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COLLABORATIVE LEARNING SPACES AND QUALITY EDUCATION AMONG POSTGRADUATES IN SOUTHWEST, NIGERIA

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Abstract

This study explores the influence of Collaborative Learning Spaces (CLS) on quality of education in private universities in Southwest Nigeria. Through a mixed-method approach, investigation was drawn on how cognitive presence and collaborative skills, enhance quality educational outcome. Statistical analyses, including regression and ANOVA, reveal significant positive impacts of CLS on student engagement and academic performance, though challenges such as infrastructural deficiencies and inadequate faculty training persist. Recommendations include targeted investments in CLS infrastructure and faculty training to optimize their potential for improving educational quality. The study contributes to the understanding of CLS in the Nigerian context and its transformative potential in improving postgraduate education.

Keywords: Collaborative Learning Spaces (CLS), Quality education, Private Universities

Introduction

Collaborative Learning Spaces (CLS) are increasingly recognized as essential components in educational settings, designed to support student engagement, teamwork and critical thinking. In the context of Southwest Nigeria, where the quality of education has faced numerous challenges including resource constraints, outdated teaching models and limited student engagement CLS has been proposed as a solution to foster improved educational outcomes, particularly in private universities (Olaniyan, 2020; Ogundele & Fagbohun, 2021). As higher education institutions aim to produce graduates equipped with the necessary skills for the 21st century, the role of collaborative learning spaces has become vital for supporting interactive and inclusive learning experiences (Obasi & Okoh, 2019).

The evolution of educational spaces from traditional, lecture-based formats to more interactive, student-centered environments aligns with global shifts in pedagogy and technology integration. These environments enable students to engage more actively in learning, promoting peer collaboration and knowledge-sharing, which are critical to developing critical thinking and problem-solving skills (Rogers et al., 2021). In Southwest Nigeria, CLS could address the gap between current educational practices and the need for modernized learning structures to prepare students for increasingly complex, real-world applications (Adejumo et al., 2022).

This study investigates the role of CLS in enhancing educational quality in private universities in Southwest Nigeria. By examinin CLS in the Nigerian context, the study provides insights into how these spaces can be optimized to align with the unique challenges and opportunities in the Nigerian educational landscape. The study explores the relationship between CLS and various quality education metrics student engagement, cognitive presence and collaborative skills.

Statement of the Problem

Collaborative Learning Spaces (CLS) have been recognized globally as an effective solution to these challenges by fostering student engagement, critical thinking and collaboration (Mebert, L., Barnes, R., Dalley, J., Gawarecki, L., Ghazi-Nezami, F., Shafer, G., … Yezbick, E. (2020)). However, CLS implementation in Nigerian private universities is hindered by infrastructural deficits, insufficient faculty training and resistance to pedagogical shifts. Despite the potential to transform postgraduate education, the extent of CLS's impact on quality education metrics, such as student engagement, cognitive presence and academic performance, remains underexplored in the Nigerian context. This study seeks to address this gap by investigating the role of CLS in

improving postgraduate quality educational outcomes and identifying strategies for their optimization.

Research Objectives

The objectives of this study is to:

1. evaluate the impact of Collaborative Learning Spaces (CLS) on student engagement, cognitive presence and collaborative skills in private universities in Southwest Nigeria.
2. assess the relationship between CLS and academic performance, student satisfaction and overall quality education outcomes.
3. identify the challenges and barriers associated with the implementation of CLS in private universities.
4. recommend actionable strategies for optimizing CLS to enhance quality postgraduate education in the Nigerian context.

Hypothesis

$H_0$1 There are no significant Influence of Collaborative Learning Spaces (CLS) on quality education indicators in private universities in Southwest Nigeria

$H_0$2: Collaborative Learning Spaces does not have a significant positive impact on student engagement in private universities in Southwest Nigeria.

$H_0$3: Infrastructural quality does not moderates the effectiveness of CLS in achieving quality education outcomes.

Literature Review

2.1 Quality Education

Quality education encompasses multiple dimensions, including academic achievement, skill development and the capacity to address societal and professional demands. According to UNESCO (2015), a quality education integrates equitable access, competent educators, supportive environments and relevant curricula to prepare learners for sustainable development. At the postgraduate level, it involves research capabilities, interdisciplinary problem-solving and real-world applications of knowledge. For Nigerian institutions, challenges such as outdated curricula, limited infrastructure and faculty shortages hinder efforts to achieve these standards (Anyanwu &

Enwere, 2018). Collaborative learning spaces (CLS) have emerged as a promising intervention to bridge these gaps and foster quality education by enhancing the learning environment, promoting critical thinking and fostering collaboration (Salami & Ifeanyi, 2019).

Tondeur et al. (2013) stress the link between infrastructure and education quality, asserting that well-designed spaces with advanced technologies create equitable opportunities for learning. In Southwest Nigeria, the integration of CLS into higher education institutions offers a pathway to address overcrowding and improve postgraduate outcomes by promoting social integration, academic achievement and research capabilities.

2.2 Collaborative Learning Spaces (CLS)

Collaborative learning spaces are environments physical or virtual designed to foster active participation, peer interaction and shared problem-solving. Johnson and Johnson (1999) define CLS as pedagogical tools enabling learners to achieve shared goals through cooperation and interaction. Matthews et al. (2011) highlight that these spaces, when equipped with ergonomic designs and modern technologies, cultivate inclusivity, creativity and productivity. The theoretical foundation of CLS is grounded in Vygotsky's (1978) social constructivism, which emphasizes the importance of interaction in cognitive development. In CLS, peer-to-peer engagement shifts learning from passive to active modes, encouraging critical thinking and collaboration (Huang et al., 2020). This approach aligns with the Community of Inquiry (CoI) framework by Garrison et al. (2000), which emphasizes cognitive, social and teaching presences as essential to meaningful learning. Studies have shown that CLS foster these dimensions, enabling students to develop higher-order thinking and social skills (Kuhn, 2018; Garrison & Vaughan, 2013).

In the context of Southwest Nigeria, traditional classroom designs often lack the flexibility and technological integration required to promote these interactive learning approaches. Adebanjo and Olayemi (2017) argue that modern CLS are essential for equipping Nigerian postgraduates with professional competencies and research skills.

2.3 Empirical Evidence on CLS and Quality Education

Empirical research highlights the transformative impact of CLS on educational outcomes. Globally, CLS has been linked to improved critical thinking, problem-solving and collaborative skills (Hockings, 2018; Li & Lalani, 2020). Johnson and Johnson (2020) found that students in CLS demonstrate better academic performance and satisfaction than those in traditional lecture-based setups. In Nigeria, empirical studies corroborate these findings. For instance, Adebayo and

Alabi (2020) reported a 35% increase in postgraduate students' collaboration and participation in Nigerian universities adopting digital tools for CLS. Similarly, Akintoye et al. (2021) observed higher engagement and retention rates among students in CLS compared to those in conventional environments. CLS also enhance skill acquisition. Watson and Moll (2019) identified that students in collaborative settings develop soft skills such as teamwork, communication and leadership skills critical for modern workplaces. In Southwest Nigeria, Adejumo et al. (2022) highlighted that CLS improved motivation and academic performance among postgraduates, demonstrating its adaptability to the region's educational challenges.

The theoretical basis of CLS is further supported by the theory of affordances, which suggests that the design of an environment enables specific behaviors (Norman, 1999). In Nigerian universities, effective CLS provide opportunities for collaboration, technological integration and equitable resource-sharing. These factors are critical in addressing the systemic deficiencies in postgraduate education (Afolabi & Adebayo, 2021). Empirical evidence suggests that CLS improve both academic and research outcomes. Van Merriënboer and Kirschner (2018) observed better concept retention and interdisciplinary learning among students in CLS environments. Salami and Ifeanyi (2019) reported that postgraduate students in Southwest Nigeria with access to CLS displayed higher engagement levels and academic satisfaction, with tangible benefits for research collaboration and innovation.

2.4 Challenges and Opportunities for CLS in Nigeria

Despite the potential benefits, several barriers limit the effective implementation of CLS in Nigerian universities. Funding constraints, inadequate infrastructure and resistance to pedagogical changes remain significant challenges (Ogundele & Fagbohun, 2021). A recent survey by Obasi and Okoh (2019) revealed that 60% of Nigerian universities lack the resources to establish CLS, leading to inconsistent educational quality. Nonetheless, opportunities for progress exist. Public-private partnerships and initiatives such as the Tertiary Education Trust Fund (TETFund) are promising avenues for funding CLS infrastructure (Adebanjo & Olayemi, 2017). Comparative research, such as that by Chen et al. (2022), highlights how government policies and institutional commitments facilitated the successful adoption of CLS in Chinese universities facing similar socio-economic constraints. Applying these lessons to Nigeria could help bridge existing gaps in postgraduate education quality.

Comparative Studies

Comparative studies underscore the importance of context-specific strategies for CLS implementation. Matthews et al. (2011) documented significant academic and cognitive improvements among Australian university students in CLS. Similarly, Huang et al. (2020) found that technologically enhanced CLS in China fostered problem-solving and teamwork. These findings align with studies in Southwest Nigeria, where Olaniyan et al. (2019) reported a 30% increase in research productivity among students using CLS. Comparative analyses further emphasize the necessity of government and institutional support. For example, Adebayo and Alabi (2020) found that Nigerian institutions without CLS had 20% higher dropout rates, underscoring the importance of these spaces in retaining and empowering postgraduate students.

Technological Integration

Technology is a cornerstone of effective CLS. Research by Matthews et al. (2011) and others has shown that ICT tools such as smartboards, collaborative platforms and online resources amplify the benefits of CLS. In Southwest Nigeria, the integration of digital tools has been shown to increase postgraduate research productivity and engagement (Olaniyan et al., 2019). These findings affirm the role of technology not merely as a supplement but as a vital component of modern CLS. Studies by Akintoye et al. (2021) and Olaniyan (2020) highlight the potential of CLS to address challenges in Nigerian universities, including outdated teaching practices and limited student interaction. Empirical evidence suggests that CLS improve student engagement and knowledge retention, although infrastructural limitations pose significant barriers (Ogundele & Fagbohun, 2021). By integrating digital tools and flexible pedagogies, CLS align with the global shift towards student-centered learning environments.

Methodology

The study employed a mixed-method approach, combining quantitative surveys with qualitative interviews to explore the role of CLS in enhancing quality education. A sample of 133 librarians and 20 postgraduate students was selected from private universities in Southwest Nigeria. Quantitative data were analyzed using statistical tools, including regression and ANOVA, while qualitative data provided contextual insights into the adoption and challenges of CLS. Data collection focused on four key metrics: student engagement, cognitive presence, social presence and academic performance. These indicators were measured using validated instruments and analyzed to determine the relationship between CLS and quality education outcomes. Reliability tests, including Cronbach's alpha, ensured the robustness of the data.

Results and Analysis

The study revealed the following:

Indicator	Statistical Measure	P-Value	Impact
Student Engagement	$\beta = 0.39$	$p < 0.01$	Significant Positive Impact
Cognitive Presence	$\beta = 0.42$	$p < 0.01$	Significant Positive Impact
Social Presence	$\beta = 0.45$	$p < 0.01$	Strong Positive Impact
Academic Performance	$R^2 = 0.22$	$p < 0.05$	Moderate Positive Impact
CLS Adoption Differences	$F = 4.56$	$p < 0.05$	Significant Institutional Differences

Key Findings and Supporting Evidence

ANOVA and Regression Findings

The analysis of variance (ANOVA) demonstrated a statistically significant relationship between Collaborative Learning Spaces (CLS) and quality education outcomes. The ANOVA model reported an R-value of 0.243 and R^2 of 0.059, indicating that CLS accounted for 5.9% of the variance in educational quality. The F-st

atistic ($F(1, 115) = 7.223$, $p = 0.008$) confirmed the model's significance. Further regression analysis highlighted that a one-unit improvement in CLS effectiveness led to a 0.403-unit increase in quality education, as evidenced by an unstandardized coefficient (B) of 0.403, t-value of 2.688 and p-value of 0.008.

The findings underline the transformative potential of CLS in improving cognitive, social and academic outcomes. These spaces align with the Community of Inquiry (CoI) model, which emphasizes the interplay of cognitive, social and teaching presences in fostering active learning. CLS enable collaborative and constructivist pedagogies that address gaps in traditional education models (Matthews et al., 2016; Vaughan, 2014).

However, the study identified significant challenges, including inadequate infrastructure, lack of training for educators and librarians and resistance to pedagogical changes. Financial constraints

and insufficient technical knowledge hinder the effective adoption of CLS, while traditional teaching practices often conflict with the collaborative methodologies required.

On student Engagement ($\beta = 0.39$, $p < 0.01$)The significant positive relationship between Collaborative Learning Spaces (CLS) and student engagement aligns with broader research emphasizing active and collaborative learning environments. According to Vaughan (2014), blended and collaborative approaches enhance engagement by promoting autonomy and mastery in academic tasks. These spaces allow students to interact meaningfully with peers and educators, fostering emotional, behavioral and cognitive engagement (Vaughan, 2014). Furthermore, flexible classrooms, as described by Matthews et al. (2016), support student-centered pedagogies that enhance motivation and participation by integrating dynamic seating arrangements and access to digital tools (Matthews et al., 2016).

On Cognitive Presence ($\beta = 0.42$, $p < 0.01$), cognitive presence in CLS reflects their capacity to promote critical thinking and knowledge construction. Constructivist learning principles are embedded within CLS, where students analyze and synthesize information collaboratively, leading to enhanced cognitive outcomes (Matthews et al., 2016). Research on blended learning highlights that interactive technologies within CLS encourage higher-order thinking by facilitating task-based learning and peer discussions (Vaughan, 2014).

On the issue of Social Presence ($\beta = 0.45$, $p < 0.01$), the strongest predictor in the study, social presence, indicates the role of CLS in fostering interpersonal relationships. Peer collaboration within well-designed spaces enhances trust, reduces barriers to participation and builds community (Matthews et al., 2016). Vaughan (2014) adds that environments emphasizing peer interaction and shared objectives create opportunities for students to support each other's learning, ultimately improving educational outcomes. Flexible learning spaces facilitate this sense of belonging, as their open designs encourage spontaneous and structured group interactions (PLOS ONE, 2019).

Academic Performance ($R^2 = 0.22$, $p < 0.05$), while the moderate effect on academic performance aligns with prior studies, research suggests that CLS may impact performance indirectly through enhanced engagement and collaboration (Vaughan, 2014). Studies on active learning indicate that structured group tasks within CLS improve knowledge retention and academic performance. However, the magnitude of this effect may depend on factors such as individual learning styles and teacher facilitation skills (Matthews et al., 2016).

Institutional disparities in CLS implementation highlight challenges such as varying levels of faculty training and resource availability (CLS Adoption Differences ($F = 4.56$, $p < 0.05$). Flexible

learning spaces are most effective when paired with professional development for educators to adapt their teaching strategies to these environments (PLOS ONE, 2019). Vaughan (2014) also notes that the success of CLS relies on consistent alignment between classroom design and teaching objectives.

Institutional Differences: Significant disparities in CLS adoption across institutions ($F = 4.56$, $p < 0.05$) were attributed to varying levels of resource allocation, infrastructure and faculty training. Successful implementation depends on aligning classroom design with teaching strategies and providing professional development opportunities (PLOS ONE, 2019; Vaughan, 2014).

Summary

The findings of this study highlight the transformative impact of Collaborative Learning Spaces (CLS) on cognitive, social and academic outcomes. Grounded in the Community of Inquiry (CoI) model, which emphasizes the interplay of cognitive, social and teaching presences, CLS effectively bridge gaps in traditional education models. By fostering collaborative and constructivist pedagogies, these spaces promote active engagement and holistic learning (Matthews et al., 2016; Vaughan, 2014). CLS enhance student engagement by creating environments that encourage active participation and meaningful interaction. Structured CLS not only support higher-order thinking and problem-solving but also promote the synthesis of knowledge. Through group-based tasks, discussions and shared projects, CLS nurture teamwork and interpersonal communication skills. These outcomes are driven by a blend of technology integration, flexible space configurations and the sense of community fostered within these environments.

The study underscores a strong positive correlation between CLS and academic performance. By providing access to interactive resources and encouraging peer-to-peer learning, CLS enhance critical thinking and research capabilities, which directly contribute to academic success. Moreover, their emphasis on collaboration and community-building significantly boosts student satisfaction. Many postgraduate students reported improved learning experiences, enhanced communication and a greater sense of belonging, demonstrating the broader benefits of CLS. Despite their potential, several challenges limit the widespread adoption and effectiveness of CLS. These include inadequate infrastructure, insufficient faculty and librarian training and resistance to pedagogical changes. Financial constraints often hinder institutions from investing in modern CLS setups, while technical knowledge gaps among staff reduce their effective utilization. Furthermore, traditional teaching practices frequently clash with the collaborative approaches CLS

require, fostering resistance to adoption. To address these challenges, the study advocates for targeted interventions:

i. Institutions must prioritize upgrading physical spaces, integrating advanced technologies and ensuring robust internet connectivity to support CLS functionality.

ii. Comprehensive training programs for educators and librarians are essential to equip them with the skills and methodologies required for effective CLS use.

iii. Universities should establish clear guidelines for embedding CLS into curricula and secure consistent funding for their maintenance and improvement.

iv. Policymakers, educational institutions and stakeholders must collaborate to create sustainable frameworks for CLS adoption and implementation.

v. Regular evaluations of CLS effectiveness through student and teacher feedback can guide improvements in design and pedagogical approaches (Vaughan, 2014).

Conclusion

Collaborative Learning Spaces (CLS) have a transformative effect on higher education in Southwest Nigeria. They enhance student engagement, critical thinking and academic satisfaction. Overcoming infrastructural and pedagogical challenges through targeted investments and policy reforms will unlock their full potential, aligning Nigerian universities with global educational standards. Collaborative Learning Spaces hold significant promise for transforming postgraduate education in Nigeria. By fostering engagement, critical thinking and social connections, CLS address critical gaps in traditional learning environments. However, the realization of their full potential depends on overcoming infrastructural and pedagogical barriers. This study contributes to the growing body of research advocating for CLS as a cornerstone of quality education.

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