

Relationship between Socio-economic Background and E-Learning Technologies Adoption among Open and Distance Learning Students in Gombe State Nigeria

BY

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Abstract

This study Relationship between socio-economic background and e-Learning technologies adoption among open and distance learning students in Gombe State Nigeria. The rapid integration of digital technologies into education has created new opportunities for flexible learning; however, disparities in socio-economic status may significantly affect students' ability to access and utilize these platforms effectively. The study adopted a quantitative research design, using a structured questionnaire to collect data from a representative sample of ODL students across selected institutions in Gombe State. Key variables investigated included family income, parental education, access to digital devices, internet connectivity, and digital literacy levels, alongside students' adoption and usage patterns of e-learning technologies. Data were analyzed using descriptive statistics and Pearson Product Moment Correlation. The findings revealed that students from higher socio-economic backgrounds demonstrated significantly higher levels of e-learning adoption, attributed to better access to personal devices, stable internet connectivity, and prior exposure to digital tools. Conversely, students from lower socio-economic backgrounds faced challenges including limited access to devices, high cost of internet data, and inadequate digital skills, which hindered their effective participation in e-learning. The study concludes that socio-economic disparities play a critical role in shaping students' engagement with e-learning technologies in ODL contexts. It recommends targeted institutional and government interventions, including subsidized internet access, provision of learning devices, and digital literacy training programs, to bridge the digital divide and promote equitable access to e-learning opportunities among students in Gombe State.

Keywords: Socio-economic, Students, E-Learning Technologies, Open and Distance Learning

Introduction

The integration of e-learning technologies into education systems has transformed the landscape of teaching and learning globally, particularly within Open and Distance Learning (ODL) environments. E-learning refers to the use of digital technologies such as computers, mobile devices, and internet-based platforms to facilitate learning beyond the traditional classroom setting. In recent years, the adoption of e-learning has accelerated due to increased internet penetration, the proliferation of mobile technologies, and the need for flexible learning pathways (Anderson, 2018). In Nigeria, ODL institutions such as the National Open University of Nigeria (NOUN) and other dual-mode universities have increasingly embraced e-learning platforms to expand access to education and accommodate diverse learners, including working-class individuals and those in geographically remote areas (Ololube, 2020).

Despite these advancements, access to and effective utilization of e-learning technologies remain uneven, particularly in developing regions such as Gombe State. One of the critical determinants influencing students' adoption of e-learning is their socio-economic background. Socio-economic status (SES) typically encompasses factors such as family income, parental education, occupation, and access to material resources, all of which shape educational opportunities and outcomes (Sirin, 2005). Students from higher socio-economic backgrounds are more likely to have access to digital devices such as laptops and smartphones, stable internet connectivity, and conducive learning environments, thereby enhancing their ability to participate in e-learning activities (OECD, 2021).

Conversely, students from lower socio-economic backgrounds often face significant barriers that hinder their adoption of e-learning technologies. These barriers include limited access to affordable internet services, lack of personal digital devices, unreliable electricity supply, and low levels of digital literacy (Aker & Mbiti, 2019). In many parts of northern Nigeria, including Gombe State, these challenges are further compounded by infrastructural deficits and economic constraints, which exacerbate the digital divide between different socio-economic groups (Adedoyin & Soykan, 2020). As a result, while e-learning platforms are designed to enhance accessibility, they may inadvertently widen educational inequalities if socio-economic disparities are not adequately addressed.

The outbreak of the COVID-19 pandemic further highlighted the importance of e-learning technologies in sustaining educational activities during disruptions. Many institutions transitioned rapidly to online learning modalities; however, the effectiveness of this transition varied significantly among students depending on their socio-economic circumstances (UNESCO, 2020). Students with access to reliable internet and digital tools were able to continue learning with minimal disruption, whereas those from disadvantaged backgrounds experienced significant learning losses due to their inability to engage with online platforms.

This situation underscores the need to critically examine the role of socio-economic factors in shaping students' adoption of e-learning technologies, particularly in ODL contexts where self-directed and technology-mediated learning is central.

In the context of Gombe State, where a significant proportion of the population lives in rural or semi-urban areas, socio-economic challenges are pronounced. Many students enrolled in ODL programs rely on limited financial resources and may lack the necessary infrastructure to fully engage with e-learning platforms. Furthermore, variations in parental education and exposure to technology may influence students' attitudes, confidence, and readiness to adopt digital learning tools (Bandura, 1997). Studies have shown that students' self-efficacy and prior experience with technology are strongly associated with their willingness to adopt e-learning systems (Venkatesh et al., 2012). These factors are often shaped by socio-economic conditions, thereby reinforcing the link between SES and technology adoption.

Additionally, institutional support mechanisms, such as access to learning management systems, technical support services, and digital training programs, play a crucial role in facilitating e-learning adoption. However, students from lower socio-economic backgrounds may be less able to take advantage of these resources due to financial and logistical constraints (Tarhini et al., 2017). This suggests that addressing socio-economic disparities requires a multifaceted approach that includes both institutional interventions and broader policy measures aimed at improving digital inclusion.

Given the increasing reliance on e-learning in ODL and the persistent socio-economic inequalities in Nigeria, there is a need for empirical research to understand how these factors interact to influence students' adoption of e-learning technologies. Such understanding is essential for designing inclusive educational policies and interventions that ensure equitable access to quality education for all learners. Therefore, this study seeks to investigate the influence of socio-economic background on students' adoption of e-learning technologies in ODL in Gombe State, Nigeria, with a view to providing evidence-based recommendations for improving access and reducing the digital divide.

Statement of the Problem

Despite the growing adoption of e-learning technologies in Open and Distance Learning (ODL) in Nigeria, significant disparities persist in students' access to and utilization of these platforms. In Gombe State, many students enrolled in ODL programmes face challenges such as limited access to digital devices, high cost of internet data, poor connectivity, and inadequate digital skills. These challenges are often linked to variations in socio-economic background, including family income, parental education, and living conditions. While e-learning is intended to promote equitable access to education, evidence suggests that students from lower socio-economic backgrounds are less likely to fully engage with these technologies,

thereby widening the educational gap. However, there is limited empirical evidence specifically examining how socio-economic factors influence students' adoption of e-learning technologies in ODL in Gombe State. This gap necessitates a focused investigation to inform policies and interventions aimed at enhancing inclusive digital learning.

Objectives of the Study

The main objective of this study is to examine the Relationship between socio-economic background and students' adoption of e-learning technologies in ODL in Gombe State, Nigeria. The specific objectives are to:

1. Relationship between family income and students' adoption of e-learning technologies.
2. Relationship between parental education and students' use of e-learning platforms.
3. Relationship between access to digital devices and internet connectivity on e-learning adoption.
4. Relationship between socio-economic background and students' digital literacy levels.

Research Questions

1. To what extent does family income influence students' adoption of e-learning technologies?
2. How does parental education affect students' use of e-learning platforms?
3. What is the effect of access to digital devices and internet connectivity on e-learning adoption?

Research Hypotheses

H₀₁: There is no significant relationship between Family income and students' adoption of e-learning technologies.

H₀₂: There is no significant relationship between Parental education and students' use of e-learning platforms.

H₀₃: There is no significant relationship between Access to digital devices and internet connectivity and elearning adoption.

H₀₄: There is no significant relationship between socio-economic background and students' digital literacy levels.

Literature Review

The concept of e-learning has attracted significant scholarly attention due to its transformative role in modern education systems, particularly within Open and Distance Learning (ODL). E-learning is widely defined as the use of digital technologies and internet-based platforms to facilitate teaching and learning in

flexible and learner-centered environments (Rodrigues et al., 2019). In higher education, e-learning has become a strategic tool for expanding access, improving instructional delivery, and supporting lifelong learning. Studies indicate that institutions globally are increasingly adopting e-learning as an effective means of knowledge dissemination and educational delivery (Ansong et al., 2017). However, despite its potential benefits, the level of adoption among students varies considerably, especially in developing countries, where socio-economic disparities remain a critical issue.

Socio-Economic Status and Educational Outcomes

Socio-economic status (SES) has long been recognized as a major determinant of students' educational access, participation, and achievement. SES typically includes indicators such as income level, parental education, and occupational status. Research consistently shows a strong relationship between SES and students' learning outcomes, with students from higher socio-economic backgrounds generally achieving better academic results due to greater access to resources and support systems (Broer et al., 2019). Similarly, an umbrella review by recent scholars highlights that SES influences learning through mechanisms such as family investment in education and exposure to supportive learning environments (Springer Review, 2024).

In contrast, students from low socio-economic backgrounds often face multiple challenges, including limited access to educational materials, inadequate learning environments, and reduced parental support. These challenges contribute to lower engagement and achievement levels. Evidence from prior studies suggests that low-SES students are more likely to experience disengagement in learning due to economic stress, cognitive challenges, and lack of academic support (Perera, 2023). In the context of digital learning, these disadvantages are further amplified, as access to technology becomes an essential requirement for participation.

E-Learning Adoption in Higher Education

The adoption of e-learning technologies in higher education has been widely studied using various theoretical models such as the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). These models emphasize factors such as perceived usefulness, ease of use, social influence, and facilitating conditions as key determinants of technology adoption. In the Nigerian context, studies reveal that although awareness of e-learning is increasing, actual adoption remains relatively low due to infrastructural and socio-economic constraints (Adakawa et al., 2021).

Furthermore, a review of e-learning adoption in universities identified multiple influencing factors, including institutional support, technological infrastructure, user attitudes, and socio-cultural factors (Ramzani & Suleiman, 2019). These findings suggest that e-learning adoption is a multifaceted process

influenced by both individual and environmental variables. In ODL settings, where learners depend heavily on digital platforms for instructional delivery, these factors become even more critical.

Socio-Economic Factors and E-Learning Adoption

A growing body of literature emphasizes the role of socio-economic background in shaping students' adoption of e-learning technologies. Students from higher-income households are more likely to own personal computers, smartphones, and have access to reliable internet services, which significantly enhances their ability to participate in online learning. Conversely, students from lower-income backgrounds often face financial barriers that limit their access to these essential resources.

Studies conducted in developing regions highlight that high costs of internet data, lack of digital devices, and poor infrastructure are major barriers to e-learning adoption among disadvantaged students (Barikzai et al., 2024). Similarly, research in rural African contexts indicates that inadequate infrastructure, limited funding, and insufficient digital skills hinder effective adoption of e-learning technologies (Esan & Masombuka, 2026). These challenges are particularly pronounced in regions such as northern Nigeria, where socio-economic inequalities are more evident.

In addition to financial constraints, parental education and home environment also play significant roles in influencing students' readiness and confidence in using e-learning platforms. Students from educated families are more likely to receive guidance and encouragement in using digital tools, thereby enhancing their digital literacy and self-efficacy. On the other hand, students from less educated backgrounds may lack such support, leading to lower levels of engagement with e-learning technologies.

Digital Divide and Educational Inequality

The concept of the digital divide is central to understanding disparities in e-learning adoption. The digital divide refers to the gap between individuals who have access to digital technologies and those who do not. This divide is often driven by socio-economic inequalities and has significant implications for educational equity. Literature shows that while e-learning has the potential to democratize education, it may also widen existing inequalities if access to technology is not evenly distributed (Barikzai et al., 2024).

In Nigeria, the digital divide is evident in disparities between urban and rural areas, as well as between different socio-economic groups. Students in urban areas and from higher-income families tend to have better access to digital resources compared to their rural and low-income counterparts. This imbalance affects not only access but also the quality of learning experiences and outcomes. Studies have emphasized the need for targeted interventions to bridge this gap through improved infrastructure, subsidized internet access, and digital literacy programs (Adakawa et al., 2021).

Empirical Evidence from ODL Contexts

Empirical studies in ODL contexts reveal that socio-economic background significantly influences students' adoption and use of e-learning technologies. For instance, research in African universities indicates that students' ability to engage with e-learning platforms is closely linked to their access to financial and technological resources (Ansong et al., 2017). Similarly, studies in rural tertiary institutions show that lack of infrastructure and financial limitations remain major barriers to effective e-learning adoption (Esan & Masombuka, 2026).

Moreover, the literature highlights that even when e-learning platforms are available, students from lower socio-economic backgrounds may not fully utilize them due to lack of digital skills and confidence. This underscores the importance of considering both access and capability when examining e-learning adoption. The interaction between socio-economic factors and technological readiness therefore plays a critical role in determining students' engagement with e-learning in ODL environments.

Summary and Gap in Literature

From the reviewed literature, it is evident that socio-economic background is a key determinant of students' adoption of e-learning technologies. While numerous studies have examined factors influencing e-learning adoption, there is still limited empirical research focusing specifically on the interplay between socio-economic status and e-learning adoption in ODL contexts within Gombe State, Nigeria. Most existing studies are either generalized or focused on other regions, leaving a contextual gap that this study seeks to address.

Therefore, this study contributes to the existing body of knowledge by providing empirical evidence on how socio-economic background influences students' adoption of e-learning technologies in ODL in Gombe State, Nigeria, thereby informing policy and practice aimed at promoting inclusive and equitable digital education.

Methodology

The study employed descriptive survey research design of a quantitative nature. This design is considered appropriate because it allows for the collection of data from a large population to describe existing conditions and examine relationships among variables without manipulating them. The design enables the researcher to assess how socio-economic factors such as income level, parental education, and access to resources influence students' adoption of e-learning technologies. The use of a survey design is consistent with similar studies on technology adoption and educational inequalities, as it facilitates generalization of findings to a broader population.

The population of the study comprises of all students enrolled in Open and Distance Learning (ODL) programmes in selected institutions within Gombe State, Nigeria. This includes students from institutions such as study centres of the National Open University of Nigeria (NOUN), Unimaid Distance Learning study centre, Iconic Open University Gombe state centre and other tertiary institutions offering distance learning programmes. The population is heterogeneous in terms of age, socio-economic background, academic discipline, and level of digital exposure, making it suitable for examining variations in e-learning adoption.

A representative sample of the population were selected using a multi-stage sampling technique. First, purposive sampling was used to select ODL institutions and study centres within Gombe State that actively utilize e-learning platforms. Secondly, stratified sampling was employed to categorize students based on relevant characteristics such as level of study or programme of study. Finally, simple random sampling was used to select participants from each stratum to ensure equal representation.

The sample size consisted of approximately 350 students, which is considered adequate for statistical analysis and generalization. The determination of the sample size is guided by standard research recommendations for survey studies, ensuring that it is large enough to detect significant relationships among variables.

Data for the study was collected using a structured questionnaire titled *Socio-Economic Background and E-Learning Adoption Questionnaire (SEBEAQ)*. The questionnaire was divided into two main sections. Section A captured demographic information such as age, gender, programme of study, and socio-economic indicators including family income and parental education. Section B consisted of items measuring students' access to digital devices, internet connectivity, digital literacy, and level of adoption of e-learning technologies.

The items were structured on a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1). This format allows for the quantification of respondents' perceptions and facilitates statistical analysis. The questionnaire was self-administered to ensure ease of distribution and collection.

To ensure the validity of the instrument, both face and content validity were established. The questionnaire was reviewed by experts in educational technology, measurement and evaluation, and ODL to assess its relevance, clarity, and adequacy in measuring the intended constructs. Their suggestions and corrections was incorporated into the final version of the instrument. This process ensures that the instrument adequately covers all aspects of socio-economic background and e-learning adoption.

The reliability of the instrument was determined through a pilot study conducted among a small group of ODL students outside the main study area but with similar characteristics. The data obtained was analyzed using Cronbach's Alpha to determine the internal consistency of the instrument, yielding a reliability coefficient of 0.73 which is considered acceptable, indicating that the instrument is reliable for the study.

The researcher obtained permission from relevant institutional authorities before administering the questionnaire. Participants were informed about the purpose of the study and assured of confidentiality and anonymity. The questionnaire was distributed both physically and electronically (where applicable) to accommodate students who primarily engage in online learning.

Respondents were given adequate time to complete the questionnaire, and follow-ups was conducted to ensure a high response rate. Completed questionnaires was collected, coded, and prepared for analysis. Ethical considerations, including voluntary participation and informed consent, was strictly adhered to throughout the data collection process.

The data collected were analyzed using both descriptive and inferential statistical methods. Descriptive statistics such (mean, and standard deviation) were used to summarize the demographic characteristics of respondents and their responses to questionnaire items. Inferential statistics was employed to test the research hypotheses. Specifically, Pearson Product Moment Correlation were used to examine relationships between socio-economic variables and e-learning adoption. All hypotheses were tested at a 0.05 level of significance. Statistical analysis was conducted using appropriate software such as SPSS.

Results and Discussion

This section presents the results of data analysis based on the research questions and hypotheses formulated for the study. A total of 350 questionnaires were administered, out of which 320 were properly completed and returned, giving a response rate of 91.4%. The analysis is presented using descriptive statistics (mean and standard deviation) for research questions and inferential statistics (correlation and regression analysis) for testing hypotheses at 0.05 level of significance.

Results Based on Research Questions

Research Question 1: *To what extent does family income influence students' adoption of e-learning technologies?*

Table 1: Family income influence on students' adoption of e-learning technologies

S/N	Item	Mean	SD	Decision
1	I have access to personal digital devices due to my family income	3.85	0.92	Agree
2	My family income allows me to afford internet data regularly	3.78	0.88	Agree
3	Financial stability enhances my participation in online learning	3.91	0.95	Agree
4	I experience fewer challenges accessing e-learning platforms due to my financial background	3.67	1.02	Agree
Grand Mean		3.80	0.94	Agree

The results of the analysis in Table1 show the influence of family income on students' adoption of e-learning technologies. The table revealed that all the 4 items had their mean values ranged from 3.67 to 3.89 were above the cut-off point of mean 3.50 indicating that all the items were in agreement with the research question one that family income has influence on students' adoption of e-learning technologies. The table further revealed that the standard deviation of all the 4 items ranged from .88 to 1.02 which implies that there was less variability in the opinion of the respondents. The grand mean is 3.80 which is above the cutoff point of 3.50. This also implies that family income has influence on students' adoption of e-learning technologies.

Research Question 2: How does parental education affect students' use of e-learning platforms?

Table 2: Parental education influence on students' use of e-learning platforms

S/N	Item	Mean	SD	Decision
1	My parents encourage me to use digital learning tools	3.60	0.97	Agree
2	My parents' level of education influences my use of e-learning platforms	3.72	0.89	Agree
3	I receive academic support from my parents in using technology	3.55	1.01	Agree
4	My parents' exposure to technology motivates my e-learning usage	3.68	0.93	Agree
Grand Mean		3.64	0.95	Agree

The results of the analysis in Table 2 show the influence of parental education on students' adoption of e-learning technologies. The table revealed that all the 4 items had their mean values ranged from 3.60 to 3.72 were above the cut-off point of mean 3.50 indicating that all the items were in agreement with the research question one that parental education has influence on students' adoption of e-learning technologies.

The table further revealed that the standard deviation of all the 4 items ranged from .93 to 1.01 which implies that there was less variability in the opinion of the respondents. The grand mean is 3.64 which is above the cutoff point of 3.50. This also implies that parental education has influence on students' adoption of e-learning technologies.

Research Question 3: *What is the effect of access to digital devices and internet connectivity on e-learning adoption?*

Table 3: Influence of access to digital devices and internet connectivity on e-learning adoption

S/N	Item	Mean	SD	Decision
1	I have regular access to a smartphone/laptop for learning	3.95	0.85	Agree
2	Internet connectivity affects my participation in e-learning	4.10	0.80	Agree
3	Poor network reduces my engagement in online classes	4.05	0.82	Agree
4	Availability of devices improves my learning experience	4.12	0.78	Agree
Grand Mean		4.06	0.81	Agree

The results of the analysis in Table 3 show the influence of access to digital devices and internet connectivity on students' adoption of e-learning technologies. The table revealed that all the 4 items had their mean values ranged from 3.95 to 4.12 were above the cut-off point of mean 3.50 indicating that all the items were in agreement with the research question one that access to digital devices and internet connectivity has influence on students' adoption of e-learning technologies. The table further revealed that the standard deviation of all the 4 items ranged from .78 to 0.85 which implies that there was less variability in the opinion of the respondents. The grand mean is 4.06 which is above the cutoff point of 3.50. This also implies that access to digital devices and internet connectivity has influence on students' adoption of e-learning technologies.

Results Based on Hypotheses

Hypothesis 1

H₀₁: There is no significant relationship between Family income and students' adoption of e-learning technologies.

Variable	N	r-value	p-value	Decision
Family Income & E-learning Adoption	320	0.62	0.000	Rejected

Since $p < 0.05$, the null hypothesis is rejected. There is significant relationship between Family income and students' adoption of e-learning technologies.

Hypothesis 2

H₀₂: There is no significant relationship between Parental education has and students' use of e-learning platforms.

Variable	N	r-value	p-value	Decision
Parental Education & E-learning Use	320	0.58	0.001	Rejected

The null hypothesis is rejected. There is significant relationship between Parental education has and students' use of e-learning platforms.

Hypothesis 3

H₀₃: There is no significant relationship between Access to digital devices and internet connectivity and e-learning adoption.

Variable	N	r-value	p-value	Decision
Device/Internet Access & E-learning Adoption	320	0.71	0.000	Rejected

The null hypothesis is rejected. There is significant relationship between Access to digital devices and internet connectivity and e-learning adoption.

Hypothesis 4

H₀₄: There is no significant relationship between socio-economic background and students' digital literacy levels.

Variable	N	r-value	p-value	Decision
Socio-economic Background & Digital Literacy	320	0.65	0.000	Rejected

The null hypothesis is rejected. There is a significant relationship between socio-economic background and digital literacy levels.

Findings of the Study

1. There is significant relationship between Family income and students' adoption of e-learning technologies, indicating that students from higher-income backgrounds are more likely to adopt and effectively use e-learning platforms than those from lower-income backgrounds.
2. There is significant relationship between Parental education has and students' use of e-learning platforms, showing that students whose parents are more educated tend to engage more actively with digital learning technologies.
3. There is no significant relationship between Access to digital devices and internet connectivity and e-learning adoption, confirming that availability of technological resources is a major determinant of students' participation in online learning.
4. There is a significant relationship between socio-economic background and students' digital literacy levels, implying that students from higher socio-economic backgrounds possess better digital skills, which enhances their ability to adopt e-learning technologies.

Discussion

The findings of this study reveal that socio-economic background plays a significant role in shaping students' adoption of e-learning technologies in Open and Distance Learning (ODL) in Gombe State, Nigeria. The first finding showed that there is relationship between Family income and students' adoption of e-learning technologies. This implies that students from higher-income families are better positioned to access essential digital resources such as laptops, smartphones, and internet data, which are critical for effective participation in e-learning. This finding is consistent with previous studies which assert that financial capacity determines access to educational technologies and learning opportunities (OECD, 2021). In the Nigerian context, where the cost of internet data and digital devices remains relatively high, students from low-income households are often excluded from full participation in online learning, thereby reinforcing educational inequality.

The second finding indicated that there is a significant relationship between parental education and students' use of e-learning platforms. This suggests that students whose parents are educated are more likely to receive academic support, motivation, and guidance in the use of digital technologies for learning. Educated parents are also more likely to value education and encourage the use of innovative learning tools. This aligns with the position of (Sirin, 2005), who found that parental education is a strong predictor of students' academic engagement and achievement. In addition, this finding supports social learning theory, which

emphasizes the role of the home environment in shaping learners' attitudes and behaviors toward educational practices, including technology use.

The third finding revealed that there is no significant relationship between Access to digital devices and internet connectivity and e-learning adoption. This highlights the importance of technological infrastructure in facilitating effective online learning. Students who have regular access to functional devices and stable internet connections are more likely to participate actively in e-learning activities, complete assignments, and interact with instructors and peers. Conversely, those with limited or unreliable access face significant challenges that hinder their engagement. This finding corroborates earlier studies (Adedoyin & Soykan, 2020), which identified poor internet connectivity and lack of access to devices as major barriers to e-learning adoption in developing countries. It also underscores the critical role of government and institutional support in providing affordable and reliable digital infrastructure to students.

The fourth finding established that there is a significant relationship between socio-economic background and students' digital literacy levels. This indicates that students from higher socio-economic backgrounds tend to possess better digital skills due to greater exposure to technology and learning opportunities. Digital literacy is essential for navigating e-learning platforms, accessing online resources, and engaging in virtual learning environments. Students from disadvantaged backgrounds, however, often lack these skills, which limits their ability to benefit from e-learning. This finding is in line with (Venkatesh et al., 2012), who emphasized that users' competence and confidence in using technology are key determinants of technology adoption. It also reflects the broader issue of the digital divide, where disparities in access and skills create unequal learning outcomes among students.

Overall, the discussion of findings highlights that socio-economic factors such as income, parental education, access to technology, and digital literacy are interrelated and collectively influence students' adoption of e-learning technologies in ODL. These findings suggest that efforts to promote e-learning in Nigeria must go beyond mere provision of platforms to addressing the underlying socio-economic inequalities that limit students' access and participation.

Conclusion

This study established that socio-economic background significantly influences students' adoption of e-learning technologies in ODL in Gombe State, Nigeria. Family income, parental education, access to digital resources, and digital literacy were found to be key determinants of students' engagement with e-learning. Students from higher socio-economic backgrounds demonstrated greater access, competence, and

participation in online learning. Conversely, those from lower socio-economic backgrounds faced significant barriers that limited their effective use of e-learning platforms. The study therefore concludes that addressing socio-economic disparities is essential for achieving equitable and inclusive e-learning in ODL.

Recommendations

1. Government and institutions should provide subsidized internet access and affordable digital devices to support students from low-income backgrounds.
2. Awareness programmes and orientation should be organized to educate parents on the importance of supporting their children's use of e-learning technologies.
3. Institutions should improve ICT infrastructure by providing accessible computer centres and reliable internet services for students.
4. Regular digital skills training programmes should be organized to enhance students' competence and confidence in using e-learning technologies.



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