's Computation, 2026

Adaptive learning systems, which tailor the content and pace of material for each learner, were the most popular of all AI functionality. Second was the intelligent tutoring systems, which provided individual tutoring. This pattern is based on students wanting to hear from AI the individualized attention that cannot be provided by a classroom overcrowded with students - a preference that is entirely consistent with the principles of Constructivist Learning Theory and UDL

Discussion of Findings

The findings of this study report the problems encountered by undergraduate students in the face of overcrowded classrooms in Oyo Metropolis and the potential of AI as a responsive pedagogical tool, offers to students. The study found that students lack critical thinking and practical application. Dominic (2023) attributes this pattern to the banking model of education which is prevalent in large Nigerian University Classrooms where the emphasis is on rote memorization and not higher order cognitive development. Fantinelli et al. (2024) found that academic signs that students often have a theoretical understanding still won't be able to use that knowledge on new contexts, one of the issues that is systematically underpinning learning destination is personalized interaction of critical thinking gaps in this study, in comparison with findings across the world that show foundational knowledge deficits to be more of a foreground problem, may show the particular pedagogical constraints of extreme overcrowding, where interactive and problem-based learning become logistically unfeasible.

This finding is consistent with the theory of UDL and Adigun, Opele and Onayinka (2024) who also recorded significant academic anxiety in students during large class in Nigerian universities and the sense of anonymity in the class.

Access to AI is also a critical finding that is well supported by Oshowole's (2024) finding that a high interest in digital tools among Nigerian educators and students is consistently hampered by infrastructural barriers. The barriers identified in this study -- poor power supply, unreliable internet, an inadequate training -- are similar to those identified in the broader Nigerian higher education technology literature. This roots the recommendations of this study in a local reality and precludes techno-optimist views about how the adoption of AI will go given that awareness is raised.

The overwhelming popularity of adaptive learning and intelligent tutoring by students proves that there is a correspondence between what can be effectively done by artificial intelligence and the constructivist teaching and pedagogy principles. These applications reflect the scaffold that the lecturer provided to students on a small group basis and in this aspect, operate in the larger zone of proximal development of the students (Tshering, 2024).

Conclusion

This study examined the possibilities of the AI-driven tools in solving learning gaps in overcrowded classrooms in public universities with diverse learning needs in Oyo Metropolis, Nigeria. The purpose was achieved by survey of 320 undergraduate students and semi structured interview conducted on 15 lecturers from the University of Ibadan and Emmanuel Alayande University of Education, Oyo with data analyzed using descriptive statistics and qualitative content analysis. The findings support the proposition that overcrowding in such institutions creates circumstances in which individual learning needs are systematically unmet,

so that large deficits in higher-order cognitive skills, especially critical thinking and practical application, and widespread losses of student self-efficacy occur.

AI-based tools - primarily intelligent tutoring systems and adaptive learning tool platforms - are being perceived as viable and enticing solutions to both students and lecturers. Nonetheless, the organizational problems like poor internet connection, unstable power supply and lack of training are currently present to act as a barrier to effective adoption. That is why AI cannot be conceived as an end in itself and its transformative power is a hostage to the complementary investments into the digital infrastructure, the capacity building of both faculty and learners

Recommendations

The recommendations that are drawn concerning the finding of this study are as follows:

1. University Management: Investments in solar powered backup systems and campus-wide affordable Wi-Fi is key to counter the infrastructural barriers that have been singled out as the main barriers to AI adoption in this study.

2. Lecturers: Focus on AI literacy, blended learning pedagogy and the use of AI-based formative assessment tools (e.g., AI quiz platforms) should become institutionalized. Faculty should be supported to start with accessibly scans, low threshold tools and build more complex AI functionalities in.

3. Policymakers: The Federal Ministry of Education and the National Universities Commission (NUC) should develop a national policy framework for AI in education, including funding provisions for educational technology, development of locally-adapted open-source AI learning tools as well as mandatory inclusion of digital pedagogy and AI literacy in the pre-service and in-service training of all teaching staff in universities.

4. Researchers: Future researchers should shift from looking at perceptional data to more rigorously controlled pilot studies in which adaptive AI platforms are deployed in large undergraduate classes.

5. Educational and Counseling psychologists: They should create evidence-based programmes to support the development of student metacognitive skills, self-regulation, and academic resilience, especially with students that have been identified as having diverse learning needs or students that are part of historically marginalized groups.

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AI ADOPTION AND TEACHERS' SELF-EFFICACY IN LESSON PREPARATION AMONG SECONDARY SCHOOL TEACHERS IN IBADAN AND OSOGBO, NIGERIA.

by

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Abstract

Artificial Intelligence (AI) is transforming many spheres of life and educational processes, providing teachers with new technologies in preparing, delivering, and assessing lessons. The paper examined the relationship between AI adoption and teacher self-efficacy in lesson planning in secondary schools in Ibadan and Osogbo, Nigeria. The descriptive cross-sectional survey research design was adopted; and 400 public secondary school teachers (200 teachers each from Ibadan and Osogbo) took part in the survey design through multistage sampling. An instrument titled AI Adoption and Teachers Self-Efficacy Questionnaire (AATSEQ), was used to measure the students' knowledge of AI tools, the influence of AI on lesson preparation and self-efficacy when utilizing AI. An analysis was done based on descriptive and inferential statistics. The results of the research yielded information about teachers' knowledge of AI tools in education, the relationship between teachers' self-efficacy and openness to adopt AI in lesson preparation, the influence of AI in teachers' current lesson preparation process, location-type differences in attitudes to the adoption of AI, and guide policy-making to promote the digital competence and pedagogical innovation among teachers in Nigeria.

Keywords: Artificial Intelligence, Self-Efficacy, Lesson Preparation, Teachers, Nigeria

Introduction

Artificial intelligence (AI) applications in education are on the rise and have received a lot of attention in the last couple of years (Zawacki-Richter, et al., 2019). As self-efficacy of teachers can predict their confidence to adopt AI and incorporate it into preparation for classroom interaction (Bandura, 1997), studies have suggested that teachers who are more technologically and pedagogically self-efficacious are more open to AI-supported teaching and learning (Zawacki-Richter et al., 2019). Ismaniati et al. (2025) have reported that self-efficacy plays an important role in mediating the relationship between technological literacy of teachers and their behavioral intention to apply AI tools, which is why confidence, not just access, would lead to adoption. Similarly, as Benson and Ward's (2013) study reported that self-efficacy is a strong predictor of technology use, it indicates that teachers who feel confident have a higher chance of adopting AI tools for classroom preparation and other teaching-learning activities.

However, Al-Harmi (2021) reported challenges confronting AI adoption among teachers to include data readiness, educational transformation, financial readiness, and ethical anxiety.

The use of Artificial intelligence (AI) is permeating many spheres of life progressively, and education has not been an exception. Since the introduction of adaptive learning software, AI has gained reputation as an important resource that can contribute immensely to teachers' processes of lesson preparation, delivery, and assessment of instruction (Belloula, 2025). These technologies are not seen as substitutes to the teacher but, most often, as assistants that can help eliminate routine and thus permit pedagogical decisions (Kong et al., 2025). Lesson preparation involves planning, creativity, and sensitivity to diversity in order to deliver a lesson where every student is carried along in the teaching-learning process. However, the requisite mastery and teachers' belief in themselves to adopt AI to prepare classroom instruction can potentially alleviate or cause new sources of anxiety for teachers, highlighting the centrality of teacher self-efficacy in AI adoption.

Self-efficacy is an individual's belief that they can successfully accomplish a task or complete a project (Artino, 2012). According to Bandura (1986) self-efficacy is an individual's judgments of their capabilities to organise and execute the courses of action required to attain designated types of performances. Klassen and Chiu (2024) in their studies, showed that strong self-efficacy influences a teacher's classroom control and the degree to which they plan and shape their lessons in response to student needs (With a confident attitude of skills and abilities, teachers tend to implement new approaches with minimal anxieties. On the other hand, lack of confidence can impede the use of new technology, such as AI (Zhou et al., 2022). This conflict of adoption and trust is notably pertinent in the following sense in that AI tools require not only technical skills but also pedagogical familiarity. The adoption of Artificial Intelligence can assist the teacher to create lesson plans, customise content, and give immediate feedback that can enable a teacher to save time and undertake more extra teaching activities (Kong et al., 2025). Amidst possible drawbacks like issues of excessive dependence, ethics, and a lack of professional autonomy of teachers (Sun et al., 2022). More important to this study is teacher attitudes as well as the level of confidence they have to adopt AI for classroom use.

In recent studies, the mediating functions of the professional identity and digital competence of teachers and the institutional support are central (Wang et al., 2025). To be more specific, the decision to use AI as a collaboration partner in crafting lessons, as opposed to a threat, seems to show an appropriate use of AI. Owing to the fact that teachers play various roles within the school setting, including being in *locus parentis* of students, it is safe to say that teachers are many times overburdened with responsibilities which can drastically reduce their effectiveness. In Nigeria particularly where teachers experience packed schedules, scarce facilities, and extensive classes, AI can improve efficiency by revolutionising the lesson planning stage of teacher classroom preparation. Nevertheless, the readiness of the teachers to use such tools, and their belief that they can do it successfully, is under-investigated. The researchers therefore do not merely seek to contribute to ongoing discourse on AI adoption in education, but desire to contribute to knowledge on teacher self-efficacy and policy decisions on effective adoption of AI in secondary school education in Nigeria.

The popularity of Artificial Intelligence (AI) has transformed many sectors by delivering complex tasks in record time, helps to manage time and gives energy for other activities. In the world of education, AI offers the opportunity of empowering teachers (Velander, et al., 2023). It provides for adaptive learning systems, automated tests, and quick and intelligent planning of lessons by teachers. The innovation can effectively decrease workload, enhance planning, and provide up-to-date information on subject content, while the teacher has time for other personal commitments. However, while AI offers advantages, concerns persist regarding its potential effects on teacher effectiveness, subject mastery, and commitment to teaching profession. In short, the precise effect of AI use on the self-efficacy of teachers in lesson planning remains unknown.

While AI can support some teachers to plan, organize and deliver quality lessons, others may feel inadequate, overwhelmed, and threatened. Su, et al. (2022) and Ayanwale and Sanusi (2023) reported that in a world where AI has become popular to the extent that students use it, teachers' knowledge of technology and ability to use digital devices can determine their confidence level within the classroom. Therefore, there is the need to investigate whether the adoption of AI in education empowers or weakens the self-efficacy of teachers in lesson planning. Many researches had been conducted on Artificial Intelligence but few on Artificial Intelligence and teachers' self-efficacy, and this also have not been well established empirically in Ibadan and Osogbo. This gap was filled by this study.

Objectives of the study

This study seeks to examine the relationship between teacher self-efficacy and adoption of artificial intelligence in lesson preparation.

Specifically, the objectives are to:

1. examine the influence of adoption of AI tools on the teachers' self-efficacy in lesson preparation, and
2. assess teachers' knowledge of Artificial Intelligence (AI) tools in Ibadan and Osogbo.

Research Question

The study was guided by the research question:

> What is the level of knowledge that teachers in Ibadan and Osogbo possess regarding AI tools in education?

Hypothesis

One hypothesis was raised and tested to guide the study:

There is no significant influence of adoption of AI tools on the teachers' self-efficacy in lesson preparation.

Literature Review

Concept of Artificial Intelligence in Education

The growth of AI use in education is due to its many exciting possibilities for enhancing learning outcomes of learners and several other educational goals (Merusca, 2023). AI has become a major driver of job productivity in the 21st Century. Ali et al., (2023) argued that the benefits of AI include improved productivity and efficiency and saving of time and efforts. Its importance has permeated several professional contexts such as education (Chen, et al., 2020). A major impact of artificial intelligence in education is its capacity to personalize the learning process to meet the specific needs of each student (Merusca, 2023).

The field of education is especially suitable as an area where AI technologies can be applied, since the cognitive processes of teaching and learning are knowledge-intensive (Wang, et al., 2024). An AI system that is intended to be cognitively intelligent and solve problems using algorithms and knowledge bases can contribute positively towards teacher and student capabilities. After first appearing in the mid-1950s, AI has gradually found its way into education and training in a wide range of disciplines, including language, STEM, and medicine (Perrotta and Selwyn, 2020).According to Hwang et al. (2020) and Hennekeuser et al. (2024), AI provides personalised learning experiences, intelligent teaching, guidance, feedback, and support based on an individual's level of knowledge and interest to meet the needs of students. Similarly, Holmes et al. (2019) argue that AI has the potential to revolutionise education and improve outcomes. According to Seo, et al. (2021), an appropriate adoption of AI in education can effectively lessen the workload of teachers.

Self-efficacy is an individual's belief about their ability to structure and implement the courses of actions necessary to achieve desired expectations (Bandura, 1977). Such belief in one's own ability is influenced by several factors such as personality traits, interests, and experience (Caprara et al., 2019; Samfira, & Paloş, 2021). Individuals who have higher levels of conscientiousness and openness to experience report higher sense of self-efficacy (Djigić, et al., 2014).

Teacher self-efficacy is an important construct in education (Lazarides & Warner, 2020). According to Bandura's (1977) theoretical explanation, self-efficacy as a construct is associated with principles such as motivation, persistence, and adaptive coping. Lazarides and Warner (2020) define teacher self-efficacy as a teacher's own belief in their ability to prompt learner engagement and learning, even when the learners are unmotivated. Klassen and Tze (2014) have argued that self-efficacy can be developed through training, experience, and exposure.

Self-Efficacy Theory

The paper focused on theory that are related to the variables of this study. According to self-efficacy theory, individuals are more likely to engage in a task, persist in it, and perform effectively when they believe they possess the competence required to accomplish the tasks successfully. Feathers (1982) in Williams and Rhodes (2017) express that dominant theories of behaviour that preceded the self-efficacy theory that emphasised outcome expectation which may result from successfully executing a behaviour. Such theories include the Expectancy-

Value Theory (Tolman, 1932; Lewin, Dembo, Festinger, & Sears, 1944), Rotter's Social Learning Theory (1954, 1966), and Atkinson's Theory of Achievement Motivation (1957). Bandural's (1977) new idea in conceptualising self-efficacy (originally named as efficacy expectancy) distinguished between an individual's motivation to execute a certain behaviour based on expected outcomes of the behaviour and the individual's perceived ability to execute the behaviour (Williams and Rhodes, 2017). Outcome expectancies do not have a bearing on an individual's perceived capacity to perform a behaviour, even when an individual knows that the behaviour will generate a definite outcome. For example, winning a tennis match is a targeted behaviour whose outcome potentially is winning a trophy (Bandura, 1997).

The self-efficacy theory is distinct from outcome expectations in that even though self-efficacy has the outcome expectancy component, the "belief in one's own ability" component is central to the self-efficacy theory. According to Bandura (1977), "Outcome and efficacy expectations are differentiated, because individuals can believe that a particular course of action will produce certain outcomes, but if they entertain serious doubts about whether they can perform the necessary activities such information does not influence their behaviour (p. 193)."

Research Methods

The study adopted a descriptive cross-sectional survey design to investigate the relationship between teacher's self-efficacy and their adoption of Artificial Intelligence in lesson preparation in public schools in Ibadan (Oyo State) and Osogbo (Osun State). The study population comprised all public secondary school teachers in Ibadan and Osogbo, the state capitals of Oyo and Osun States. A sample size of 400 teachers (200 from each city) were selected using multistage sampling technique which involved stratifying schools' locations (urban and rural). The schools in each state are divided into two: urban and rural areas. Five schools were randomly chosen per location, 5 in urban areas and 5 in suburban or rural areas. From each of the schools, 10 male and 10 female teachers were selected by convenience. A structured questionnaire titled *AI Adoption and Teachers' Self-Efficacy Questionnaire (AATSEQ)* was used for data collection. The instrument has four sections which include demographic information, teacher's knowledge of the usability of AI tools in education, the current influence of AI on teachers' lesson preparation, and teacher's self-efficacy in adopting AI tools for lesson preparation. A pilot test was conducted to ensure validity and reliability using Cronbach's Alpha coefficients above 0.70. Data was analysed using descriptive and inferential statistics.

Research Question 1

What is the level of knowledge that teachers in Ibadan and Osogbo possess regarding AI tools in education?

To answer this question, items on the Section B of the questionnaire were adopted. Responses to these items were summed together to represent respondents' measure of knowledge regarding AI tools in education. On the measure, the mean score was 28.36 and the standard deviation was 9.01, while the minimum and maximum score were 8.00 and 40.00 respectively. To categorize into levels, teachers who scored between 8 and 20 were regarded as possessing

low knowledge of AI tools, those who scored between 21- 30 were regarded as possessing moderate knowledge of AI tools, while those who scored above 30 were regarded as possessing high knowledge of AI tools. These were then subjected to descriptive analysis and the results are presented in Table 1.

Table 1:Level of knowledge of AI tools in education among teachers

Knowledge of AI tools	Frequency	Percent
Low	92	23.0
Moderate	81	20.3
High	227	56.8
Total	400	100.0

Table 1 presents the results of the level of knowledge that teachers possess regarding AI tools in education in Oyo and Osun States. Results showed that most of the respondents (56.8%) possessed high levels of knowledge of AI tools in education, while 23.0% and 20.3% of respondents demonstrated low and moderate levels of knowledge of AI tools in education respectively. From the above, it can be concluded that knowledge of AI tools in education is considerably high among the respondents.

Research Question 2

What is the influence of AI tools on teachers' lesson preparation processes?

To answer this question, items on the Section D of the questionnaire were adopted. Responses to these items were scored in a way that a score of 1 was allotted to Strongly Disagree, a score of 2 was allotted to Disagree, a score of 3 was allotted to Undecided, a score of 4 was allotted to Agree and a score of 5 was allotted to Strongly Agree. These were subjected to descriptive statistics, and then to Relative Significance Index (RSI) and the results are presented in Table 2.

Table 2: Influence of AI tools on teachers' lesson preparation processes

S/N	Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	No Response	RSI	Rank
1	AI tools make it easier for me to prepare lesson plans efficiently.	51 (12.8)	34 (8.5)	35 (8.8)	209 (52.3)	64 (16.0)	07 (1.8)	0.70	8
2	I rely on AI applications to generate instructional materials or ideas.	33 (8.3)	49 (12.3)	28 (7.0)	145 (36.3)	135 (33.8)	10 (2.5)	0.75	4
3	AI helps me customise lessons to meet individual student needs.	46 (11.5)	41 (10.3)	36 (9.0)	168 (42.0)	101 (25.3)	08 (2.0)	0.72	7
4	Using AI reduces the time I spend searching for teaching resources.	40 (10.0)	29 (7.2)	24 (6.0)	153 (38.3)	145 (36.3)	09 (2.3)	0.77	1
5	AI improves the quality and accuracy of my lesson content.	50 (12.5)	36 (9.0)	28 (7.0)	158 (39.5)	120 (30.0)	08 (2.0)	0.73	6
6	AI-based feedback tools guide my choice of teaching strategies.	38 (9.5)	36 (9.0)	27 (6.8)	164 (41.0)	127 (31.8)	08 (2.0)	0.76	3

7	The use of AI increases my confidence in lesson delivery.	49 (12.3)	35 (8.8)	32 (8.0)	149 (37.3)	127 (31.8)	08 (2.0)	0.74	5
8	AI has significantly changed how I plan and organise my lessons.	46 (11.5)	31 (7.8)	22 (5.5)	157 (39.3)	137 (34.3)	07 (1.8)	0.76	2

Table 2 presents the results of the influence of AI tools on teachers' lesson preparation processes. On the Table, item 4 on the use of AI reducing the time spent in searching for teaching resources ranked as 1st, with RSI 0.77, followed by item 8 on AI significantly changing how teachers plan and organize their lessons ranked as 2nd, with RSI 0.76. Item 6 on AI-based feedback tools serving as guide of teachers' teaching strategies ranked as 3rd, with RSI 0.76. Item 2 on the use of AI increasing teachers' confidence in lesson delivery ranked as 4th, with RSI 0.75. The least on the Table include item 3 on AI helping teachers customize lessons to meet individual student needs, as this ranked as 7th, with RSI 0.72, while item 1 addressing AI tools making it easier for teachers to efficiently prepare lesson plans ranked as 8th, with RSI 0.70. From this, it can be concluded that teachers generally exhibited positive attitudes towards the adoption of AI into teaching practices and processes, showing that the adoption of AI is beneficial for teachers for lesson preparation and delivery in classrooms.

Research Question 3

What is the influence of teachers' self-efficacy on adoption of AI tools into lesson preparation?

To answer this question, items on the Section D of the questionnaire were adopted. Responses to these items were scored in a way that a score of 1 was allotted to Strongly Disagree, a score of 2 was allotted to Disagree, a score of 3 was allotted to Undecided, a score of 4 was allotted to Agree and a score of 5 was allotted to Strongly Agree. These were subjected to descriptive statistics, and then to Relative Significance Index (RSI) and the results are presented in Table 3.

Table 3: Influence of teachers' self-efficacy on adoption of AI tools into lesson preparation

S/N	Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	No Response	RSI	Rank
1	I feel confident in my ability to learn and use new AI-based teaching tools.	31 (7.8)	29 (7.2)	38 (9.5)	237 (59.3)	58 (14.5)	07 (1.8)	0.73	8
2	I believe I can adapt my teaching style to integrate AI effectively.	9 (2.3)	25 (6.3)	29 (7.2)	186 (46.5)	145 (36.3)	06 (1.5)	0.82	2
3	I am open to experimenting with new AI technologies in my classroom.	21 (5.3)	23 (5.8)	24 (6.0)	209 (52.3)	115 (28.7)	08 (2.0)	0.79	4
4	I feel capable of solving problems that may arise when using AI tools.	16 (4.0)	30 (7.5)	53 (13.3)	149 (37.3)	139 (34.8)	13 (3.3)	0.79	5
5	I believe using AI will improve my teaching performance.	23 (5.8)	26 (6.5)	40 (10.0)	174 (43.5)	130 (32.5)	07 (1.8)	0.78	6
6	I am confident that I can motivate students through AI-supported activities.	17 (4.3)	38 (9.5)	42 (10.5)	161 (40.3)	136 (34.0)	06 (1.5)	0.78	7

7	I am willing to participate in training programmes to enhance my AI competencies.	14 (3.5)	11 (2.8)	16 (4.0)	198 (49.5)	156 (39.0)	05 (1.3)	0.84	1
8	I believe I can maintain control of my lessons even when AI tools are involved.	19 (4.8)	34 (8.5)	39 (9.8)	139 (34.8)	164 (41.0)	05 (1.3)	0.80	3

Table 2 presents the results of the influence of teachers' self-efficacy on adoption of AI tools into lesson preparation. Item 7 on teachers' willingness to participate in training programmes to enhance my AI competencies ranked as 1st, with RSI 0.84, followed by item 2, on teachers believing they can adapt their teaching styles to integrate AI effectively, which ranked as 2nd, with RSI 0.82. Item 8 on teachers believing that they can maintain control of their lessons even when AI tools are involved ranked as 3rd, with RSI 0.80. Item 3 on teachers being open to experimenting with new AI technologies in my classroom ranked as 4th, with RSI 0.79. The least on the Table includes item 6 on teachers being confident that they can motivate students through AI-supported activities, which ranked as 7th, with RSI 0.78, while item 1 on teachers feeling confident in their abilities to learn and use new AI-based teaching tools ranked as 8th, with RSI 0.73. the result showed that teachers with higher self-efficacy have a greater likelihood of embracing AI tools in lesson preparation.

Discussion

The outcome of research question one showed that educators in Osun and Oyo States tend to have a rather high level of knowledge about AI tools in education. It means that most of the teachers already understand how and where AI technologies can be used and applied in the teaching and learning process, which is an indication of the increased awareness of the digital transformation of the education field. This result is consistent with the results of Onwuagboke et al., (2024), who reported that Nigerian teachers had a significant amount of knowledge about AI-mediated tools for teaching and research. On the same note, Arkorful, et al. (2025) reported that teachers in Ghana had moderate to high-level awareness of AI concepts for teaching. However, Aliyu's (2025) study of teachers' knowledge of AI for teaching in Sokoto State revealed that teachers had low knowledge of AI capabilities and how they can employ it for instructional purposes. This difference between these works and the current one may be attributed to contextual influences like openness to technology, the availability of technological devices, and the policy in support of technology integration in schools. Therefore, the average degree of AI awareness among teachers in Oyo and Osun States can be viewed as the result of a better digital literacy awareness.

The result from the second research question showed that AI tools have a significant positive influence on the process of lesson preparation by teachers, as majority of the teachers who were knowledgeable about AI reported that AI helped them to spend less time finding learning materials, better organise their lessons, and improve the quality of the lesson in general. This shows that the incorporation of AI allows efficiency, creativity, and flexibility in the preparation of teaching. The result aligns with that of Nje et al. (2025), who reported teachers' openness to adopting artificial intelligence in lesson preparation among other teacher duties. In the same vein, Akgün and Greenhow (2021) identified various benefits of the adoption of AI in the teaching and learning process. Conversely, Olalekan et al. (2023) reported that low knowledge of AI corresponds to low application of AI tools in lesson preparation.

Similarly, Adebayo et al. (2023) discovered that teachers in the secondary schools of Sokoto State were poorly informed about AI tools and thus their impact was insignificant on the instructional processes.

The result from the third research question showed that self-efficacy of teachers is a significant factor that determines the use of AI tools in the preparation of lessons. The teachers that held faith in their ability to learn, experiment and integrate AI technologies were more likely to use the tools in the process of planning and teaching. In this case, readiness to enroll in the training programmes and develop AI competencies and be confident to modify teaching styles were the strongest predictors of adoption. The result is consistent with the theory of self-efficacy by Bandura (1997) that states that the belief of individuals in their capabilities has a direct influence on their motivation and performance. This finding is corroborated by Hazzan-Bishara Kol, and Levy (2025), Adekunle and Temitope (2023), and Abu Bakar, et al., (2018) who reported that teacher self-efficacy had a positive correlation with the application of educational technologies such as the use of digital technologies and AI in lesson planning. On the other hand, Su, Et al (2022) found that the lack of self-confidence and low technological expertise among teachers prevented their use of AI, proving that self-efficacy may be a determinant of implementing technology. The findings indicate that professional development, practical training, and ongoing support of teachers have been significant in fostering successful use of AI in education by enhancing their self-efficacy. Educators with confidence in their competencies are in a better position to use AI tools to benefit lesson planning, individualise learning, and advance instructional outcomes.

Conclusion

Teachers with higher self-efficacy are more likely to adopt and effectively integrate AI tools in lesson preparation, improving instructional efficiency, customization, and overall lesson quality. Conversely, low self-efficacy and limited technological confidence can hinder the use of AI, highlighting the critical role of teachers' belief in their abilities for successful technology integration. Professional development and practical support are therefore essential for enhancing AI adoption.

Recommendations

Based on the outcome of this study, the following recommendations are made:

1. Schools and educational authorities should implement continuous professional development programs focusing on AI literacy and practical training.
2. Teachers should be encouraged and supported to build confidence in using AI through workshops, peer mentoring, and hands-on activities.
3. Policies should also ensure access to AI tools and resources to facilitate seamless integration into lesson preparation, thereby maximizing instructional effectiveness.

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