



ONLINE LEARNING PLATFORMS AND ACADEMIC PERFORMANCE OF STUDENTS IN HIGHER EDUCATION INSTITUTIONS IN BUEA MUNICIPALITY, SOUTH WEST REGION OF CAMEROON

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Abstract

The study investigated online learning platforms and the academic performance of students in higher education institutions in Buea Municipality in the South West Region of Cameroon. It made use of two research objectives which were transformed into two research questions as follows: What is the influence of Google Classroom on the academic performance of students in higher education institutions in Buea Municipality? and what is the influence of Zoom on the academic performance of students in higher education institutions in Buea Municipality? The research questions were later transformed into research hypotheses. A descriptive survey design was employed. 357 students and 6 academic staff made the sample. Data were collected from students using a closed ended questionnaire, while an interview guide was used to collect data from the academic staff. Descriptive statistics and inferential statistics were used to analyse quantitative data from the questionnaire, while data from the interview guide were analysed thematically. The findings reveal that both google classroom and zoom have a positive and significant influence on the academic performance of students in higher education institutions in Buea Municipality. It was concluded that online learning platforms like google classroom and zoom positively influence academic performance of students in higher education institutions in Buea Municipality. It was recommended that students and academic staff in higher education institutions in Buea Municipality should integrate Google Classroom and zoom more widely in the teaching and learning process.

Keywords:

Online learning platform, google classroom, zoom, academic performance.



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Résumé

L'étude a examiné les plateformes d'apprentissage en ligne et les résultats scolaires des étudiants des établissements d'enseignement supérieur de la municipalité de Buea, dans la région du Sud-Ouest du Cameroun. Elle s'appuyait sur deux objectifs de recherche, déclinés en deux questions : quelle est l'influence de Google Classroom sur les résultats scolaires des étudiants des établissements d'enseignement supérieur de la municipalité de Buea ? et quelle est l'influence de Zoom sur les résultats scolaires des étudiants des établissements d'enseignement supérieur de la municipalité de Buea ? Les questions de recherche ont ensuite été transformées en hypothèses de recherche. Une enquête descriptive a été utilisée. L'échantillon était composé de 357 étudiants et de 6 enseignants. Les données ont été collectées auprès des étudiants à l'aide d'un questionnaire fermé, tandis qu'un guide d'entretien a été utilisé pour recueillir les données auprès du personnel enseignant. Des statistiques descriptives et inférentielles ont été utilisées pour analyser les données quantitatives du questionnaire, tandis que les données du guide d'entretien ont été analysées thématiquement. Les résultats révèlent que Google Classroom et Zoom ont une influence positive et significative sur les résultats scolaires des étudiants des établissements d'enseignement supérieur de la municipalité de Buea. Il a été conclu que les plateformes d'apprentissage en ligne comme Google Classroom et Zoom influencent positivement les résultats scolaires des étudiants des établissements d'enseignement supérieur de la municipalité de Buea. Il a été recommandé aux étudiants et au personnel enseignant des établissements d'enseignement supérieur de la municipalité de Buea d'intégrer plus largement Google Classroom et Zoom dans leurs processus d'enseignement et d'apprentissage.

Mots clés :

Plateforme d'apprentissage en ligne, Google Classroom, Zoom, résultats scolaires.

Introduction

Studies have shown that e-learning components, such as e-notes and e-assignments, provide easy access to course materials, enhance students' understanding of subjects, and timely submission of coursework, thereby positively influencing academic outcomes (Loveline & Yufela, 2022). Students perceive online learning as a viable alternative during disruptions, with platforms like Google Classroom facilitating active learning and engagement (Ndimofor, 2022). However, online learning has some challenges. Nkengafac (2021) is of the opinion that students with limited access to reliable internet connections or the necessary technical skills to access online learning platforms may struggle to fully participate, thus affecting their academic outcomes. Oye et al. (2020), hold the view that students from diverse backgrounds may experience varying levels of success in online learning environments due to differences in access to technology and internet connectivity.

According to Ekpoh and Essien (2022), students who use Google Classroom for Educational Technology courses achieve higher scores compared to those relying solely on traditional methods. Students who use Google Classroom in Computer Database

Management Systems exhibit significant improvements in academic achievement (Omeh et al., 2022). Students perceived Google Classroom as an effective tool for active learning (Ndimofor, 2022).

Google Classroom is not without challenges. Research indicates that factors such as limited access to personal devices, poor internet connectivity, and lack of technical support can hinder its effective utilization. For example, students at Kebbi State University in Nigeria reported difficulties in submitting assignments on time due to network issues and the absence of functional Wi-Fi on campus (Hussaini et al., 2020). Google Classroom has been shown to offer increased flexibility in teaching methods. As highlighted by Omotayo (2020), the use of online platforms such as Google Classroom allows instructors to implement blended and flipped classroom models, which have been associated with higher retention and student satisfaction. Ajayi and Adegbiya (2021) hold the view that Google Classroom plays a role in improving the efficiency of assessment and feedback. According to them, students who use Google Classroom for assignments and quizzes report quicker feedback, which led to a timelier understanding of their strengths and weaknesses. This rapid feedback loop helps students to make immediate adjustments to their learning strategies, thus improving their overall performance. Choi et al. (2020) opine that Google Classroom can handle large-scale courses with hundreds of students.

However, the benefits of Google Classroom are not always evenly distributed across different student populations. According to a study by Olojede (2021), students from lower socio-economic backgrounds face significant challenges in accessing online learning platforms like Google Classroom. Another important consideration in the use of Google Classroom is the level of digital literacy among both students and instructors. Salih and Kaka (2020) emphasize the importance of training in ensuring that all users can fully utilize the platform's features.

Gonzalez and Fernandez (2021) say synchronous learning with the use of Zoom increases student engagement and fosters a sense of community. However, the effectiveness of Zoom-based learning environments is often limited by environmental distractions and screen fatigue. According to Baranova and Smirnova (2022), students reported decreased concentration during long Zoom sessions, particularly when classes lacked interactivity. In regions with unstable internet access, the limitations of Zoom are more pronounced. Okoye and Chukwuemeka (2023) say that frequent disconnections, audio lags, and video freezing disrupt learning flow and negatively affect comprehension and participation. As a consequence, students express frustration because they miss critical parts of lectures and are unable to ask timely questions, leading to gaps in understanding. Digital equity is another critical issue in the use of Zoom for academic purposes. According to Mavundla et al. (2022), students from underprivileged backgrounds experience greater difficulties in accessing Zoom classes due to lack of devices and high data costs.

Instructors' technological proficiency also significantly affects the efficacy of Zoom sessions. Chen and Wang (2020) are of the opinion that university instructors' lack of training in Zoom features lead to missed opportunities for engagement and weak classroom management. In contrast, instructors who receive formal training are able to use advanced Zoom tools—such as breakout rooms, whiteboards, and collaborative documents—to foster dynamic and participatory classes. This highlights the need for continuous professional development in digital pedagogy. To add, the psychological impact of prolonged Zoom use has become an area of concern. Bailenson (2021) coined the term “Zoom fatigue” to

describe the exhaustion associated with overuse of video conferencing. His research attributes this fatigue to excessive eye contact, the cognitive load of interpreting non-verbal cues over video, and the constant self-view feature. These stressors can impair students' mental well-being and reduce academic performance, suggesting that Zoom sessions should be strategically scheduled and balanced with asynchronous tasks to avoid burnout. This study seeks to find out the use of online learning platforms such as google classroom and zoom and its influence on academic performance of students in higher education institutions in Buea Municipality.

Statement of the Problem

The advancement in science and technology and the development of online learning platforms have made learning resources more readily available than ever before. Students and academic staff in higher educational institutions can access learning materials in the comfort of their homes and at the time best convenient to them. As a consequence, students and academic staff can easily carry out research on any field of study based on their interest. Students can easily do assignments as well as get additional material for their course content.

Inadequate use of online learning platform might limit both students and academic staff of learning resources. This may further result in students facing more challenges with their academic work, having lower grades, failing in courses, spending more years in school than planned for a programme, and/or dropping out of school. It is against this backdrop that this study seeks to find out the use of online learning platforms and academic performance of students in higher education institutions in Buea Municipality.

Methodology

A descriptive survey design was used for this study, with the use of both quantitative and qualitative methods. The sample was made up of 357 students and six academic staff from three higher education institutions in Buea. Purposive sampling was used to get the lone public and the lone denominational higher institutions, while simple random sampling was used to get one lay private higher institution. Accidental sampling was used to obtain the students and the academic staff who served as sample for the study. Quantitative data were collected from the students by means of closed ended questionnaire constructed using the four-point Likert scale. Qualitative data were collected from academic staff by means of an interview guide. Both instruments were administered using the direct delivery technique. The quantitative data were analyzed descriptively using frequencies, percentages, and mean, and also inferentially using the Pearson Product-Moment Correlation Coefficient. The qualitative data were analyzed thematically.

FINDINGS

Research Question One: What is the influence of Google Classroom on the Academic Performance of Students of Higher Education Institutions in Buea Municipality?

Table 1 Google Classroom and Academic Performance of Students

SN	ITEM	Stretched				Collapsed	
		SA	A	D	SD	SA +A	SD +D
1	Google classroom enhances student engagement during lessons	203 (56.9%)	99 (27.7%)	43 (12.0%)	12 (3.4%)	302 (84.6%)	55 (15.4%)
2	I find Google classroom easy to navigate	51 (14.3%)	257 (72.0%)	40 (11.2%)	9 (2.5%)	308 (86.3%)	49 (13.7%)
3	I prefer using Google Classroom to traditional classroom meetings.	34 (9.5%)	204 (57.1%)	74 (20.7%)	45 (12.6%)	238 (66.6%)	119 (33.3%)
4	Google classroom supports collaborative learning with peers	205 (57.4%)	75 (21.0%)	51 (14.3%)	26 (7.3%)	280 (78.4%)	77 (21.6%)
5	I do much of my academic work using Google Classroom.	205 (57.4%)	58 (16.2%)	67 (18.8%)	27 (7.6%)	263 (73.6%)	94 (26.4%)
6	Limited Internet access affects my ability to use Google classroom effectively	91 (25.5%)	225 (63.0%)	24 (6.7%)	17 (4.8%)	316 (88.5%)	41 (11.5%)
7	I feel more involved in blended learning through Google classroom	208 (58.3%)	85 (23.8%)	43 (12.0%)	21 (5.9%)	293 (82.1%)	94 (17.9%)
8	Training improved my ability to use Google classroom	215 (60.2%)	99 (27.7%)	33 (9.2%)	10 (2.8%)	314 (87.9%)	43 (12%)
	MRS	1212 (42.4%)	1102 (38.5%)	375 (13.1%)	167 (5.8%)	2314 (80.9%)	542 (19.1%)

In relation to research question one, eight items were used to find out the extent to which google classroom influence the academic performance of students in higher education institutions in Buea Municipality. In relation to item one, 302 respondents (84.2%) agreed to the fact that google classroom enhances student engagement during lessons while 55 respondents (15.4%) disagreed. In relation to item two, 308 respondents (86.3%) agreed to the fact that they find Google classroom easy to navigate while 49 respondents (13.7%) disagreed. In relation to item three, 238 respondents (66.6%) agreed to the fact that they prefer using Google Classroom to traditional classroom meetings while 119 respondents (33.3%) disagreed.

In relation to item four, 280 respondents (78.4%) agreed to the fact that Google classroom supports collaborative learning with peers while 77 respondents ((21.6%)

disagreed. In relation to item five, 263 respondents (73.6%) agreed to the fact that they do much of their academic work using Google Classroom while 94 respondents ((26.4%) disagreed. In relation to item six, 316 respondents (88.5%) agreed to the fact that Limited Internet access affects their ability to use Google classroom effectively while 41 respondents ((11.5%) disagreed. In relation to item seven, 293 respondents (82.1%) agreed to the fact that they feel more involved in blended learning through Google classroom while 94 respondents ((17.9%) disagreed. In relation to item eight, 314 respondents (87.9%) agreed to the fact that Training improved their ability to use Google classroom while 43 respondents ((12.1%) disagreed.

To further determine the effect Google classroom on the academic performance of students of higher education institutions in Buea Municipality, the Pearson product-moment correlation coefficient was calculated to ascertain the influence as indicated in the table below.

Verification of Hypothesis One

Ho₁: Google classroom has no significant effect on the academic performance of students in higher education institutions in Buea municipality.

Ha₁: Google classroom has a significant effect on the academic performance of students in higher education institutions in Buea municipality.

Table 2

Perceived Influence of Google Classroom on the Academic Performance of Students in Higher Education Institutions in Buea Municipality

		<i>Google classroom</i>	<i>Academic performance</i>
<i>Google classroom</i>	Pearson Correlation	1	.868**
	Sig. (2-tailed)		.000
	N	357	357
<i>Academic performance</i>	Pearson Correlation	.868**	1
	Sig. (2-tailed)	.000	
	N	357	357
**. Correlation is significant at the 0.01 level (2-tailed).			

From the table above, the Pearson correlation coefficient ($r = .868^{**}$, $P=0.05$) indicates a strong positive and statistically significant relationship between Google classroom and academic performance of students of higher education institutions in Buea municipality. This, therefore, connotes enough statistical evidence ($r=0.868^{**}$, $n=357$, $P=0.05$) that Google classroom positively and significantly influence the academic performance of students in higher education institutions in Buea municipality. Hence, the null hypothesis is rejected, and the alternate hypothesis is accepted, which states that Google classroom has a significant effect on the academic performance of students in higher education institutions in Buea municipality.

Table 3***Lecturers' Opinion on the Influence of Google Classroom on Academic Performance of Students in Higher Education Institutions in Buea Municipality***

Codes	Themes	Sampled Quotations
Do you use Google Classroom for your academic activities? if yes how often, if no please may I know why?	Extensively use	"Yes, I utilize Google Classroom extensively. It provides a structured environment for students to access materials and submit assignments. I've noticed that it enhances communication and helps students stay organized, which positively impacts their academic performance."
	A key tool	"Absolutely, Google Classroom is a key tool in my teaching. It allows me to share resources efficiently and track student engagement. I've observed that students who actively participate in the platform tend to perform better in assessments."
	Yes	"I do use Google Classroom. It facilitates collaboration among students and makes it easier for them to ask questions outside of class hours. This level of engagement has shown a correlation with improved grades."
	Daily	"Yes, I incorporate Google Classroom almost daily, especially during exam periods. The immediate access to resources and practice quizzes helps students prepare better and boosts their confidence."
	Weekly	"Yes, I use it several times a week. It allows me to share coding exercises and resources effectively. Frequent use has helped my students improve their practical skills and overall performance."
		"Yes, I utilize it weekly. It supports not just academic tasks but also peer interactions. This regular engagement fosters a collaborative learning environment that positively affects student performance."
	Least three times a week	"Yes, I engage with Google Classroom at least three times a week. This consistency allows me to monitor student progress closely and provide timely feedback, which I believe is crucial for their success."

In relation to the interview on the use of Google classroom by lecturers of higher education institutions in Buea Municipality, a number of themes were raised as seen on the table above pointed out by their directive quotations as follows. In response to the question, 'Do you use Google Classroom for your academic activities?' a respondent agreed by saying *"Yes, I utilize Google Classroom extensively. It provides a structured environment for students to access materials and submit assignments. I've noticed that it enhances communication and helps students stay organized, which positively impacts their academic performance."* this was corroborated by another respondent who stated that *"Absolutely, Google Classroom is a key tool in my teaching. It allows me to share resources efficiently and track student engagement. I've observed that students who actively participate in the platform tend to perform better in assessments."*

In addition, another respondent holds that:

"I do use Google Classroom. It facilitates collaboration among students and makes it easier for them to ask questions outside of class hours. This level of engagement has shown a correlation with improved grades."

While another pointed out that:

"Yes, I incorporate Google Classroom into my courses. I find it helpful for providing feedback and fostering a sense of community among students. Those who engage more with the platform often demonstrate higher academic performance."

Responding to the how often, they use Google classroom, the respondent stated that:

"Yes, I use Google Classroom daily. I find it essential for posting lectures, assignments, and announcements. The regular interaction helps keep students engaged and accountable." Another respondent pointed that *"Yes, I use it several times a week. It allows me to share coding exercises and resources effectively. Frequent use has helped my students improve their practical skills and overall performance."*

While yet another hold that:

"Yes, I engage with Google Classroom at least three times a week. This consistency allows me to monitor student progress closely and provide timely feedback, which I believe is crucial for their success." Some of the respondents were also of the view that, *"Yes, I use it weekly for discussions and assignments. I appreciate how it facilitates ongoing conversations about course material, which seems to enhance students' comprehension and grades."* *"Yes, I incorporate Google Classroom almost daily, especially during exam periods. The immediate access to resources and practice quizzes helps students prepare better and boosts their confidence."*

Research Question Two: What is the influence of Zoom on the Academic Performance of Students in Higher Education Institutions in Buea Municipality?

Table 4
Zoom and Academic Performance of Students

SN	ITEM	Stretched					Collapsed
		SA	A	D	SD	SA +A	SD +D
1	Zoom enables real-time interaction with my lecturers	253 (70.9%)	55 (15.4%)	43 (12.0%)	6 (1.7%)	308 (86.3%)	49 (13.7%)
2	Zoom has improved my ability to collaborate with classmates during group discussions.	254 (71.1%)	56 (15.7%)	45 (12.6%)	2 (.6%)	310 (86.8%)	47 (13.2%)
3	The use of zoom has been an effective tool in	209 (58.5%)	86 (24.1%)	56 (15.7%)	6 (1.7%)	295 (82.6%)	62 (17.4%)

	helping me achieve academic success in my course.						
4	Zoom has helped me not only to take classes within my locality but also to take foreign lectures	244 (68.3%)	76 (21.3%)	30 (8.4%)	7 (2.0%)	320 (89.6%)	37 (10.4%)
5	With zoom classes, I feel more relaxed than the traditional face to face class.	220 (61.6%)	70 (19.6%)	57 (16.0%)	10 (2.8%)	290 (81.2%)	67 (18.8%)
6	Poor internet connection disrupts my zoom classes	271 (75.9%)	75 (21.0%)	11 (3.1%)	00 (00%)	346 (96.9%)	11 (3.1%)
7	Zoom classes are as effective as physical classroom lectures	250 (70.0%)	58 (16.2%)	29 (8.1%)	20 (5.6%)	308 (86.2%)	49 (13.8%)
8	Zoom helps me stay engaged during lectures	67 (18.8%)	245 (68.6%)	39 (10.9%)	6 (1.7%)	312 (87.4%)	45 (12.6%)
9	I prefer learning through zoom to other online platforms	98 (27.5%)	205 (57.4%)	31 (8.7%)	23 (6.4%)	303 (84.9%)	54 (15.1%)
	MRS	1866 (58.9%)	876 (27.6%)	341 (10.5%)	80 (2.5%)	2742 (86.6%)	421 (13.3%)

In relation to research question two, nine items were used to find out how Zoom influence the academic performance of students in higher institutions of learning in Buea municipality. In relation to item one, 308 respondents (86.3%) agreed to the fact that Zoom enables real-time interaction with their lecturers while 49 respondents (13.7%) disagreed. In relation to item two, 310 respondents (86.8%) agreed to the fact that the use of zoom has been an effective tool in helping them achieve academic success in their course while 47 respondents (13.2%) disagreed.

In relation to item three, 295 respondents (82.6%) agreed to the fact that Zoom has helped them not only to take classes within their locality but also to take foreign lectures while 62 respondents (17.4%) disagreed. In relation to item four, 320 respondents (89.6%) agreed to the fact that with zoom classes, they feel more relaxed than the traditional face to face class while 37 respondents (10.4%) disagreed. In relation to item five, 290 respondents (81.2%) agreed to the fact that poor internet connection disrupts their zoom classes while 67 respondents (18.8%) disagreed. In relation to item six, 346 respondents (96.9%) agreed to the fact that Zoom classes are as effective as physical classroom lectures while 11 respondents (3.1%) disagreed. In relation to item seven, 308 respondents (86.2%) agreed to the fact that Zoom helps them stay engaged during lectures while 49 respondents (13.8%) disagreed. In relation to item eight, 312 respondents (87.4%) agreed to the fact that they prefer learning through zoom to other online platforms while 45 respondents (12.6%) disagreed. In relation to

item nine, 303 respondents (84.9%) agreed to the fact that Zoom enables real-time interaction with their lecturers while 54 respondents (15.1%) disagreed.

To further determine the effect of zoom on the academic performance of students in higher education institutions in Buea Municipality, the Pearson product-moment correlation coefficient was calculated to ascertain the influence as indicated in the table below.

Verification of Hypothesis two

Ho₂: Zoom, has no significant influence on the academic performance of students in higher education institutions in Buea municipality.

Ha₂: Zoom, has a significant influence on the academic performance of students in higher education institutions in Buea municipality.

Table 5

Perceived Influence of Zoom on the Academic Performance of Students in Higher Education Institutions in Buea Municipality

		<i>Zoom</i>	<i>Academic performance</i>
<i>Zoom</i>	Pearson Correlation	1	.920**
	Sig. (2-tailed)		.000
	N	357	357
<i>Academic performance</i>	Pearson Correlation	.920**	1
	Sig. (2-tailed)	.000	
	N	357	357

** . Correlation is significant at the 0.01 level (2-tailed).

From the table above, the Pearson correlation coefficient ($r = .920^{**}$, $P=0.05$) indicates a strong positive and statistically significant relationship between zoom and academic performance of students of higher education institutions in Buea Municipality. This, therefore, connotes enough statistical evidence ($r=0.920^{**}$, $n=357$, $P=0.05$) that zoom positively and significantly influence the academic performance of students of higher education institutions in Buea municipality. Hence, the null hypothesis is rejected, and the alternate hypothesis is accepted, which states that zoom have a significant impact on the academic performance of students in higher education institutions in Buea municipality.

Table 6

Lecturers' Opinion on the Influence of Zoom on Students' Academic Performance

Codes	Themes	Sampled Quotations
Do you use zoom for your academic activities	Real-time interaction,	"Yes, I use Zoom for my lectures and discussions. It allows for real-time interaction, which is crucial for engaging students. I've noticed that those who participate actively tend to perform better academically."
	Collaboration	"Absolutely, I rely on Zoom for both lectures and group work. The platform facilitates collaboration among students, which enhances their understanding of complex topics and improves their academic outcomes."

if yes, how often, if no please may I know why?	communication	"Yes, I frequently use Zoom for my classes. It's an effective way to maintain communication and encourage participation. I've observed that students who engage in live sessions tend to excel in their assessments."
	Host discussions	"Yes, I incorporate Zoom into my teaching strategy. The ability to host discussions and Q&A sessions has proven beneficial for students. Their academic performance reflects the enhanced understanding gained through these interactions."
	Problem-solving sessions	"Yes, I use Zoom regularly for tutorials and live problem-solving sessions. This interactive format allows me to address students' questions in real time, which has a positive impact on their performance."
	Every week	"Yes, I use Zoom almost every week for my lectures and discussions. This regular interaction helps keep students engaged and allows for immediate feedback, which enhances their academic performance."
	Twice a week	"Yes, I utilize Zoom for my classes about twice a week. It's essential for group work and real-time coding exercises. The frequent engagement has shown to improve students' understanding and skills significantly."
	At least once a week	"Yes, I use Zoom at least once a week. I find that live sessions are crucial for clarifying concepts and encouraging participation. Students who attend these sessions tend to perform better in their assessments."
	Every two weeks	"Yes, I incorporate Zoom into my teaching strategy every two weeks. These sessions allow for deeper discussions and collaboration, which positively impacts students' comprehension and overall performance."
	Regularly	"Yes, I use Zoom regularly, especially during exam preparation. I host weekly problem-solving sessions that help students grasp difficult concepts, leading to improved grades."

In answering the question "do you use zoom for your academic activities?" The respondents agreed by saying ...*"Yes, I use Zoom for my lectures and discussions. It allows for real-time interaction, which is crucial for engaging students. I've noticed that those who participate actively tend to perform better academically."* *"Absolutely, I rely on Zoom for both lectures and group work. The platform facilitates collaboration among students, which enhances their understanding of complex topics and improves their academic outcomes."* ...*"Yes, I frequently use Zoom for my classes. It's an effective way to maintain communication and encourage participation. I've observed that students who engage in live sessions tend to excel in their assessments."*

In addition, the respondents were of the opinion that they use zoom very often as coded in their statements below:

"Yes, I use Zoom almost every week for my lectures and discussions. This regular interaction helps keep students engaged and allows for immediate feedback, which enhances their academic performance."

"Yes, I utilize Zoom for my classes about twice a week. It's essential for group work and real-time coding exercises. The frequent engagement

has shown to improve students' understanding and skills significantly."

"Yes, I use Zoom at least once a week.

I find that live sessions are crucial for clarifying concepts and encouraging participation. Students who attend these sessions tend to perform better in their assessments."

Conclusion

Finding on research question one reveals that Google classroom positively and significantly influences the academic performance of students in higher education institutions in Buea municipality. This study is in line with Al-Marroof et al. (2020), who hold that the integration of Google Classroom into educational systems significantly enhances students' engagement, motivation, and ultimately academic achievement. This finding aligns strongly with the Technology Acceptance Model (TAM), which posits that perceived usefulness and ease of use determine the acceptance and effective use of a technology. The study revealed that students who found Google Classroom intuitive and helpful for organizing their learning materials demonstrated improved academic performance. Similarly, a study by Putri et al. (2021), found that the systematic delivery of content via Google Classroom led to improved comprehension and performance among undergraduate students in online learning environments. This was further supported by research conducted by Khalil and Ebner (2020), which highlighted the platform's role in providing a structured learning space that encourages active participation. When viewed through the TAM lens, the perception of Google Classroom as an accessible and beneficial tool reinforces its positive impact on academic success.

Findings in relation to research question two reveal that zoom positively and significantly influences the academic performance of students in higher education institutions in Buea municipality. This study is in line with Almahasees et al. (2021), who are of the opinion that the use of Zoom as a video conferencing tool during the COVID-19 pandemic enhance real-time interaction and collaboration among students and instructors, fostering improved learning outcomes. This finding is well supported by the Community of Inquiry (CoI) framework, which emphasizes cognitive presence, teaching presence, and social presence as central to a successful educational experience in online environments. Zoom enables all three presences by allowing synchronous communication, screen sharing, and immediate feedback, thereby enriching the academic environment. Similarly, a study by González-Zamar and Abad-Segura (2021) demonstrated that Zoom facilitates an active learning atmosphere where students participate more frequently, enhancing their comprehension and performance. Supporting this, Wei and Chou (2022) found that Zoom allows for flexible yet meaningful learning interactions that keep students engaged, leading to higher academic achievement. These studies collectively highlight that Zoom's capacity to foster real-time interaction aligns with the CoI framework's emphasis on presence as a driver of academic success. Based on the aforementioned, it is concluded that online learning platforms like Google classroom and zoom have a positive influence on students' academic performance in higher education institutions in Buea Municipality.

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