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Strategies to Enhance Student Engagement and Retention in Higher Education Learning Environments

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Abstract : *This paper explores strategies to enhance student engagement and retention in higher education institutions in Cameroon, focusing on interactive and collaborative learning tools. The study examines current practices, challenges, and the potential benefits of integrating innovative learning methods to foster an engaging educational environment. Using a mixed-methods approach, integrating both qualitative and quantitative data, this research identifies key factors influencing student engagement and retention. Surveys and interviews conducted with students, educators, and administrators provide comprehensive insights into the effectiveness of these learning tools. The findings highlight the positive impact of interactive platforms and collaborative activities on student motivation and academic success. Furthermore, the paper discusses the challenges faced in implementing these strategies, such as limited access to technology and inadequate training for educators. By addressing these issues, the study offers actionable recommendations for educators, policymakers, and stakeholders in the Cameroonian higher education sector to improve student outcomes and create a more supportive learning environment.*

Keywords: student engagement, retention strategies, interactive learning tools, collaborative learning, Cameroonian higher education

INTRODUCTION

Student engagement and retention are vital elements that determine the success of higher education institutions. Engaged students are more likely to persist through challenges, achieve academic success, and complete their programs of study (Astin, 1984; Tinto, 1993). Retention, which refers to the ability of an institution to keep students enrolled until they complete their degrees, is significantly influenced by the level of student engagement. In Cameroon, the educational sector faces significant challenges in keeping students motivated and committed to their studies. High dropout rates are a pressing concern, often linked to traditional lecture-based approaches that are prevalent in many Cameroonian institutions. These methods frequently fall short in catering to the diverse needs of students, leading to disengagement and attrition.

The traditional lecture-based approach, while effective for delivering content to large groups, often results in passive learning environments. Students are typically required to listen and take notes, with minimal opportunities for interaction, discussion, or practical application of knowledge. This method can be particularly disengaging for students who thrive on interaction, collaboration, and hands-on learning. Consequently, there is a growing recognition of the need to adopt more innovative and engaging teaching methods to enhance student engagement and retention (Prince, 2004). Research by Kahu and Nelson (2018) further supports this, indicating that student engagement is multifaceted, involving behavioural, emotional, and cognitive aspects that traditional methods often fail to address. This study seeks to explore and analyse strategies that can enhance student engagement and retention by focusing on interactive and collaborative learning tools. Interactive learning tools, such as digital platforms, gamification, and simulation-based learning, involve students actively in the learning process, making education more engaging and effective. These tools have been shown to increase student motivation, improve understanding of complex concepts, and provide personalized learning experiences (García-Sanjuán et al., 2021; Prince, 2004).

Collaborative learning tools, such as group projects, peer assessment, and online discussion forums, promote teamwork and collective problem-solving. These tools help students develop critical thinking, communication, and interpersonal skills, which are essential for their academic and professional success (Johnson, Johnson, & Smith, 1998). By working together, students can share diverse perspectives and approaches to problem-solving, leading to deeper understanding and retention of knowledge. Recent studies by Saqr et al. (2021) have demonstrated the positive impacts of collaborative learning environments on student outcomes, particularly in fostering a sense of community and belonging.

The primary aim of this research is to evaluate the effectiveness of these innovative learning methods in fostering an engaging educational environment. By examining current practices and challenges within the Cameroonian higher education system, this study provides a comprehensive analysis of how interactive and collaborative tools can be integrated to improve student outcomes. The research employs a mixed-methods approach, integrating both qualitative and quantitative data. Surveys and interviews conducted with students, educators, and administrators offer a broad perspective on the use and impact of these tools.

Current engagement and retention strategies in Cameroonian higher education vary significantly across institutions. Some institutions have begun integrating digital platforms and online resources to supplement traditional teaching methods. However, the adoption of interactive and collaborative learning tools is still in its nascent stages, often hindered by factors such as limited access to technology, inadequate training for educators, and resistance to change

(Yusuf, 2018). Additionally, a study by Ekanem and Nkadi (2022) highlights the challenges of infrastructure and resource constraints, which further complicate the implementation of these tools. This study aims to fill this gap by providing actionable recommendations for educators, policymakers, and stakeholders in the Cameroonian higher education sector. By addressing the challenges and leveraging the opportunities presented by interactive and collaborative learning tools, this research seeks to enhance student engagement and retention, ultimately contributing to the success of higher education institutions in Cameroon

LITERATURE REVIEW

Student Engagement Theory

Student engagement theory posits that the more students are involved in academic and extracurricular activities, the more likely they are to succeed academically. Astin (1984) defines student involvement as the amount of physical and psychological energy that a student devotes to the academic experience. Engaged students participate actively in the learning process, show interest in their studies, and are likely to persist through challenges. This theory has been supported by numerous studies demonstrating the correlation between high levels of engagement and positive academic outcomes (Kahu & Nelson, 2018; Kuh, 2009).

Astin's theory outlines five critical components of student involvement: academic involvement, involvement with faculty, involvement with peers, involvement in work, and involvement in extracurricular activities. Each component plays a significant role in enhancing the overall educational experience. For instance, academic involvement includes activities such as attending classes, completing assignments, and participating in academic discussions. Involvement with faculty involves interactions that extend beyond the classroom, such as seeking advice and mentorship, which can significantly impact student success and retention.
Recent studies have expanded on Astin's theory to include digital engagement, particularly in the context of online and blended learning environments (Dixson, 2015). This includes participation in online discussions, engagement with digital learning materials, and interaction with instructors and peers through digital platforms. The inclusion of digital engagement reflects the evolving nature of educational environments and the increasing importance of technology in student learning experiences.

Retention Theories

Retention theories explore the factors that influence students' decisions to continue or discontinue their studies. Tinto's Model of Student Retention (1993) is one of the most widely referenced frameworks. Tinto suggests that student retention is influenced by their academic

and social integration within the institution. According to Tinto, students who feel connected to their academic environment and peers are more likely to stay and complete their programs.

Tinto's model emphasizes the importance of academic support and social integration. Academic support involves providing resources such as tutoring, advising, and mentoring to help students succeed academically. Social integration includes creating opportunities for students to form relationships with peers and faculty, participate in extracurricular activities, and feel a sense of belonging within the institution. Tinto's model also highlights the significance of institutional commitment to student success, suggesting that universities must actively engage in practices that promote student retention (Braxton, Doyle, Hartley, Hirschy, Jones, & McLendon, 2014).

Bean's Student Attrition Model (1980) also contributes to understanding retention by focusing on external factors influencing students' decisions to leave an institution. Bean identifies factors such as financial constraints, external responsibilities, and personal reasons as critical to student retention. He emphasizes that institutions must address these external pressures by providing adequate support services, financial aid, and flexible academic programs to accommodate diverse student needs. Recent advancements in retention theories highlight the role of psychological factors, such as students' sense of self-efficacy and resilience, in influencing retention (Duckworth, Peterson, Matthews, & Kelly, 2007). These studies suggest that fostering a growth mindset and providing resources for mental health and well-being can enhance students' ability to cope with academic challenges and persist in their studies.

Interactive Learning Tools

Interactive learning tools encompass various technologies and methods designed to actively involve students in the learning process. These tools include digital platforms, gamification, and simulation-based learning. Digital platforms, such as learning management systems (LMS), provide students with access to course materials, forums, and interactive quizzes. Examples of widely used LMS include Moodle, Blackboard, and Canvas, which offer functionalities that support interactive learning and continuous assessment (Aljohani, 2019).

Gamification incorporates game elements into the learning environment, making learning more engaging and fun. This approach uses elements such as point scoring, leaderboards, and badges to motivate students and encourage participation (Deterding, Dixon, Khaled, & Nacke, 2011). Educational games and simulations, such as Kahoot, Quizizz, and Duolingo, have been shown to increase student engagement and improve learning outcomes by providing immediate feedback and promoting active participation (Hamari, Koivisto, & Sarsa, 2014).

Simulation-based learning uses virtual environments to mimic real-world scenarios, allowing students to practice and apply their knowledge in a risk-free setting. Simulations are widely used in fields such as medicine, engineering, and business, where hands-on experience is crucial for skill development. For example, medical students use virtual patients and surgical simulators to practice procedures and diagnose conditions without the risk of harming real patients (Lateef, 2010).

Interactive learning tools offer numerous benefits in higher education. They can increase student motivation by making learning more engaging and enjoyable. Personalized learning experiences, facilitated by adaptive learning technologies, cater to individual student needs and learning paces. Adaptive learning systems, such as Smart Sparrow and Knewton, use algorithms to adjust the difficulty and type of content presented based on student performance, providing a tailored learning experience (Johnson et al., 2016). Furthermore, these tools enhance students' understanding of complex concepts through interactive simulations and practical applications. For instance, virtual labs allow science students to conduct experiments in a controlled digital environment, enhancing their understanding of scientific principles without the limitations of physical lab resources (De Jong, Linn, & Zacharia, 2013). Interactive tools also foster critical thinking and problem-solving skills by requiring students to apply knowledge in real-world scenarios and make decisions based on their understanding (Prince, 2004).

Collaborative Learning Tools

Collaborative learning tools promote teamwork and collective problem-solving among students. Examples include group projects, peer assessment, and online discussion forums. Group projects encourage students to work together towards a common goal, fostering collaboration and communication skills. Platforms like Google Workspace and Microsoft Teams facilitate collaborative work by providing tools for real-time document editing, communication, and project management (Hrastinski, 2019). Peer assessment allows students to evaluate each other's work, providing opportunities for constructive feedback and critical thinking. This method not only helps students develop evaluative skills but also encourages reflection and deeper understanding of the subject matter (Falchikov & Goldfinch, 2000). Tools like Peergrade and Turnitin enable structured peer review processes, making it easier for students to give and receive feedback.

Online forums facilitate asynchronous discussions, enabling students to engage with their peers and instructors outside the classroom. Discussion boards, such as those found in LMS or standalone platforms like Piazza and Edmodo, allow students to post questions, share resources, and discuss course content at their own pace. These forums can be particularly beneficial for shy or introverted students who may be reluctant to participate in face-to-face discussions (Gao,

Zhang, & Franklin, 2013). Collaborative learning tools have been shown to improve critical thinking, communication skills, and teamwork abilities. By working together, students can share diverse perspectives and approaches to problem-solving, leading to deeper understanding and retention of knowledge (Johnson, Johnson, & Smith, 1998). Collaborative learning also helps build a sense of community and support among students, contributing to their overall engagement and persistence.

Studies have shown that students who engage in collaborative learning activities demonstrate higher levels of academic achievement, motivation, and satisfaction with their learning experiences (Springer, Stanne, & Donovan, 1999). Collaborative learning environments also prepare students for the workforce by developing essential skills such as teamwork, communication, and conflict resolution (Gokhale, 1995).

Current Practices in Cameroon

Cameroon's higher education system comprises public and private universities, polytechnics, and technical colleges. Despite significant progress in expanding access to higher education, the sector faces challenges related to quality, relevance, and student retention. Traditional lecture-based teaching methods remain predominant, with limited integration of innovative learning tools. This often results in passive learning environments, where students are less likely to be actively engaged.

Public universities in Cameroon, such as the University of Yaoundé, the University of Douala, and the University of Buea, dominate the higher education landscape. These institutions face challenges such as overcrowded classrooms, limited resources, and inadequate infrastructure, which hinder the effective implementation of interactive and collaborative learning strategies (Njeuma et al., 2001).

Private universities and technical colleges, such as the Catholic University of Central Africa and the Higher Institute of Technology and Management, have more flexibility in adopting innovative teaching methods. However, they also face challenges, including high tuition fees and limited access to funding, which can restrict their ability to invest in advanced educational technologies (Tambo, 2003).

Analysis of Existing Engagement and Retention Strategies

Current strategies to enhance student engagement and retention in Cameroonian higher education institutions are varied. Some institutions have started to incorporate digital platforms and online resources to supplement traditional teaching methods. For example, the University of Buea has introduced an e-learning platform to support blended learning, providing students with access to course materials, quizzes, and discussion forums (Ndongfack, 2015).

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Despite these efforts, the adoption of interactive and collaborative learning tools is still in its early stages. Efforts to improve retention often focus on providing academic support services, such as tutoring and counselling, but may not fully address the need for engaging and interactive learning experiences. Research has shown that while academic support services are essential, they must be complemented by innovative teaching methods that actively engage students in the learning process (Tinto, 1993).

Several institutions have implemented peer mentoring programs, where senior students provide guidance and support to first-year students. These programs aim to facilitate social integration and help new students navigate the academic environment (Tabot, 2017). However, the effectiveness of these programs varies, and their impact on student engagement and retention is not always systematically assessed.

METHOD

Research Design

This study employs a mixed methods approach to offer a comprehensive analysis of student engagement and retention strategies within Cameroonian higher education institutions. By integrating both qualitative and quantitative data, this methodology allows for a nuanced understanding of the effectiveness of interactive and collaborative learning tools in enhancing student engagement and retention. The research design encompasses two primary components: surveys and interviews, targeting students, educators, and administrators across a selection of higher education institutions in Cameroon.

The mixed-methods approach is particularly suited for this study because it facilitates a broader exploration of the research questions from multiple perspectives. According to Creswell and Plano Clark (2017), this approach provides a more complete understanding of the research problem by combining numerical data with in-depth qualitative insights. The combination of quantitative data on student engagement metrics and qualitative data on institutional experiences and perspectives ensures a well-rounded analysis.

Participants

The study involved a diverse group of 250 participants selected from various higher education institutions across Cameroon to offer a holistic view of student engagement and retention strategies. Participants were chosen using purposive and stratified random sampling techniques to ensure representation from a broad spectrum of academic, demographic, and institutional backgrounds. This approach aimed to capture the diverse experiences and perspectives within Cameroonian higher education.

Student participants included 130 undergraduates and 100 graduates from faculties such as Arts, Sciences, Engineering, and Social Sciences, representing both public and private institutions. This wide range of academic levels and disciplines was essential for identifying common factors influencing student engagement and retention, as well as specific challenges unique to different fields of study. By including students from various backgrounds, the study sought to uncover both general trends and discipline-specific insights.

The study also engaged 20 faculty members, comprising professors, senior lecturers, lecturers, and teaching assistants from various departments. Faculty members play a crucial role in shaping student engagement through their teaching methods and interactions. Their input was valuable for assessing the effectiveness of existing engagement strategies and identifying potential areas for improvement. Including a diverse range of faculty perspectives provided a comprehensive understanding of different teaching approaches and their impact on student retention.

Data Collection

To capture quantitative data on student engagement and retention, online surveys are administered to a sample of students from selected institutions. The surveys are designed to gather information on several key variables.

*Experiences with Interactive and Collaborative Learning Tools***:** Students are asked about their use of digital platforms, gamification, simulation-based learning, and collaborative tools like group projects and peer assessment. Questions focus on the frequency of use, types of tools employed, and students' perceptions of their effectiveness (Chen, 2021).

Levels of Engagement: The survey includes questions to measure students' engagement levels, using a Likert scale to assess their participation in academic activities, involvement in extracurriculars, and interactions with faculty and peers (Kuh, 2009). This data helps identify how engagement correlates with the use of interactive and collaborative learning tools.

Intentions to Persist in Studies: Questions are included to gauge students' intentions to continue their studies at their current institution. This aspect of the survey aims to identify any relationship between engagement levels and retention intentions (Tinto, 1993).

The online format of the survey allows for efficient data collection from a geographically dispersed student population. However, efforts are made to ensure high response rates by providing incentives and sending reminders.

Semi-structured interviews were conducted with educators and administrators to gain qualitative insights into the implementation and effectiveness of engagement and retention strategies. These interviews are designed to explore several dimensions.

Perceptions of Current Strategies: Interviews seek to understand how educators and administrators perceive the effectiveness of existing engagement and retention strategies. This includes exploring their experiences with interactive and collaborative learning tools and the challenges they face in their implementation (Johnson & Christensen, 2019).
Challenges and Opportunities: The interviews aim to uncover obstacles to the adoption of innovative learning methods, such as resource limitations, resistance to change, or lack of training. Additionally, they explore opportunities for improvement, including potential strategies for enhancing the effectiveness of these tools (Garrison, Anderson, & Archer, 2010).
Suggestions for Improvement: Participants are asked to provide recommendations for improving engagement and retention strategies. This includes suggestions for better integrating interactive and collaborative tools into the curriculum and enhancing institutional support for these methods (Meyer & Land, 2006).
Semi-structured interviews are chosen for their flexibility, allowing for in-depth exploration of topics while maintaining a consistent structure across interviews. This approach facilitates rich, detailed responses and allows for follow-up questions based on participants' answers.

Data Analysis
Quantitative data from the surveys were analysed using a variety of statistical methods to uncover patterns and correlations related to student engagement and retention in Cameroonian higher education. Descriptive statistics provided an overview of the data, while inferential statistics, including correlation and regression analyses, examined relationships between the use of interactive and collaborative learning tools and student outcomes.

Thematic Analysis
Qualitative data from the interviews were analysed using thematic analysis, which involved identifying and interpreting patterns or themes within the data. This process included several steps: data familiarization, coding, theme development, and interpretation.
Data Familiarization: Initial readings of the interview transcripts were conducted to gain an understanding of the content and context. Key themes such as "technology access," "student motivation," and "teaching quality" began to emerge.
Coding: The transcripts were systematically coded to identify key pieces of data relevant to the research questions. For example, segments of text describing challenges in accessing reliable internet were labelled as "technology access issues."
Theme Development: Codes were grouped into broader themes based on their similarities and relevance. Themes such as "challenges in adopting new technologies" and "benefits of collaborative learning" were identified.

Interpretation: The identified themes were interpreted to provide insights into the experiences and perspectives of educators and administrators. This interpretation helped draw conclusions about the challenges and opportunities related to interactive and collaborative learning tools.
The mixed-methods approach adopted in this study is justified by the need to capture both the breadth and depth of the research problem. Quantitative data provides a broad overview and generalizable findings regarding the impact of interactive and collaborative learning tools on student engagement and retention. Meanwhile, qualitative data offers depth, providing rich, contextual insights into the lived experiences of educators and administrators. This dual approach ensures that the study's recommendations are both evidence-based and contextually relevant.

The use of descriptive and inferential statistics allows for a rigorous analysis of the survey data, ensuring that the findings are robust and reliable. Descriptive statistics provide a snapshot of the current state of student engagement, while correlation and regression analyses help identify and quantify the relationships between key variables. This quantitative rigor is complemented by the thematic analysis of interview data, which uncovers deeper insights and helps explain the patterns observed in the survey results. By integrating these methods, the study addresses the research questions comprehensively, offering actionable recommendations that are informed by a thorough understanding of both the quantitative trends and the qualitative nuances of student engagement and retention in Cameroonian higher education.

FINDINGS

The analysis of survey data across Cameroonian higher education institutions reveals notable variations in student engagement and retention, reflecting the diverse educational environments and teaching methodologies employed across these institutions. The findings highlight the critical role that digital platform, such as Learning Management Systems (LMS), and innovative pedagogical strategies, including gamification and interactive tools, play in enhancing student engagement and retention. These results offer valuable insights into the mechanisms through which digitalization and collaborative learning foster a more engaging academic experience.

Student Engagement and Retention: Quantitative Insights

The quantitative data collected from the surveys provide a detailed picture of student engagement and retention intentions. Table 1 presents descriptive statistics for these variables, offering a snapshot of the average levels of engagement and retention across the surveyed institutions.

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Table 1. Descriptive Statistics of Engagement and Retention

Variable	Mean	Standard Deviation
Engagement Score (1-5)	3.4	0.8
Retention Intention (1-5)	3.7	0.7

The mean engagement score, on a scale of 1 to 5, was 3.4 with a standard deviation of 0.8. This score indicates a moderate level of engagement among students. The variation in engagement scores suggests that while some students are highly engaged, others may experience lower levels of motivation and involvement in their academic activities. This disparity could be attributed to differences in the availability and quality of digital tools, the nature of instructional design, and the extent to which interactive elements are integrated into the curriculum.

The mean retention intention score was slightly higher at 3.7, with a standard deviation of 0.7. This suggests that most students intend to continue their studies, reflecting a generally positive outlook toward their academic journey. The relatively high retention intention could be indicative of the students' satisfaction with their learning environment, which may be enhanced by the use of digital platforms and collaborative learning opportunities.
These descriptive statistics provide a foundational understanding of the overall trends in engagement and retention, setting the stage for a deeper exploration of the factors influencing these outcomes.

The Role of Digital Platforms and Collaborative Learning
To further understand the factors contributing to student engagement and retention, a correlation analysis was conducted, examining the relationships between key variables such as the use of digital platforms, the frequency of group projects, and access to online resources. **Table 2** presents the correlation coefficients for these variables.

Table 2. Correlation Analysis

Variables	Engagement Score	Retention Intention
Use of Digital Platforms	0.52**	0.48**
Frequency of Group Projects	0.47**	0.43**
Access to Online Resources	0.45**	0.40**

*Note. *p<.05, **p<.01*

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The use of digital platforms, such as LMS and other online learning tools, was found to have a significant positive correlation with both engagement scores ($r = 0.52$, $p < 0.01$) and retention intentions ($r = 0.48$, $p < 0.01$). This finding underscores the importance of digital tools in creating a more engaging and interactive learning environment. Digital platforms offer various features, such as interactive quizzes, online discussions, and multimedia content, which make the learning process more dynamic and accessible. These tools not only enhance student engagement but also foster a sense of community and belonging, which are critical for retention.

The correlation analysis also revealed that the frequency of group projects was positively correlated with engagement ($r = 0.47$, $p < 0.01$) and retention intentions ($r = 0.43$, $p < 0.01$). Group projects encourage collaboration, critical thinking, and peer-to-peer learning, all of which contribute to a more engaging educational experience. The positive correlation suggests that students who frequently participate in group projects are more likely to feel connected to their peers and more committed to their academic pursuits.

Access to online resources, such as e-books, research databases, and educational videos, was another factor positively correlated with engagement ($r = 0.45$, $p < 0.01$) and retention intentions ($r = 0.40$, $p < 0.01$). These resources provide students with the flexibility to explore topics at their own pace, leading to deeper understanding and greater academic satisfaction. The availability of high-quality online resources can be particularly beneficial in contexts where physical resources may be limited, further enhancing student engagement and retention. The correlation analysis highlights the interconnectedness of digital tools, collaborative learning, and academic outcomes, suggesting that a holistic approach to educational design is essential for fostering student success.

Predictive Power of Digital Platforms and Collaborative Learning

To assess the predictive power of these variables, a regression analysis was conducted to determine whether the use of digital platforms and other interactive tools could predict retention intentions, controlling for academic performance and socio-economic status. Table 3 presents the results of this regression analysis.

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Table 3. Regression Analysis

Predictor Variables	β (Standardized Coefficient)	t-value	p-value
Use of Digital Platforms	0.35	5.23	<0.001
Frequency of Group Projects	0.28	4.16	<0.001
Access to Online Resources	0.22	3.11	0.002
Academic Performance (GPA)	0.20	3.05	0.003
Socio-Economic Status	0.18	2.78	0.006

The regression analysis revealed that the use of digital platforms was a significant predictor of retention intentions ($\beta = 0.35$, $p < 0.001$), even after controlling for other factors such as academic performance and socio-economic status. This finding reinforces the importance of integrating digital tools into the curriculum as a means of promoting student retention. The ability of digital platforms to provide a personalized and interactive learning experience likely contributes to this positive outcome, as students who feel more engaged are more likely to persist in their studies.

Similarly, the frequency of group projects was a significant predictor of retention intentions ($\beta = 0.28$, $p < 0.001$). This result suggests that collaborative learning experiences play a crucial role in encouraging students to remain in their academic programs. Group projects not only enhance academic engagement but also help students build strong social connections, which can be a key factor in their decision to continue their studies.
Access to Online Resources: Access to online resources also emerged as a significant predictor of retention intentions ($\beta = 0.22$, $p = 0.002$). The availability of these resources likely provides students with the tools they need to succeed academically, thereby increasing their motivation to stay in school.

While academic performance (GPA) and socio-economic status were also significant predictors of retention intentions, their effects were less pronounced ($\beta = 0.20$, $p = 0.003$ for GPA; $\beta = 0.18$, $p = 0.006$ for socio-economic status) compared to the use of digital platforms and group projects. This finding suggests that while academic success and socio-economic factors are important, the role of digital tools and collaborative learning in promoting retention is even more critical.

The regression analysis provides a comprehensive understanding of the factors that contribute to student retention, highlighting the significant impact of digital platforms and collaborative learning. These findings suggest that educational institutions should prioritize the integration of these elements into their curricula to enhance student engagement and retention.

Factors Affecting Student Engagement and Retention

Relevance of Course Content

Educators emphasized the necessity for course content to be closely tied to students' future careers to maintain their interest and motivation. For example, one interviewee stated, "*When the students see how what they are learning applies to their future jobs, they become more invested in the class*." Another educator noted, "*Students often ask, 'How will this help me in the real world?' If we can't answer that, we lose them*."

Quality of Teaching

The quality of teaching was repeatedly highlighted as a key determinant of student engagement. An administrator pointed out, "*Our students respond well to teaching methods that go beyond lectures—methods that get them involved, like case studies or practical applications*." Another educator added, "*When I use interactive elements like simulations or role-playing, I notice a significant increase in student participation and retention*."

Availability of Academic Support Services

The availability of academic support services was identified as crucial for retention. One educator remarked, "*Students who have access to tutoring and mentoring are more likely to overcome academic challenges and stay in school*." Another interviewee emphasized, "*Our counseling services are a lifeline for students struggling emotionally or academically. Without them, many would drop out*."

Sense of Connection

A strong sense of connection to peers and instructors was noted as essential for higher engagement levels. One student commented during the interviews, "*I stay motivated because I feel part of a community. My classmates and professors are always there to support me."* An instructor echoed this sentiment, saying, "*Building relationships with students helps them feel more connected and less likely to disengage when things get tough*."

Effectiveness of Interactive and Collaborative Learning Tools

Interactive learning tools have shown a positive impact on student engagement. For instance, a participant from the University of Buea shared, "Since we introduced the Learning Management System, students are more engaged—they can access materials anytime and interact with quizzes, which keeps them interested." Another educator noted, "Gamification elements like badges and leaderboards have turned learning into a more engaging and competitive activity. Students are more motivated when there's a game-like challenge."

Collaborative learning tools were praised for their role in developing critical thinking and teamwork skills. One educator highlighted, "Group projects force students to think critically and learn to work together, which are crucial skills in the real world." A student remarked, "Peer assessments have helped me understand the course material better. When I have to evaluate others' work, I learn more and feel more responsible for my own learning."

Challenges and Opportunities

Limited Access to Technology: Several interviewees expressed concerns about the disparity in access to technology. An administrator from a rural institution noted, "Our students are at a disadvantage because they don't have reliable internet or modern devices. This makes it hard for them to fully participate in digital learning." Another participant added, "We want to use more interactive tools, but our infrastructure just isn't up to the task."

Inadequate Training for Educators: Training deficiencies were a recurrent theme. One educator confessed, "I find it challenging to use new technologies effectively because we haven't received enough training. There's a steep learning curve." Another mentioned, "Without proper support, many of us stick to what we know—traditional methods—because we don't feel confident with the new tools."

Infrastructure Constraints: Infrastructure issues were frequently cited as barriers. One participant reported, "Our internet service is so unreliable that we can't depend on online tools for teaching." Another added, "Even when we have the software, our hardware is outdated, and there's no technical support."

Opportunities:

Growing Availability of Digital Technologies: Despite challenges, the potential of digital technologies was acknowledged. An educator noted, "With more students having smartphones, we can start integrating mobile learning apps into our courses." Another said, "As mobile

technology becomes more accessible, it opens up new possibilities for interactive learning, even in under-resourced areas."

Increasing Awareness of Benefits: There is a growing awareness of the benefits of interactive tools. One administrator stated, "We're beginning to see how these tools can improve engagement and academic performance, and there's increasing support for their adoption." Another interviewee mentioned, "Policymakers are starting to recognize the need for these tools, which is a positive sign for the future."

Support from International Organizations: The role of international support was also highlighted. One participant commented, "Partnerships with international organizations are helping us overcome some of the technological and financial barriers to implementing interactive learning tools." Another added, "With external support, we can access resources and training that would otherwise be out of reach."

DISCUSSIONS AND CONCLUSION

The study's findings reveal key insights into the factors affecting student engagement and retention, supported by recent research and evidence from the interviews conducted. Firstly, the relevance of course content is pivotal for maintaining student engagement. Educators consistently emphasized that when course material aligns with students' career goals and interests, students are more likely to stay motivated and engaged. This finding is supported by Tinto (1993), who argues that relevance directly impacts student persistence. Interviews corroborated this, with educators noting that students often express higher satisfaction and commitment when they see a clear connection between their studies and their future careers.

Secondly, the quality of teaching significantly influences engagement. Effective teaching practices, characterized by interactive methods and real-world applications, are linked to higher levels of student satisfaction and retention. This is consistent with Hattie and Timperley (2007), who found that engaging teaching strategies enhance student learning experiences. Educators interviewed highlighted that interactive teaching methods, such as incorporating case studies and practical exercises, are highly valued by students and contribute to their engagement.

The availability of academic support services also emerged as a crucial factor. Access to tutoring, counseling, and mentoring was frequently mentioned in interviews as essential for student retention. Bean and Eaton (2001) support this view, indicating that comprehensive support services help address both academic and emotional needs, thereby improving retention

rates. The interviews revealed that institutions providing robust support systems tend to have higher student satisfaction and lower dropout rates.

A strong sense of connection within the academic community was another key finding. The interviews revealed that students who feel integrated into their academic environment and supported by peers and faculty are more likely to persist through challenges. Astin (1984) underscores this by highlighting that a sense of belonging is critical for student engagement. Educators noted that fostering a supportive and inclusive atmosphere enhances students' commitment to their studies.

Interactive learning tools have shown a positive impact on engagement. Case studies from institutions like the University of Buea, where the Learning Management System (LMS) has facilitated better access to course materials and interactive activities, illustrate this impact. Chen (2021) supports these findings, showing that LMS adoption can lead to improved student engagement. Additionally, gamification elements, such as badges and leaderboards, have been reported to increase motivation and participation, aligning with Deterding et al. (2011).

Collaborative learning tools also play a significant role in developing critical thinking and teamwork skills. Group projects and peer assessment, as observed in institutions like the University of Yaoundé I, contribute to students' problem-solving abilities and sense of responsibility. Johnson, Johnson, and Smith (1998) and Falchikov and Goldfinch (2000) support this, noting that collaborative activities enhance both academic skills and social interactions. The challenges and opportunities identified underscore the need for targeted interventions. The study highlights that while there are barriers such as limited technology access and inadequate training, there are also significant opportunities through increasing digital technology availability and international support. Addressing these challenges and leveraging the opportunities can lead to more effective strategies for enhancing student engagement and retention in Cameroonian higher education institutions.

The integration of interactive and collaborative learning tools in Cameroonian higher education holds significant potential for enhancing student engagement and retention, but it also faces substantial challenges. One of the key obstacles is the disparity in access to technology, particularly in rural and underfunded areas, where inadequate infrastructure limits the effective use of digital platforms and other tools. This technological gap creates an unequal educational experience, further entrenching existing disparities within the system. Inadequate training for educators compounds this issue, as many lack the skills and support needed to effectively incorporate new technologies into their teaching practices. This deficiency leads to underutilization of the tools and resistance to adopting innovative methods. Overcoming these

challenges requires targeted investments in technology infrastructure and comprehensive professional development programs for educators. Despite these barriers, there are promising opportunities. The increasing availability of mobile devices and online platforms can help bridge the infrastructure gap, making education more accessible and engaging. Additionally, growing awareness among educators and policymakers about the benefits of these tools creates a favourable environment for their adoption.

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