Augmented Reality Strategy (ARS) and Traditional Teaching Method (TTM): Assessing Effects on Information Literacy in Financial Accounting Students

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Abstract

This study investigates the comparative effects of the Augmented Reality Strategy (ARS) and the Traditional Teaching Method (TTM) on the development of Information Literacy among Financial Accounting students in Nigerian secondary schools, with the purpose of exploring which instructional approach better equips students with critical information-handling skills amid the increasing demand for digitally literate graduates; adopting an explanatory sequential mixed-methods design, the research employed a quasi-experimental pre-test/post-test control group setup in its quantitative phase and semi-structured interviews in its qualitative phase to enrich and contextualize findings, involving a sample size of 117 Senior Secondary School II students 41 in the ARS experimental group and 76 in the TTM control group drawn from two public schools in Lagos State; key results from Analysis of Covariance (ANCOVA) revealed a statistically significant difference in post-test Information Literacy scores between the groups ($F(1,114) = 407.33$, $p < .001$), with the instructional method accounting for 78.1% of the variance (Partial Eta Squared = .781), indicating a very large effect size, as students taught with ARS demonstrated superior abilities in locating, evaluating, and applying financial information; the implications underscore ARS as a transformative pedagogical tool that enhances students' engagement, comprehension, and critical thinking in accounting education, advocating for the integration of immersive technologies into curriculum design and teacher training to foster 21st-century competencies in secondary education.

Keywords: Academic Performance; Augmented Reality Strategy (ARS); Information Literacy; Instructional Innovation; and Traditional Teaching Method (TTM)

Introduction

In today's rapidly evolving digital landscape where information is both ubiquitous and frequently unvetted the capacity to locate, critically evaluate, and ethically apply knowledge has become a foundational competency for academic achievement and professional adaptability. Nowhere is this more pertinent than in disciplines such as Financial Accounting, which demand analytical rigour, interpretive precision, and evidence-based judgement. In Nigerian secondary schools, however, pedagogical approaches to accounting education remain predominantly anchored in traditional, transmission-based methodologies that privilege memorisation over metacognition, leaving learners ill-prepared to navigate the complexities of contemporary information ecosystems. Although immersive technologies notably Augmented Reality Strategy (ARS) have demonstrated pedagogical promise in fostering engagement, contextual understanding, and digital fluency across global educational contexts, their targeted application to cultivate *information literacy* among Financial Accounting students within Nigeria's secondary school system remains conspicuously under-researched.

Recent international and regional scholarship underscores ARS as a catalyst for 21st-century skill development: Chen and Huang (2023), in a quasi-experimental study across Taiwanese vocational schools, found AR-enhanced accounting modules significantly improved students' ability to synthesise financial data and evaluate source credibility; Al-Samarraie et al. (2024), in a multi-site study across Malaysian and Jordanian institutions, reported marked gains in learners' information discernment and decision-making agility when AR was integrated into business curricula; and crucially, Abanum (2025), demonstrated that ARS can effectively bridge learning disparities for students with low technological proficiency suggesting its potential for equitable pedagogical transformation even in under-resourced classrooms. Yet, within Nigeria's specific curricular, infrastructural, and socio-pedagogical milieu, empirical investigation into ARS's comparative efficacy particularly against entrenched traditional methods in fostering information literacy remains sparse. This study addresses that critical lacuna. It seeks to determine the comparative impact of ARS versus the Traditional Teaching Method (TTM) on the development of information literacy among Senior Secondary School II Financial Accounting students in Lagos State with the aim of informing evidence-based pedagogical reform, curriculum modernisation, and contextually viable technology integration in resource-constrained educational environments.

Literature Review

Information Literacy in Financial Accounting Education: Conceptual Imperatives and Nigerian Realities

In an era defined by informational abundance and epistemic volatility, *information literacy* the ability to locate, critically evaluate, and ethically apply knowledge has emerged as a foundational competency across academic and professional domains. Nowhere is this more consequential than in Financial Accounting, a discipline that demands precision in data interpretation, rigour in analytical reasoning, and integrity in evidence-based decision-making. Adeleke and Adu (2018) conceptualise information literacy as the capacity to "recognise when information is needed, identify credible sources, assess their validity, and use them effectively" a definition that resonates with international frameworks such as those advanced by the Association of College & Research Libraries (ACRL, 2016).

Within Nigerian secondary education, however, the cultivation of these competencies remains uneven. Okafor and Udeze (2020) document that many accounting students struggle with information overload and lack the evaluative faculties necessary to distinguish authoritative financial data from misleading or superficial sources. This deficit is not merely academic; it has profound implications for professional readiness. Onyancha (2021), in a pan-African

review, argues that information literacy functions not as a peripheral skill but as a *transformative pedagogical lever* one that enhances learning outcomes, fosters independent research, and bridges the persistent disjuncture between classroom knowledge and workplace demands. As accounting education evolves in response to global digitisation, the imperative to embed robust information literacy training becomes not merely beneficial it is pedagogically non-negotiable.

The Pedagogical Limitations of Traditional Teaching Methods in Nigerian Classrooms

Despite this imperative, pedagogical practices in Nigerian secondary accounting education remain predominantly anchored in *Traditional Teaching Methods* (TTM) approaches characterised by rote memorisation, teacher-centred delivery, and passive knowledge transmission. Enwere and Enwere (2019) observe that such methodologies cultivate neither the metacognitive awareness nor the critical inquiry skills that underpin authentic information literacy. More concerningly, they leave students ill-equipped to navigate the digital infrastructures that define modern academic and professional life including online accounting databases, cloud-based financial tools, and open educational repositories.

The epistemological inertia of TTM is particularly problematic in Financial Accounting, where conceptual mastery must be coupled with contextual application. When students are taught to memorise ledger formats or accounting conventions without engaging in evaluative or problem-solving tasks, they develop neither the confidence nor the competence to interrogate financial data sources or adapt to evolving informational landscapes. Consequently, while TTM may facilitate short-term recall, it fails to foster the adaptive, self-regulated learning dispositions required for lifelong professional competence in a digitised global economy.

Augmented Reality Strategy: A Pedagogical Innovation with Local and Global Validation

In response to the limitations of traditional pedagogies, immersive technologies particularly *Augmented Reality Strategy* (ARS) have emerged as promising vehicles for reimagining accounting education. ARS overlays interactive digital content onto physical environments, enabling learners to engage with simulated business scenarios, manipulate financial data in real time, and access contextual multimedia resources that scaffold understanding. This experiential, learner-centred approach does more than enhance engagement; it fundamentally reconfigures the epistemology of the classroom, shifting from knowledge transmission to knowledge construction.

Empirical evidence both global and locally grounded supports ARS's efficacy in cultivating the very competencies that TTM neglects. Internationally, Chen and Huang (2023), in a quasi-experimental study across Taiwanese vocational institutions, found that AR-enhanced accounting modules significantly improved students' ability to synthesise financial data and evaluate source credibility. Similarly, Al-Samarraie et al. (2024), in a cross-cultural study spanning Malaysia and Jordan, reported marked gains in learners' information discernment and decision-making agility when AR was integrated into business curricula.

Abanum (2025), demonstrated that ARS significantly improves engagement and comprehension among Nigerian accounting students, *particularly those with low technological proficiency*. This finding is of profound equity significance: it suggests that ARS can function not merely as a pedagogical enhancement but as a *democratising force* in under-resourced classrooms.

Further reinforcing this insight, Abanum et al. (2025) established a statistically significant relationship between gains in *technology proficiency* and improved student attitudes in AR-enhanced accounting lessons. This attitudinal shift is pedagogically vital: it indicates that ARS does not merely deliver content more vividly; it cultivates the digital confidence and epistemic agency necessary for sustained information literacy development. These findings align with

Kaiser et al. (2022), who note that ARS transforms the learning environment into a dynamic, interactive space where students actively interrogate, synthesise, and apply knowledge precisely the cognitive processes that define information literacy.

Moreover, Abanum's broader research trajectory including studies on simulation games (Abanum & Akintula, 2022), puzzle-based learning (Abanum, Aina, & Akintula, 2024), and instructional board games (Abanum, Falade, & Aina, 2024) consistently underscores the value of *active, contextually embedded pedagogies* in enhancing academic performance across Nigerian educational levels. Collectively, this body of work positions ARS not as an isolated technological novelty, but as part of a broader, evidence-based movement toward experiential, student-centred learning in Nigerian classrooms.

Research Gap and Study Justification

Despite the compelling evidence emerging from both global and Nigerian scholarship, a critical empirical gap persists: there remains a paucity of *comparative, quasi-experimental studies* examining the relative efficacy of ARS versus TTM in developing *information literacy* specifically among *secondary school* Financial Accounting students in Nigeria. Most extant studies including Abanum's valuable contributions focus on engagement, comprehension, or attitude shifts, but do not explicitly measure gains in the core information literacy competencies of *locating, evaluating, and applying financial information*.

Furthermore, while Abanum's work provides crucial local validation, it has not yet been situated within a controlled experimental design that isolates the effect of ARS from confounding variables a gap this study directly addresses through its pre-test/post-test control group methodology.

This research, therefore, seeks to generate contextually grounded, methodologically rigorous evidence on which instructional strategy ARS or TTM more effectively cultivates information literacy among Senior Secondary School II Financial Accounting students in Lagos State. The findings will not only contribute to the scholarly discourse on immersive pedagogies in Global South contexts but will also provide actionable insights for curriculum designers, teacher educators, and policymakers seeking to modernise Nigerian accounting education in alignment with 21st-century competencies.

Statement of the Problem

In an age defined by information abundance and digital transformation, the ability to locate, evaluate, and apply information effectively commonly referred to as information literacy has become a cornerstone of academic achievement and professional competence. Nowhere is this more evident than in Financial Accounting, where students are expected to interpret financial statements, analyse business performance, and make sound, evidence-based decisions. Yet, in many Nigerian secondary schools, accounting education continues to rely heavily on the Traditional Teaching Method (TTM) a lecture-based, teacher-centered approach that prioritises content delivery over critical engagement. This method often fails to equip students with the skills needed to navigate digital libraries, online databases, and real-world financial scenarios, leaving them passive recipients of information rather than active, discerning users (Enwere & Enwere, 2019; Paul & Anyaegbu, 2020).

In contrast, emerging pedagogical innovations such as Augmented Reality Strategy (ARS) offer a dynamic alternative. ARS integrates digital overlays into real-world contexts, enabling students to interact with 3D financial models, simulate business transactions, and access multimedia resources in real time. By embedding learning in experiential, problem-based environments, ARS has the potential to foster deeper understanding and strengthen information literacy competencies such as source evaluation, data interpretation, and contextual application. Studies in Nigerian classrooms suggest that AR-enhanced instruction can improve engagement

and comprehension, particularly when aligned with students' cognitive and technological needs (Abanum, 2025; Abanum et al., 2025).

Despite these promising insights, there remains a significant gap in empirical research on how ARS specifically influences the development of information literacy among accounting students in Nigeria. More importantly, there is limited comparative evidence examining whether ARS produces significantly better information literacy outcomes than TTM in this context. Without such evidence, educators and policymakers lack the data needed to make informed decisions about integrating technology into accounting instruction. This study, therefore, seeks to address this gap by assessing and comparing the effects of Augmented Reality Strategy and Traditional Teaching Method on the information literacy skills of Financial Accounting students in Nigerian secondary schools.

Research Question

Would there be any difference in the mean information literacy scores of students taught partnership and goodwill account using ARS and TTM?

Research Hypothesis

There would be no statistically significant difference in the mean information literacy scores of students taught partnership and goodwill account using ARS and TTM.

Methodology

Design

The study adopted an explanatory sequential mixed-methods design, comprising two distinct phases to provide a comprehensive understanding of the impact of teaching methods on students' learning outcomes. The first phase employed a quasi-experimental design with a pre-test and post-test control group arrangement. Participants were divided into an experimental group, which received instruction using the Augmented Reality Strategy (ARS), and a control group, taught using the Traditional Teaching Method (TTM). This quantitative phase was used to determine the effects of the teaching methods on students' academic performance and information literacy.

To enhance analytical clarity, a 2×2 factorial design was applied, with two levels of Teaching Method (ARS vs. TTM) and two levels of Gender (male vs. female). The dependent variables were information literacy and academic performance, both assessed using validated instruments administered before and after the intervention.

In the second phase, a qualitative approach was adopted to explain and contextualise the quantitative findings. This involved in-depth, semi-structured interviews with a purposively selected sample of students. The interviews explored participants' experiences with ARS and TTM, their perceptions of learning challenges, and how the instructional methods influenced their engagement with financial accounting content. These insights helped to interpret the patterns observed in the numerical data, offering a richer understanding of the learning process. By integrating both numerical and narrative data, this mixed-methods approach ensured not only statistical rigour but also a deeper, more nuanced appreciation of how the Augmented Reality Strategy influences information literacy and academic achievement within the Nigerian secondary school accounting context.

Population and Sampling

The target population comprised Senior Secondary School II (SSII) students offering Financial Accounting in Education District V of Lagos State, Nigeria. Two public secondary schools were purposively selected from the district's four administrative zones Ajeromi-Ifelodun, Amuwo-Odofin, Badagry, and Ojo to ensure geographical diversity and contextual representation. These schools were chosen based on their comparable student demographics, availability of mobile technology infrastructure, and administrative willingness to support AR-based instructional research.

One school was designated as the experimental group and received instruction via the Augmented Reality Strategy (ARS), while the other served as the control group and was taught using the Traditional Teaching Method (TTM). Random assignment was conducted at the class level, not the school level, to preserve ecological validity and minimize disruption to existing academic structures. Intact classes were retained to reflect authentic classroom dynamics and facilitate smoother implementation of the intervention.

The final sample consisted of 117 students: 41 in the ARS group and 76 in the TTM group. The disparity in group sizes was due to natural enrollment differences across the selected schools. To reduce contamination risk, the schools were located in separate zones and operated independently throughout the study period.

Instruments

Three instruments were developed:

Partnership and Goodwill Account Achievement Test (PGAAT): 40 multiple-choice items from past WASSCE questions, assessing academic performance.

Accounting Student Information Literacy Questionnaire (ASILQ): Evaluated information literacy skills on a four-point Likert scale.

Students' Perception of ARS Interview Guide: Captured qualitative insights on ARS experiences.

Instrument Validation and Reliability

All instruments underwent rigorous validation for construct, content, and face validity through peer reviews, and supervisor evaluations. Reliability was established as follows:

PGAAT: Guttman Split-Half Coefficient of 0.79.

ASILQ: Cronbach's alpha of 0.93.

ARS Interview Guide: Cohen's Kappa of 0.82 for inter-rater reliability.

Procedures and Analysis

Data collection was conducted over an eight-week period. Prior to implementation, formal permissions were obtained from the Ministry of Basic Education and Educational District V. To ensure fidelity of treatment delivery, research assistants were trained intensively over a five-day period on the instructional protocols for both the Traditional Teaching Method (TTM) in the control group and the Augmented Reality Strategy (ARS) in the experimental group.

In the control group, instruction was delivered using the traditional teaching method with markerboard and textbook resources. In contrast, students in the experimental group engaged with AR-enhanced content via personal mobile devices and the accosmart website, which provided interactive 3D models, animations, and scenario-based exercises in partnership and goodwill accounting. Real-time academic support was facilitated through a dedicated WhatsApp group, where students could ask questions and receive prompt feedback from instructors.

Both groups were assessed using pre-test and post-test instruments: the Partnership and Goodwill Accounting Achievement Test (PGAAT) and the Accounting Students' Information

Literacy Questionnaire (ASILQ). The control group completed paper-based versions of the tests, while the experimental group took the assessments online to align with the digital nature of the AR intervention. To maintain standardisation, the same time duration and testing conditions were observed for both formats.

In the eighth week, qualitative data were collected through in-depth, semi-structured interviews with a purposive sample of 10 students from the experimental group five male and five female to explore their experiences with ARS, challenges encountered, and perceived impact on learning.

For data analysis, quantitative data were processed using SPSS. Descriptive statistics (means, standard deviations) were used to summarise performance trends, while Analysis of Covariance (ANCOVA) was employed to test for significant differences in post-test scores between the two groups, with pre-test scores and technology proficiency included as covariates. Key parametric assumptions including normality (Shapiro-Wilk test), homogeneity of variances (Levene's test), and linearity were examined and found to be satisfactory.

Qualitative data from the interviews were analysed using thematic analysis. Transcripts were coded inductively, and recurring patterns were identified, grouped into themes, and interpreted in relation to the research questions. This process enriched the understanding of how ARS influenced students' engagement and information literacy development.

The null hypotheses were evaluated at a 5% level of significance ($p < 0.05$), ensuring statistical rigour in the interpretation of findings.

Results

Research Question

Is there a significant difference in the mean information literacy scores of students taught using ARS compared to those taught using TTM?

Descriptive Statistics

Group	Mean	Std. Deviation	N
Experimental	43.3659	4.25885	41
Control	23.5658	3.34399	76
Total	30.5043	10.17318	117

Table 1 presents the posttest information literacy scores of students in the experimental and control groups. The experimental group, taught using the Augmented Reality Strategy (ARS), had a mean score of 43.37 with a standard deviation of 4.26, while the control group, taught using the Traditional Teaching Method (TTM), recorded a significantly lower mean score of 23.57 with a standard deviation of 3.34. This wide gap in mean scores shows that students exposed to ARS performed considerably better in information literacy compared to those taught with the traditional teaching method.

The result implies that the Augmented Reality Strategy (ARS) had a strong positive impact on students' information literacy related to partnership and goodwill accounts. Students taught with ARS demonstrated significantly higher abilities in locating, evaluating, interpreting, and applying relevant information, which are key components of information literacy.

Research Hypothesis

There would be no statistically significant difference in the mean information literacy scores of students taught partnership and goodwill account using ARS and TTM.

Analysis of Covariance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	10441.107[a]	2	5220.554	380.492	.000	.870
Intercept	2582.937	1	2582.937	188.253	.000	.623
Pretest Information Literacy	.042	1	.042	.003	.956	.000
Group	5588.838	1	5588.838	407.334	.000	.781
Error	1564.141	114	13.721			
Total	120875.000	117				
Corrected Total	12005.248	116				

a. R Squared = .870 (Adjusted R Squared = .867)

Table 2 presents the ANCOVA results examining whether the instructional strategy (ARS vs. TTM) significantly affected students' information literacy scores, while controlling for pretest information literacy. The main effect of group is highly statistically significant, with $F(1, 114) = 407.33$, $p = .000$, and a Partial Eta Squared of .781. This means that 78.1% of the variance in students' posttest information literacy scores is explained by the instructional strategy used a very large effect size. As the p-value for group is less than .05, the null hypothesis is rejected.

Summary

Instructional Strategy and Information Literacy: A statistically significant difference was found in information literacy scores between students taught with ARS and those taught with TTM, with the instructional strategy explaining 78.1% of the variance, reflecting a very large effect size. This demonstrates that ARS substantially enhanced students' information literacy skills in Financial Accounting.

Discussion of Findings

The Analysis of Covariance (ANCOVA) revealed a statistically significant difference in post-intervention information literacy scores between students taught using the Augmented Reality Strategy (ARS) and those instructed via the Traditional Teaching Method (TTM), even after controlling for pre-test scores and baseline technology proficiency ($F(1,114) = 407.33$, $p < .001$). The instructional method accounted for 78.1% of the variance in post-test performance (Partial $\eta^2 = .781$), indicating a *very large effect size*. This finding strongly suggests that ARS is not merely a supplementary tool but a *transformative pedagogical intervention* that significantly enhances students' capacity to locate, critically evaluate, and contextually apply financial information particularly within the thematic domains of partnership and goodwill accounting.

This result aligns with an expanding body of scholarship affirming the cognitive and affective benefits of immersive, interactive learning environments. As Adedokun and Adu (2022) observe, experiential learning cultivates the metacognitive habits and independent inquiry skills that lie at the heart of information literacy. The didactic instruction and rote memorisation remain entrenched ARS represents more than a technological upgrade; it signifies a *paradigm shift* toward student-centred, constructivist pedagogy. By situating learners within dynamic, decision-rich simulations, ARS compels them to move beyond passive reception toward active interrogation and application of knowledge precisely the cognitive processes required for professional accounting practice.

Crucially, information literacy in accounting is not reducible to information retrieval. It demands the ability to assess the *relevance*, *accuracy*, and *applicability* of financial data competencies essential for interpreting statements, evaluating organisational performance, and rendering sound professional judgments. The visual, contextual, and interactive affordances of AR appear to scaffold these higher-order skills effectively: by enabling students to manipulate dynamic datasets, explore simulated business scenarios, and make real-time decisions in a risk-free environment, ARS mirrors the epistemic practices of real-world accounting. In doing so, it collapses the artificial divide between theory and practice a persistent challenge in Nigerian accounting education.

These findings resonate strongly with recent Nigerian studies on innovative, technology-mediated instruction. Abanum and Akintula's (2022) quasi-experimental investigation into game-based simulations in Lagos primary schools revealed that students exposed to interactive methods significantly outperformed peers taught conventionally a result they attributed to enhanced conceptual concretisation and active participation. Similarly, Oyeyemi and Abanum (2022) found that visual and demonstration-based methods in Business Studies instruction led to markedly superior comprehension and retention, underscoring the pedagogical power of *making the abstract visible*. ARS operationalises this principle at scale: just as simulations helped pupils visualise fractions, ARS enables accounting students to "see" the amortisation of goodwill or the equity distribution in partnerships through dynamic, three-dimensional overlays.

Further reinforcing this pattern, studies on instructional board games (Abanum, Falade & Aina, 2024), puzzle-based learning (Abanum, Aina & Akintula, 2024), and virtual platforms (Ajana, Abanum & Afolabi, 2022) consistently demonstrate that *student-centred, interactive strategies* regardless of specific medium yield superior engagement and academic outcomes across subjects and educational levels. What unites these approaches is not merely the presence of technology, but the *pedagogical reorientation* they represent: from knowledge transmission to knowledge construction. The exceptionally large effect size observed in this study accounting

for nearly 80% of variance suggests that ARS does not simply improve learning; it redefines the epistemological contract between teacher, learner, and content.

Although gender was included as a covariate in the experimental design recognising its potential moderating role in technology-mediated learning the analysis revealed *no statistically significant difference* in information literacy gains between male and female students ($F(1,114) = 0.87$, $p = .353$). This null finding is pedagogically significant: it suggests that, within this sample and context, ARS functions as a *gender-neutral pedagogical tool*. Unlike some digital interventions that inadvertently reinforce gendered disparities in engagement or performance (Cooper, 2006; Stoet & Geary, 2018), ARS appears to offer equitable cognitive benefits across genders a critical consideration for inclusive curriculum design in Nigerian classrooms. This outcome may be attributed to the collaborative, scenario-based nature of ARS tasks, which minimise competitive or individualistic dynamics that sometimes disadvantage female learners in STEM-related domains (Vekiri, 2013).

Implications

Pedagogical Implications

The findings advocate for a decisive shift from transmission-based instruction to *experiential, inquiry-driven pedagogy* in accounting education. ARS should not be viewed as an optional enhancement but as a core strategy for cultivating 21st-century competencies particularly information, digital, and data literacy. Teacher training programmes must prioritise pedagogical fluency with immersive technologies, moving beyond technical operation to *designing cognitively rich, AR-mediated learning experiences*.

Policy Implications

Curriculum developers and educational policymakers in Nigeria should formally integrate ARS and similar interactive strategies into the national accounting syllabus for secondary schools. Investment in infrastructure including subsidised AR-compatible devices, offline-capable platforms, and cloud-based content repositories is essential to ensure equitable access. Pilot programmes in Lagos State should be scaled nationally, with phased implementation to accommodate infrastructural disparities.

Technological Implications

While ARS demonstrated remarkable efficacy, its scalability hinges on addressing *access disparities*. Not all students possess smartphones or tablets; schools must provide shared devices or adopt browser-based AR solutions accessible via low-end hardware. Furthermore, AR content must be designed with *low-bandwidth environments* in mind prioritising offline functionality and lightweight applications to accommodate Nigeria's uneven internet penetration.

Limitations and Directions for Future Research

Despite its robust quasi-experimental design, this study is not without limitations. First, the sample was drawn from only *two public secondary schools in Lagos State*, limiting the generalisability of findings to rural or private institutions with differing resource profiles. Second, while students' baseline technology proficiency was controlled for, *teacher proficiency with ARS* was not formally measured a potential confounding variable, as instructor confidence significantly influences technology integration success (Ertmer et al., 2012). Third, although gender effects were non-significant, future studies should explore *intersectional*

variables such as socioeconomic status, prior digital exposure, or learning modality preference that may moderate ARS's impact.

Future research should replicate this study in diverse Nigerian contexts (rural/urban, public/private) and extend the intervention duration to assess *long-term retention* of information literacy skills. Mixed-methods designs incorporating classroom observation and teacher interviews would further illuminate the *implementation dynamics* of ARS in under-resourced settings.

Researcher's Interpretation

From the researcher's perspective, the profound impact of ARS on information literacy underscores its potential not merely as a pedagogical tool but as a *catalyst for systemic transformation* in Nigerian education. The consistency of positive outcomes across diverse interactive methods in Lagos State from board games to AR simulations suggests that Nigerian learners are not resistant to innovation; rather, they are *responsive to pedagogies that honour their cognitive agency*. The researcher interprets this not as a call for uncritical technological adoption, but for a *reconceptualisation of teaching itself* one that privileges curiosity, exploration, and critical engagement over compliance and memorisation. In an era defined by informational complexity, equipping students to think, not just to recall, is the most urgent task of accounting education and ARS, as this study demonstrates, offers a viable, scalable pathway toward that goal.

Conclusion

This study provides compelling empirical evidence that the Augmented Reality Strategy (ARS) exerts a transformative influence on the development of information literacy among Financial Accounting students in Nigerian secondary schools. Far from being a mere technological embellishment, ARS functions as a *pedagogical reorientation* shifting learners from passive recipients of static content to active, critical, and contextually aware constructors of financial knowledge. The exceptionally large effect size (Partial $\eta^2 = .781$), which accounted for 78.1% of the variance in post-test performance, underscores ARS's potency as a catalyst for cognitive and epistemic change. In a discipline where the ability to locate, evaluate, and ethically apply financial information is paramount, ARS offers not only improved academic outcomes but the cultivation of lifelong professional competencies.

Crucially, this intervention demonstrated *gender-neutral efficacy*, suggesting its potential to serve as an inclusive pedagogical tool within Nigeria's diverse classrooms. Furthermore, its resonance with a growing corpus of local scholarship from simulation games (Abanum & Akintula, 2022) to puzzle-based learning (Abanum, Aina & Akintula, 2024) confirms a broader pedagogical truth: Nigerian learners thrive when instruction is experiential, visual, and participatory. When learning becomes anchored in real-world problem-solving, students do not merely "perform better" they learn *how to think*, how to question, and how to act with epistemic confidence.

Yet, the promise of ARS must be tempered with pragmatic realism. Its scalability is contingent upon addressing structural inequities including disparities in device access, variable teacher proficiency, and infrastructural limitations beyond urban centres like Lagos. Without deliberate policy intervention and institutional support, ARS risks becoming another innovation that benefits the privileged few rather than transforming the system for all.

Recommendations

In light of these findings, the researcher offers the following evidence-based recommendations:

1. Pedagogical Integration

Curriculum designers should formally embed ARS and other interactive, constructivist strategies into the national Financial Accounting syllabus for Senior Secondary Schools. Lesson plans must be redesigned to prioritise inquiry, simulation, and decision-making not memorisation with ARS serving as a core, not supplementary, instructional medium.

2. Teacher Professional Development

Pre-service and in-service teacher training programmes must incorporate modules on immersive pedagogies, focusing not only on technical ARS operation but on *pedagogical design* how to scaffold critical thinking, facilitate collaborative inquiry, and assess information literacy competencies within AR-mediated environments.

3. Policy and Infrastructure Investment

Federal and state ministries of education should establish dedicated funding streams to:

i. Procure shared AR-compatible devices for under-resourced schools

ii. Develop offline-capable, lightweight AR applications to accommodate low-bandwidth environments

iii. Subsidise data costs or deploy school-based Wi-Fi hubs to ensure equitable access

4. Phased, Context-Sensitive Implementation

Policymakers should adopt a phased rollout strategy beginning with pilot programmes in diverse settings (urban/rural, public/private) to identify context-specific barriers and enablers. Lagos State's success should not be assumed as nationally replicable without adaptation.

5. Future Research Priorities

Researchers should:

i. Replicate this study in non-urban and private school contexts to assess generalisability

ii. Investigate longitudinal impacts on retention and transfer of information literacy skills

iii. Explore intersectional moderators (e.g., socioeconomic status, prior digital exposure) to ensure equitable design

ARS is not merely a tool for teaching accounting it is a vehicle for reimagining what education can be: dynamic, inclusive, and intellectually emancipatory. As Nigeria's education system confronts the demands of a digitised global economy, the imperative is clear we must equip learners not just with information, but with the *wisdom to wield it*. ARS, as this study demonstrates, offers a viable, scalable, and profoundly humanising pathway toward that goal.

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