Innovative Strategies and Public Basic Secondary School Students' Retention in Social Science Subjects in Calabar Education Zone of Cross River State, Nigeria

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Abstract

This study, adopted survey research design, to investigate the relationship between innovative strategies and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone of Cross River State, Nigeria. Four research questions and four hypotheses guided the study. The population of the study is public basic secondary school students in Calabar Education Zone. The researchers adopt a simple random sampling technique to select one hundred and twenty (120) students as sample for the study. The instruments used for data collection were a questionnaire tagged "Innovative Strategies Questionnaire (ISQ)" and Social Studies Retention Test. Cronbach Alpha reliability method was used in computing the reliability coefficients which ranged from 0.69 to 0.76. To test the hypotheses, Pearson Product Moment Correlation statistical analysis was employed at the 0.05 level of significance. The result revealed that there was a significant relationship between the use of Google Meet, Zoom Cloud, Google Forms, spreadsheet and basic secondary school students' retention in Social Science subjects in the study area. Based on the findings, it was recommended, among others, that the Ministry of Education should promote the use of innovative strategies used in this study in the teaching and learning of Social Science subjects.

Keywords: innovative, strategies, students, retention, schools

Introduction

Education is the bedrock of national development because good education has the potentials of changing the quality of life of the people. Through education, knowledge of the world is gained which aid in transforming the world. Since the outbreak of COVID-19 pandemic, several innovative learning strategies and procedures have been tried and evaluated to guarantee that learners understand the lesson (Perienen, 2020). Some innovative learning platforms are available for use during teaching, depending on the sort of internet connection the teachers and learners have. Google Classroom, Google Forms, Google Meet, Google cloud, and spreadsheet are some of the innovative learning strategies used in activities, handouts, modules, and other chores learners require for learning (John, 2020). The study of Aznam et al. (2020) find that the integration of Google Meet's media-assisted lecture strategies produces a unique learning experience for achieving learning goals such as knowledge building and learners' learning outcomes while learning from home. The Google Meet interface allows users to meet face to face directly and effectively, while also being incredibly light and fast. Management is simple and may be followed by a large number of people (Singh & Soumya, 2020). Learners can communicate more with their friends and verbally expose and explore their speaking abilities when they use Google Meet video conferencing (Fakhruddin, 2019).

Among innovative learning strategies used in the teaching and learning of Social Science subjects is ZOOM app; it has appeared to be the most popularly used Video Broadcasting Tool (VBT) in the teaching and learning of Social Science courses in higher education institutions (HEIs) in Nigeria following the outbreak of COVID-19. ZOOM app is an American Communications Technology Company headquartered in San Jose, California. ZOOM app allows students and teachers to share the whiteboard that can be used to solve, write the notes, and draw or illustrate problems related to Social Science subjects; ask questions during the teaching and learning process by raising the hand; and share the screen to broadcast the notes (UNESCO Institute for Statistics [UIS], 2020).

Furthermore, in the real classroom setting, teachers find it complicated to assess students' performance and retention due to the time, energy, and other obstacles. The process of assessment is sometimes considered as overwhelming activities, especially when it comes to the large classes. The heavy workload in assessing the students are a common phenomenon that is felt by the teachers (Lacaster & Clarke, 2017). Technically, assessment is traditionally carried out in paper-based system. Yet, due to the rapid change of technology in the language classroom, the traditional assessment shifts to the technology-based system. One of the widely used innovative strategy for learning assessment is Google Forms with its quiz feature.

Further still, another innovative strategy used in Social Science instruction is spreadsheet. Spreadsheets have been around since the early 1980s and, although not designed as an educational tool, have been used in Social Science subjects' classrooms since they first became available. One way that seems to help students move from a non- Social Science concepts to a Social Science approach is through work with spreadsheets. This is because, in using such a software, compared to using paper and pencil, students appear to be able to learn more readily to express relationships using the symbolic language in the spreadsheet environment. This is a key to making progress in Social Science subjects.

Conventional instructional strategy does not allow for active participation and interaction of students in the teaching-learning process. As a result, poor retention becomes evident. The concept of retention, according to Iwuji (2012), is the remembering of a fact or idea after a passage of time. Meaningful learning is deemed to have taken place if after a passage of time, the student can recall and apply information which he or she has been taught previously. This occurs when learning is coded into memory. Thus, the appropriate coding of incoming information provides the index that may be consulted so that retention takes place without an elaborate search in the memory lane. Hence, the study sought to assess innovative strategies and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone of Cross River State, Nigeria.

Several studies have been carried out on influence of the use of Google Meet application on teaching and learning with its significant effect on students' academic retention. Septantiningtyas et al. (2021) carried out a quantitative study aimed at finding the effect of the Google meet application on students' interest/retention in the University of Nurul Jadid Paiton Probolinggo; one class was used for experimental treatments and one other class as a control class. The highest interval of interest in learning was found in the experimental class with a score of 110 and the lowest with a score of 94 with an average interval of 101.84. While the control class only had the highest score of 106 and the lowest score of 70 with an average interval of 89.52. The finding revealed that there is a significant difference between the experimental class conducted by learning using the Google Meet application and the control class where the learning process is carried out directly (face to face).

Agung et al. (2020) conducted a study to investigate the effect of the Google Meet media-assisted lecture method on building student knowledge and learning outcomes while learning from home. A quasi-experimental in the form of pretest-posttest control group design was used in the study. The sample was 96 first-year students (70 girls and 26 boys; aged 18-20) at the University of Trunojoyo Madura in the academic year 2019/2020. The results of the two-way MANOVA revealed that students taught using

the Google Meet media-assisted lecture method have posttest scores building knowledge and learning outcomes higher than comparison groups.

Several researchers have carried out studies on the impact of Zoom cloud software on teaching and learning in schools. Among them is a study by Nurwati et al. (2021) aimed at determining the effect of implementing online learning with the Zoom platform on students' learning outcomes in Telkom Makassar. Data were collected utilizing test. The data analysis technique used was descriptive and inferential statistical analysis techniques. The results of inferential and descriptive statistical analysis revealed that application of the online learning through Zoom has an effect on the learning outcomes of class VIII students of SMP Telkom Makassar.

In another study, Hidayat et al. (2022) conducted a study aimed to describe the effectiveness of using Zoom Meetings in the learning process at the selected elementary schools in Madura. A sample of 160 students selected from schools participated in the study by filling out questionnaire distributed online. Data was collected using a five-item Likert scale survey. Based on the results of data analysis from filling in student questionnaire, it was concluded that the online learning system using Zoom in elementary schools was effectively used, and aided students' retention in the study area.

Sari et al. (2020) conducted a study to investigate the positive features and limitations of Google forms as an Essential for Living (EFL) assessment tool. The participants were 240 non-English major students. It was concluded that the positive features of Google forms as an EFL assessment tool were in terms of efficiency in time and energy, conformity to the students' characteristics, less cost, detailed result, and helpful features. In other words, the significant implication is that the use of Google Forms as an assessment tool can alleviate the lecturer's workload and influence students' academic achievement.

Google form as an evaluation tool was also used in senior high school level in Indonesia (Thohir & Muslimah, 2020). Data of this research were from 160 students of class X at SMA Muhammadiyah Surabaya collected by employing questionnaire and interviews. The finding revealed that Google form can be considered by teachers as an alternative to make online questions and as learning evaluation instruments. Using Google Form in teaching and learning process also gives benefits for the students because students can view their scores once they submit their answers.

Spreadsheet software, most prominently Microsoft Excel, provides an interactive matrix of cells, used primarily to perform calculations on data – though both numbers and text can be input. Several researchers have conducted studies on the effectiveness of Spreadsheet software on students' learning outcome; Turner (2022) conducted an exploratory research study to examine the effects of spreadsheet on learning instruction.

A total of eight teachers engaged in approximately 20 hours of total workshop time, where some participants attended an online workshop and another group participated in an in-person offering. A comparison of pre-intervention and post-intervention survey responses indicated that the active uses of spreadsheets for Mathematics instruction workshop effectively increased participants' scores on the instructional technology adoption survey.

Moreover, Benning and Agyei (2016) used a quasi-experiment design to evaluate the effect of using spreadsheet instructional method as compared to a conventional method on students' performance in quadratic functions. Interviews and teacher made achievement test were used to collect data from senior high school students in Ghana. Data was analyzed using paired sample t-test and analysis of covariance for the achievement test whereas interviews were transcribed and coded using data reduction technique. The study showed that the spreadsheet instructional method served a useful pedagogical approach, impacted more on the students' performance and has the potential of improving teaching and learning mathematics in Senior High schools.

Among the reviews above, no study has been carried out in Calabar Education Zone of Cross River State, Nigeria on the influence of any of the targeted online learning software on teaching and students' learning. This serves as a justification for the present research and the gap it seeks to fill.

Purpose of the study
The aim of this study is to assess innovative strategies and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone of Cross River State, Nigeria. Specifically, the study seeks to:
   i.   Examine the extent to which the use of Google Meet application relates with public basic secondary school students' retention in Social Science subjects.
   ii.   Examine the relationship between the use of Zoom Cloud application and public basic secondary school students' retention in Social Science subjects.
  iii.   Determine the relationship between the use of Google Forms application and public basic secondary school students' retention in Social Science subjects.
   iv.   Assess the relationship between the use of spreadsheet application and public basic secondary school students' retention in Social Science subjects.

Research questions
The study sought to provide answers to the following research questions:
   i.   What is the relationship between Google Meet application and public basic secondary school students' retention in Social Science subjects?
   ii.   What is the relationship between Zoom Cloud application and public basic secondary school students' retention in Social Science subjects?

iii.   What is the relationship between the use of Google Forms application and public basic secondary school students' retention in Social Science subjects?

iv.   What is the relationship between the use of spreadsheet application and public basic secondary school students' retention in Social Science Subjects?

Hypotheses

To guide this research, three hypotheses were formulated as follows:

Ho1: There is no significant relationship between the use of Google Meet application and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone.

Ho2: There is no significant relationship between the use of Zoom Cloud application and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone.

Ho3: There is no significant relationship between the use of Google Forms application and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone.

Ho4: There is no significant relationship between the use of Spreadsheet application and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone.

Methodology

A survey research design was used in this study. Population of the study comprised 75 public secondary schools in Calabar Education Zone having 4,682 basic secondary school students (JSS II) as contain in Cross River Secondary School Education Board, Statistics Division Unit (CROSSEB, 2023). The education zone consists of seven (7) Local Government Areas including Biase, Akamkpa, Odukpani, Bakassi, Akpabuyo, Calabar Municipality and Calabar South.

The researchers adopted a simple random sampling technique to select one hundred and twenty (120) students as sample for the study. Two instruments were used to collect data. First was an instrument tagged "Innovative Strategies Questionnaire (ISQ)" and the other was 'Social Studies Retention Test (SSRT)' to assess students' retention. The questionnaire was a twenty (20) item structured questionnaire which consists of two sections (A and B). Section A contained the name of the schools of the respondents while section B elicited information on the variables of the study such as the use of Google Meet, Zoom Cloud, Google Forms and the use of spreadsheet. The instrument is modelled on a four-point rating scale with the following weights as assigned below: Strongly Agree (SA) (4), Agree (A) (3), Disagree (D) (2), and Strongly Disagree (SD) (1).

To test the validity of the instrument, the copies of the questionnaire were given to two experts in Test and Measurement unit of Department of Educational Foundations, University of Calabar to ascertain contents and face validity. Corrections were made and copies were admitted to the respondents. Cronbach Alpha reliability method was used in computing the reliability coefficients which ranged from 0.69 to 0.76.

A total of 120 copies of the questionnaire were given to respondents in the 10 selected public secondary schools. These copies of the questionnaire were administered and collected back from the respondents with the assistance of three trained research assistants. These trained research assistants were briefed on the purpose of the exercise and trained on how to guide the respondents in filling the questionnaire. The researchers collected all the completed copies of the questionnaire from the respondents on the spot to avoid loss of instrument and by implication, loss of vital information. Kuder Richardson (KR-20) reliability method was used in computing the reliability coefficient of the 'SSRT' giving index of 0.78. To test the hypotheses, Pearson Product Moment Correlation statistical analysis was employed at the 0.05 level of significance.

Presentation of results
Data collected through the copies of the questionnaire administered were analyzed using Pearson Product Moment Correlation Analysis to test the research hypotheses formulated.

Ho1: There is no significant relationship between the use of Google Meet application and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone.

Pearson Product Moment Correlation Analysis was employed to test data collected with respect to this hypothesis. This is because both the dependent and independent variables that form this hypothesis were measured continuously. The hypothesis was tested at 0.05 level of significance. The summary of result is as presented in table 1.

Table 1: Pearson product moment correlation coefficient analysis of the relationship between the use of Google Meet application and public basic secondary school students' retention in Social Science subjects (N = 120)

Variable	Mean	sD	r-value
Use of Google Meet application	16.87	4.80	
			0.76*
Students' retention	13.63	3.73	

*Significant at .05, critical r = 0.195, df = 118

The summary of results presented in table 1 shows that the calculated r-value of 0.76 is greater than the tabulated r-value of 0.195 at 0.05 level of significance and 118 degree of freedom. On this note, the null hypothesis was rejected while the alternate hypothesis was upheld. This implies that there was a significant relationship between the use of Google Meet application and public basic secondary school students' retention in Social Science subjects in the study area.

Ho2: There is no significant relationship between the use of Zoom Cloud application and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone.

Pearson Product Moment Correlation Analysis was employed to test data collected in respect of this hypothesis. The hypothesis was tested at 0.05 level of significance. The summary of result is as presented in table 2.

Table 2: Pearson product moment correlation coefficient analysis of the relationship between the use of Zoom Cloud application and public basic secondary school students' retention in Social Science subjects (N = 120)

Variable	Mean	sD	r-value
Use of Zoom Cloud application	17.75	4.31	
			0.73^{*}
Students' retention	13.63	3.73	

*Significant at .05, critical r = 0.195, df = 118

The summary of results presented in table 2 shows that the calculated r-value of 0.73 is greater than the tabulated r-value of 0.195 at 0.05 level of significance and 118 degree of freedom. On this note, the null hypothesis was rejected while the alternate hypothesis was accepted. This implies that there was significant relationship between the use of Zoom Cloud application and public basic secondary school students' retention in Social Science subjects in the study area.

Ho3: There is no significant relationship between the use of Google Forms application and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone.

Pearson Product Moment Correlation Analysis was employed to test data collected in respect to this hypothesis. The hypothesis was tested at 0.05 level of significance. The summary of result is as presented in table 3.

Table 3: Pearson product moment correlation coefficient analysis of the relationship between the use of Google Forms application and public basic secondary school students' retention in Social Science subjects (N = 120)

Variable	Mean	sD	r-value
Use of Google forms application	19.43	4.28	
			0.69^{*}
Students' retention	13.63	3.73	

*Significant at .05, critical r = 0.195, df = 118

The summary of results presented in Table 3 shows that the calculated r-value of 0.69 is greater than the tabulated r-value of 0.195 at 0.05 level of significance and 118 degree of freedom. On this note, the null hypothesis was rejected while the alternate hypothesis was accepted. This implies that there was significant relationship between the use of Google Forms application and public basic secondary school students' retention in Social Science subjects in the study area.

Ho4: There is no significant relationship between the use of Spreadsheet application and public basic secondary school students' retention in Social Science subjects in Calabar Education Zone.

Pearson Product Moment Correlation Analysis was employed to test data collected in respect of this hypothesis. The hypothesis was tested at 0.05 level of significance. The summary of result is as presented in table 4.

Table 4: Pearson product moment correlation coefficient analysis of the relationship between the use of Spreadsheet application and public basic secondary school students' retention in Social Science subjects (N = 120)

Variable	Mean	sD	r-value
Use of Spreadsheet application	18.82	4.74	
			0.76^{*}
Students' retention	13.63	3.73	

*Significant at .05, critical r = 0.195, df = 118

The summary of results presented in Table 4 shows that the calculated r-value of 0.76 is greater than the tabulated r-value of 0.195 at 0.05 level of significance and 118 degree of freedom. On this note, the null hypothesis was rejected while the alternate hypothesis was accepted. This implies that there was significant relationship between the use of Spreadsheet application and public basic secondary school students' retention in Social Science subjects in the study area.

Discussion of the findings
Findings from hypothesis one indicated that there was a significant relationship between the use of Google Meet application and public basic secondary school students' retention in Social Science subjects in the study area. The finding from the analysis of hypothesis one agrees with the earlier position of Septantiningty as et al. (2021) who revealed that there is a significant difference between the experimental class conducted using the Google Meet application and the control class where the learning process was carried out directly (face to face). The implication of the finding was that learning using the Google meet application has influence on students' interest in learning.

The summary of results of hypothesis two presented in table 2 shows that there was significant relationship between the use of Zoom Cloud application and public basic secondary school students' retention in Social Science subjects in the study area. The finding from the analysis of hypothesis two is in line with the earlier position of Nurwati et al. (2021) who conducted a study aimed at determining the effect of implementing online learning with the Zoom platform on students' learning outcomes in Telkom Makassar. The results of inferential and descriptive statistical analysis revealed that application of the online learning through Zoom has an effect on the learning outcomes of students.

The summary of results of hypothesis three presented in table 3 shows that there was significant relationship between the use of Google Forms application and public basic secondary school students' retention in Social Science subjects in the study area. The finding from the analysis of hypothesis three was in line with the earlier position of Thohir and Muslimah (2020) who carried out a study and found that there was significant relationship between the use of Google Forms application and public basic secondary school students' retention in learning in the study area.

The summary of results of hypothesis four presented in Table 4 shows that there was significant relationship between the use of Spreadsheet application and public basic secondary school students' retention in Social Science subjects in the study area. The finding from the analysis of hypothesis four agrees with the earlier finding of Benning

and Agyei (2016) who conducted a quasi-experimental research and found that the spreadsheet instructional method served as useful pedagogical approach, impacted more on the students' performance and has the potential of improving teaching and learning process in Senior High schools.

Conclusion

Students of this 21st century like learning and interacting through innovative ways; this includes interactions between students-students, teachers-students, and even teachers-teachers. The study concludes that there was significant relationship between the use of Google Meet application, Zoom Cloud application, the use of Google Forms application, spreadsheet application and basic secondary school students' retention in Social Science subjects in the study area.

Recommendations

Based on the findings of the study, it was recommended that the Ministry of Education through Secondary School Education Board should promote the use of innovative strategies used in this study in the learning of Social Science subjects.

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