AN ASSESSMENT OF EFFECTS OF GOOGLE AND WEBEX MEETS APPLICATIONS ON STUDENTS ACADEMIC PERFORMANCE: A CASE STUDY OF COLLEGES OF EDUCATION IN GOMBE STATE

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ABSTRACT

The study focused on whether the use of Webex and Google Meet Apps affects NCE students' academic performance. This research will be useful to stakeholders like Lecturers, tutors, and the Department of Education of Colleges of Education Gombe State. The design for this research was Experimental design, a scientific approach to research, where one or more independent variables are manipulated and applied to one or

more dependent variables to measure their effect on the latter. The study will be guided by two research questions. The outcome of the research will vindicate the effects of Webex and Google Meet on NCE students' academic performance. The research will be significant in several ways. Firstly, it will provide insights into the use of technological tools in the classroom setting and their impact on student learning outcomes in Colleges of Education in Gombe State. Secondly, it will highlight the strengths and weaknesses of Google and Webex Meets applications, which will inform their further development and improvement. Thirdly, the research will contribute to the body of knowledge on the use of technology in education and its impact on student performance in Nigeria.

Keywords: Assessment, Effects, Applications, Webex, Google.

INTRODUCTION

Technology has become an integral part of modern education, with the use of technological tools such as Google and Webex Meets applications increasingly popular in schools and colleges worldwide. These tools have been used to enhance the learning experience of students and make education more accessible to them (Bergin & Reilly, 2018). Google applications, such as Google Classroom, Google Docs, and Google Drive, are designed to allow students to collaborate on projects, share documents, and communicate with their teachers. Similarly, Webex Meets is a video conferencing platform that allows students and teachers to connect with each other and hold virtual classes (Barron, Burton, & Yamasaki, 2020).

In Nigeria, Colleges of Education are institutions that are responsible for training teachers who will work in primary and secondary schools. The use of technology in these institutions is vital as it prepares future teachers for the integration of technology in their classrooms. However, there is a need to assess the impact of Google and Webex Meets applications on student academic performance in these institutions. Several studies have investigated the impact of technology on student academic performance. A study by Kirschner and van Merriënboer (2013) found that the use of technology can have a positive impact on student learning outcomes when used appropriately. Similarly, a study by Wang and Chen (2018) found that the use of Google Classroom had a positive impact on student academic performance and engagement. The current pandemic has further increased the need for the use of technology in education. The closure of schools due to the pandemic has resulted in the adoption of online learning as an alternative to traditional classroom teaching. The use of Google and Webex Meets applications has

become essential in ensuring that students continue their education during the pandemic (Khan, 2020).

Therefore, this research proposal seeks to assess the impact of Google and Webex Meets applications on students' academic performance in Colleges of Education in Gombe State, Nigeria. The study will explore how these technological tools are used in the classroom setting and whether they have a positive or negative influence on student learning outcomes. The findings of this study will be beneficial to students, teachers, educational policymakers, and software developers in Nigeria.

Conceptual Literature Review

The review will begin by discussing the importance of technology in education, followed by the use of online meetings in the education sector, and finally, the theoretical and conceptual frameworks related to the effects of online meetings on academic performance.

Importance of Technology in Education:

Advancements in technology have transformed the education sector, making it possible for students to access resources, interact with teachers and peers, and engage in learning activities beyond the traditional classroom setting. The integration of technology in education has been found to enhance the learning experience and improve students' academic performance.

Online Meetings in Education:

Online meetings, such as Google Meet and Webex Meet, have become increasingly popular in the education sector due to their ease of use and accessibility. Online meetings provide students with a platform to interact with their teachers and peers, share ideas, collaborate on projects and assignments, and receive immediate feedback, all of which contribute to the improvement of their academic performance.

Theoretical and Conceptual Frameworks

Several theoretical and conceptual frameworks have been proposed to explain the effects of online meetings on students' academic performance. One such framework is the social constructivist theory, which emphasizes the importance of social interaction and collaborative learning in the learning process. According to this theory, online meetings provide a platform for students to interact with their teachers and peers, which enhances their learning experience and improves their academic performance (Vygotsky, 1978).

Another framework that can explain the effects of online meetings on academic performance is the cognitive load theory, which suggests that the brain has a limited

capacity for processing information. According to this theory, online meetings can reduce cognitive load by providing students with access to information and reducing the need for them to remember and process information (Sweller, 1988).

Additionally, the self-determination theory proposes that students' motivation and engagement in learning activities are critical factors that contribute to their academic performance. Online meetings can enhance students' motivation and engagement by providing them with a platform to interact with their teachers and peers, receive immediate feedback, and collaborate on projects and assignments (Ryan & Deci, 2000).

Empirical Literature Review

This empirical literature review aims to assess the effects of Google Meet and Webex Meet applications on students' academic performance. The review will begin by discussing the methodology used in the studies, followed by the findings and conclusions.

Methodology

Several studies have examined the effects of Google Meet and Webex Meet applications on students' academic performance. The studies were conducted on students from different educational institutions, and data was collected through academic performance records and questionnaires. The studies employed both qualitative and quantitative research methods to assess the effects of online meetings on academic performance.

Findings

Several studies have found that Google Meet and Webex Meet applications have a positive effect on students' academic performance. For instance, a study conducted by Zainuddin and Perera (2018) found that online meetings improved students' academic performance by increasing their engagement in learning activities, promoting collaborative learning, and providing a platform for students to interact with their teachers and peers.

Another study conducted by Al-Sharafi et al. (2018) found that online meetings facilitated better communication between students and teachers, improved students' understanding of course materials, and led to better academic performance. Furthermore, the study found that online meetings provided students with a platform to ask questions and seek clarification, which improved their understanding of the subject matter.

A study conducted by Dasgupta and Kar (2019) revealed that online meetings improved students' critical thinking and problem-solving skills. The study found that online meetings provided students with a platform to collaborate and share ideas, which enhanced their critical thinking and problem-solving skills.

Statement of the Problem

The use of technology in education has become an integral part of the teaching and learning process, and the adoption of technological tools such as Google and Webex Meets applications has become increasingly popular in schools and colleges worldwide. These tools have been used to enhance the learning experience of students and make education more accessible to them. However, there is a need to assess the impact of these technological tools on student academic performance in Nigerian Colleges of Education.

The closure of schools due to the pandemic in the year 2020, has resulted in the adoption of online learning as an alternative to traditional classroom teaching. The use of Google and Webex Meets applications has become essential in ensuring that students continue their education during the pandemic. And after the pandemic, some teachers at various level continue to use the platforms. However, there is a need to investigate whether the use of these technological tools has a positive or negative impact on student academic performance in Colleges of Education in Gombe State, Nigeria.

Moreover, there is a need to explore how these technological tools are used in the classroom setting and whether they have a positive or negative influence on student learning outcomes. It is crucial to identify the strengths and weaknesses of these technological tools to inform their further development and improvement. Therefore, this research proposal seeks to assess the impact of Google and Webex Meets applications on students' academic performance in Colleges of Education in Gombe State, Nigeria.

The current literature on the impact of technology on student academic performance is mixed, with some studies suggesting a positive impact while others suggest no impact or a negative impact (Kirschner & van Merriënboer, 2013; Wang & Chen, 2018). Therefore, there is a need to investigate whether the use of these technological tools has a positive or negative impact on student academic performance in Nigerian Colleges of Education. The findings of this study will be beneficial to students, teachers, educational policymakers, and software developers in Nigeria.

The outcome of this research will be useful to: Lecturers, tutors and Department of education of Gombe State College of Education and Legal Studies Nafada, and of course other sister colleges.

Aims and Objectives the Study

The main aim of this study is to find out the effects of Google Meet and Webex Meet on colleges of education students' academic performance. The Specific objectives include:

i. To investigate the extent to which Google and Webex Meets applications are used in the classroom setting in Colleges of Education in Gombe State

ii.   To identify the strengths and weaknesses of Google and Webex Meets applications in facilitating student learning outcomes in Colleges of Education in Gombe State, and provide recommendations for their effective use

iii.   To assess the impact of Google and Webex Meets applications on student academic performance in Colleges of Education in Gombe State.

Research Questions

The following questions guides the study:

i.   To what extent Google and Webex Meets applications are used in the classroom setting in Colleges of Education in Gombe State?

ii.   What are the strengths and weaknesses of Google and Webex Meets applications in facilitating student learning outcomes in Colleges of Education in Gombe State?

iii.   What is the impact of Google and Webex Meets applications on student academic performance in Colleges of Education in Gombe State?

Significance of the Study

The study's significance lies in its potential to contribute to the body of knowledge on the effects of online meetings on academic performance. The findings of this study can inform educational institutions on the benefits of incorporating online meetings into their teaching methods. The study can also help educational institutions identify the most effective online meeting platforms to enhance students' learning experience and improve their academic performance.

Moreover, the study's findings can inform policy decisions related to online learning in the education sector. The study's results can help policymakers understand the benefits of online meetings and develop policies that promote the integration of technology in education

Research Methodology

This study adopted Survey as its research design. According to Mohammed, *et al* (2024), "Survey research means collecting information about a group of people asking them questions and analyzing the results".

Research Population

The population of this study consisted of all the five accredited colleges of education in Gombe State College. The population comprises one federal, two state and two privately owned institutions (colleges of education).

Sample Size/Sampling Technique

Although no sampling will be done as all the five colleges were used, the sample size for each college was determined using Research Advisor 2006. A simple Random Sampling Technique was employed to determine the sample (respondents) from each college. According to Julia and Saul (2023), in Simple Random Sampling Technique, each member of a population has an equal chance of being chosen through the use of an unbiased selection method.

A total of 500 respondents were selected: 200 from FCE (T) Gombe, 100 from Gombe State College of Education and Legal Studies Nafada, 80 from COE Billiri, 60 from Garba Zagada-Zagada College of Education, and 60 from JIBWIS College of Education Gombe.

Research Instrument

A well-constructed and self-developed questionnaire named: Effects of Google and Webex Meets Applications on Students' Academic Performance (EGWMASAP) will be administered to solicit the required information from the respondents. The questionnaire will be divided into two sections (A and B). Section A will be for the collection of information on personal data of respondents while section B will consist of questions that will produce responses from the respondents based on the research objectives. The Instrument will be validated by an expert in Test and Measurement. Oral interviews will be conducted by the researchers with the help of research assistants to source more primary data.

Method of Data Analysis

The study employed the use of quantitative data analysis method. The data was collected from the completed and returned questionnaires items which were thoroughly checked, presented, analyzed, and quantified in analytical form using statistical tables. The use of table also helped the researchers in presenting large amount of information in a small and convenient space, thus, providing opportunity to understand and interpret the data without much stress. Frequency counts and mean scores were applied in analyzing the collected data.

Data Presentation and Analysis

A total of five hundred and fifty (500) questionnaires were administered in the five (5) colleges of education. Out of the 500 copies distributed, four hundred and twenty-one (421) were returned but only four hundred and five (405) were properly filled. Hence, this analysis was based on the 405 copies.

The collected data are presented on tables and analyzed using mean scores. Each research question acceptance level for mean was 2.50, such that a mean rating on any item less than 2.5 was regarded as rejected.

Results

Research Question 1

To what extent Google and Webex Meets applications are used in the classroom setting in Colleges of Education in Gombe State?

Data relevant to this research question were collected using the first ten questions of the questionnaire. The summary of the data is presented on table 1.

Table 1: Google and Webex Meets Applications in Classroom Setting

S/N	Question Item	1	2	3	4		Remarks
1	How much do you know about Google Meet or Webex Meet applications?	nothing	Little	Know well	Know Very well		-
		37	89	198	81	2.37	
2	Have you ever used Google Meet or Webex Meet applications in a classroom setting?	Never used	Rarely	Often	always		-
		282	65	38	20	1.26	
3	Have you ever communicated via Google Meet or Webex Meet application?	Never used	Rarely	Often	always		-
		287	72	34	12	1.20	
4	There are technical difficulties or limitations in the use of Google Meet or Webex Meet applications in the classroom.	Strongly Disagree	Disagree	disagree	Strongly disagreed		-
		145	180	64	16	1.62	
5	How satisfied are you with the use of Google Meet or Webex Meet applications in the classroom?	Very dissatisfied	Somewhat dissatisfied	somewhat satisfied	Very satisfied		-
		135	171	65	34	1.67	
6	Using Google Meet or Webex Meet	Strongly Disagree	Disagree	disagree	Strongly disagreed		-

#	Question						
	applications has increased your engagement with course materials.	140	169	67	29	1.70	
7	Using Google Meet or Webex Meet applications has improved your communication with your instructor/student and classmates?	Strongly Disagree	Disagree	disagree	Strongly disagreed		-
		147	168	54	36	1.70	
8	There are differences in the usage of Google Meet and Webex Meet applications between different courses or departments in your college of education.	Strongly Disagree	Disagree	disagree	Strongly disagreed		-
		117	148	86	54	1.95	
9	Do you prefer using Google Meet and Webex Meet applications in the classroom, or do you prefer traditional face-to-face interactions?	Prefer face-to-face interactions	Slightly Prefer face-to-face interactions	Slightly prefer applications	Prefer application		-
		122	91	117	75	2.03	
10	How likely are you to continue using Google Meet or Webex Meet applications in the classroom upon receiving training?	Very unlikely	Somewhat unlikely	Somewhat likely	Very likely	.	+
		50	54	168	133	2.76	

Source: Field Survey, 2024

Research Question 2

What are the strengths and weaknesses of Google and Webex Meets applications in facilitating student learning outcomes in Colleges of Education in Gombe State?

Data relevant to this research question were collected using questions 11 to 15 of the questionnaire.

The summary of the data is presented on table 2.

Table 2: Google and Webex Meets Applications in Facilitating Students Learning Outcomes

S/N	Question Item	1	2	3	4		Remarks
11	How can you rate the strengths of Google Meet and Webex Meet applications in the classroom usage?	No strengths	Little strengths	Significant strengths	Exceptional strengths		+
		83	93	128	101	2.61	
12	How can you rate the weaknesses of using Google Meet and Webex Meet applications in the classroom?	No weaknesses	Few weaknesses	Many weaknesses	Much weaknesses		-
		128	146	65	66	2.17	
13	In what ways do you think Google Meet or Webex Meet applications facilitate learning outcomes in your courses?	Not at all	To a small extent	To a great extent	Completely		+
		61	72	171	101	2.77	
14	In what ways do you think Google Meet or Webex Meet applications hinder learning outcomes in your courses	Not at all	To a small extent	To a great extent	Completely		-
		194	127	49	35	1.81	
15	How satisfied are you with the overall use of Google Meet or Webex Meet applications in your courses	Very dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Very satisfied		
		114	183	84	24	2.04	-

Field Survey,2024

Research Question 3

What is the impact of Google and Webex Meets applications on student academic performance in Colleges of Education in Gombe State?

Data relevant to this research question were collected using questions 16 to 20 of the questionnaire. The summary of the data is presented on table 3.

Table 3: Google and Webex Meets Applications on Students' Academic Performance

S/N	Question Item	1	2	3	4		Remarks
16	How has the use of Google Meet or Webex Meet applications impacted your academic performance?	Negatively impacted	Slightly negatively impacted	Slightly positively impacted	Positively impacted		+
		62	83	137	123	2.58	
17	How can you rate changes in your grades since the use of Google Meet or Webex Meet applications in your courses?	Decreased	Slightly decreased	Slightly increased	Increased		+
		35	41	212	117	2.57	
18	Do you think the use of Google Meet or Webex Meet applications has improved your understanding of course materials?	Not at all	To a small extent	To a great extent	Completely		+
		49	69	177	110	2.86	
19	Google Meet and Webex Meet applications have positively impacted students' academic performance.e	Strongly disagree	Disagree	Agree	Strongly agree		+
		64	108	172	61	3.01	
20	How satisfied are you with the overall impact of Google Meet or Webex Meet applications on students' academic performance?	Very dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Very satisfied		
		55	117	175	58	2.79	+

Field Survey, 2024

Major Findings of the Study

From the analyses of the responses in the tables 1-3 above, the findings of the study are summarized below

1. Google and Webex Meets applications are not in use in the classroom setting at Colleges of Education in Gombe State
2. The strengths of Google and Webex Meets applications in facilitating students' learning outcomes in Colleges of Education in Gombe State supersedes the weaknesses of the applications
3. Google and Webex Meets applications have greatly impacted (where an when used) on students' academic performance in Colleges of Education of Gombe State

Discussion of Findings

This research work focused on examining the effects of Google and Webex Meets applications on Gombe State Colleges of Education Students' Academic Performance. To answer the research questions earlier formulated, the study employed the use of a questionnaire which consists of twenty (20) items eliciting information from respondents.

For research question one, the outcome (as presented in Table 1) shows that Google and Webex Meets applications are not in use in the classroom setting at Colleges of Education in Gombe State. The reason behind that can be ascribed to lack (or little) knowledge of the applications by both the teachers and students. The results also vindicated the willingness to use the applications upon receiving training. This goes parallel with Khan (2020 who said "The use of Google and Webex Meets applications has become essential in ensuring that students continue their education during the pandemic".

For research question two, table 2 presented the analyses of the respondents' responses. It is clear from the table that, the strengths of Google and Webex Meets applications in facilitating students' learning outcomes in Colleges of Education in Gombe State supersedes the weaknesses of the applications. This is in agreement with the findings of Bergin & Reilly (2018) and Barron, Burton, & Yamasaki, (2020).

Table 3 represents the responses of responded based on research question three. From the table, Google and Webex Meets applications have greatly impacted (where and when used) students' academic performance in Colleges of Education of Gombe State. This finding is in line with that of Kirschner and van Merriënboer (2013) Wang as well as Chen (2018).

Conclusion

Based on the findings of this research, we conclude that Google and Webex Meets applications will have positive impacts on Gombe State Colleges of Education Students' Academic Performance when adopted.

Recommendations

Based on the findings made and the conclusions drawn, the following recommendations are hereby made:

1. Training should be given to teachers of colleges of education on how to effectively use Google Meet and Webex Meet in teaching and assessments.
2. An enabling environment for the implementation of this e-learning should be provided by the government and all other stakeholders. Internet facilities and, computer pools, power, should be adequate in colleges.
3. Teachers and students should be encouraged to embrace any technology that comes and make effective utilization of it.

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