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Google Classroom and Students' Performance in Reading Comprehension in Ondo State, Nigeria

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Abstract. Reading is significant for learning; however, many Nigerian secondary students struggle. In developed nations, teachers engage their students via different online learning apps to complement classroom instruction and improve this skill. However, the same cannot be said for Nigeria, as no established online learning Apps exist. This study, therefore, investigated the effects of Google Classroom on secondary school students' reading comprehension in Ondo State, Nigeria. A quasi-experimental and descriptive research design was adopted for the study. The study population was eighty Senior Secondary School students who were purposefully selected from two secondary schools in Ondo State. The research instruments were the 2022 English Language WAEC questions and the Students' Attitudes Questionnaire (SAQ) r = 0.85. Two research questions were raised, and two research hypotheses were tested. The study's findings revealed that students taught reading comprehension using Google Classroom performed better (`$\bar{X}$ = 29.98) than those taught using the conventional method (`$\bar{X}$ =18.88). Similarly, the study's findings revealed that students held a positive attitude toward using Google Classroom for reading comprehension. On the basis of these findings, among others, the study recommended that English language teachers should explore the affordances of Google Classroom to teach reading. Furthermore, schools should allow the controlled use of phones, while the government should organize training for teachers on how to use Google Classroom effectively.

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INTRODUCTION

Reading is a critical tool for learning, and it is significant across the curriculum. Aside from being a tool for learning, reading empowers people, and this empowerment is germane to national and global development. Reading serves as the foundation upon which a child's educational journey is built. Just as a compass guides a navigator, reading directs students in their continuous pursuit of knowledge (Emmanuel, 2023). It follows, therefore, that any student who cannot read has failed to acquire the necessary skills required to function and navigate the evolving socio-technical ecology.

Despite the importance of reading in contemporary society, studies show that a significant number of Nigerian secondary school students are still deficient in reading skills. Hence, they consistently fail English language external examinations such as the Senior School Certificate Examination (SSCE), which is a pre-requisite for admission to tertiary education in Nigeria (Ogunyemi & Emmanuel, 2020). The outbreak of Covid-19 further compounded the situation in that educational activities were grounded, and many students were out of school. To ensure

learners do not lose out, some developed countries that have invested in their ICT transitioned from offline to online classrooms. However, the situation was not the same in Nigeria, as learning came to a standstill in many parts of the country. It is more disheartening that many senior secondary school students in Nigeria possess internet-enabled devices, primarily mobile phones, that could be used to support online learning. Unfortunately, these devices are often used for non-academic purposes, such as watching explicit content or engaging in betting activities. The potential for these devices to be harnessed for educational purposes remains unexploited mainly, as many Nigerian teachers have not fully incorporated digital tools into their teaching strategies. It is believed that when teachers engage their students via some online-based tools, teaching may go uninterrupted no matter the prevailing global challenges. Some of the online-based tools used by many developed nations include Schoology, Moodle, Canvas, and Google Classroom.

Google Classroom, one of the popular video conferencing apps, was introduced in 2014. It is a technological and educational advancement developed by Google Applications for Education (GAFE). According to Quiño (2022), it provides an instructional medium for students and teachers, supports their learning, and contributes to the delivery of instructions in schools. Google Classroom could be used to teach every aspect of language learning through its interactive features. In Google Classroom, students can participate in reading classes without being constrained by geographical distance. Moreover, it delivers a superb user interface, high-caliber video streaming, simplicity in organizing and engaging in meetings, and empowers the user to control access to the virtual classroom. According to Perez (2015), Google Classroom is mainly instrumental for students who experience reading anxiety, as it can be a relief as learners can ask questions and make comments without feeling shy in the presence of other students. When students use Google Classroom technology, the reading comprehension of students is expected to be more efficient, effective, and maximum. In a typical Google Classroom, teachers may track students' knowledge of a passage along the literal, inferential, evaluative, and critical levels by asking them to react to specific questions based on the passage they have read.

However, the effectiveness of Google Classroom is not solely dependent on the instructional quality but is significantly influenced by students' attitudes towards them. Students' attitudes, according to van der Kleij and Lipnevich (2021), may substantially influence students' learning behaviors, which in turn may affect their academic outcomes. When students perceive a learning method and platform as practical and relevant to their personal and educational needs, they are more likely to engage deeply with the material, which will lead to enhanced learning outcomes. This concept is rooted in self-efficacy theory, which states that students' beliefs about their ability to succeed in specific tasks can directly influence their motivation and persistence (Bandura, 1986). On the other hand, if students view an instructional strategy as irrelevant, overly challenging, or not aligned with their preferred learning styles, their engagement levels are likely to drop, which will result in poorer learning outcomes (Al-Qahtani & Higgins, 2013). Negative attitudes towards these tools can manifest as resistance to using them, low levels of interaction, and, ultimately, reduced academic performance.

While several researchers have explored the use of online learning Apps for virtual teaching, none have specifically investigated their application for teaching reading comprehension in Nigeria. For instance, Oguguo et al. (2021) examined the influence of Moodle App on students' academic performance, finding that LMS users outperformed those taught with the CAI4ME Package. However, unlike the current study, their research did not focus on reading comprehension among secondary school students. Similarly, Abdullah, Saimi, and Mohamad (2022) investigated Google Classroom as a Virtual Learning Environment for school teachers, while Daar et al. (2023) studied Online Learning App usage in English learning for midwifery

students on Flores Island during the Covid-19 pandemic. Despite acknowledging benefits like discussions and Q&A forums, students reported challenges with internet stability, data limitations, and LMS proficiency. This differs from the current research, which focuses specifically on Google Classroom's effectiveness in teaching reading comprehension.

In a related study, Ramly and Latiff (2021) assessed secondary school teachers' perceptions of Google Classroom's effectiveness during the Movement Control Order (MCO). They found no significant efficacy, attributing this to issues such as limited technical expertise and connectivity problems. Similarly, Asyiqin, Jismu, and Syah (2022) examined Google Classroom for Listening Comprehension among Universitas Riau students, a focus distinct from the present study's emphasis on reading comprehension. Finally, Al Yakin et al. (2022) investigated students' motivation and attitudes toward Google Classroom, finding that its simplicity and accessibility fostered enthusiasm, supporting its role as a viable virtual classroom tool. Therefore, this study examines the effectiveness of Google Classroom on reading comprehension among Senior Secondary School students in Ondo State, Nigeria. The following research questions were raised for the study consist of (1) what is the effect of Google Classroom treatment on the reading comprehension of senior secondary school students' Academic performance in Reading comprehension in Ondo State? And (2) what are the perceptions of secondary school students towards the use of Google Classroom for teaching reading comprehension in Ondo State?.

This study was also guided by the following null hypotheses. Those are seen on the list below.

1. There will be no significant difference in the performance of students taught reading comprehension using the Google Classroom App and the conventional method,
2. There will be no significant relationship between students' attitudes toward the use of Google Classroom App and their reading comprehension scores

METHOD

A quasi-experimental research design was adopted to address research question one, which sought to find out the effect of using Google Classroom for reading comprehension. The design involved a pre-test and post-test with students assigned to experimental and control groups. Students in the experimental group were taught reading comprehension using Google Classroom, while those in the control group were taught reading comprehension via the conventional mode. Students were purposely assigned to each group after stratified sampling based on the availability of internet-enabled mobile devices in the schools. Students in the experimental group accessed and completed reading lessons and assignments via Google Classroom, while the control group followed the conventional classroom mode. Similarly, a descriptive research design was employed to examine students' attitudes towards using Google Classroom, which addressed research question 2. The population of the study comprises all Senior Secondary School Students II in Ondo State, and a stratified sampling technique was used to select eighty secondary school students from four (4) schools in Akoko South West, Ondo State, Nigeria, based on the schools' ability to provide internet-enabled mobile devices. Two data collection tools were employed in the study: the Reading Comprehension Section of the WAEC English Language (2022) exam, a standardized and validated assessment, and a self-structured questionnaire titled Student Attitudes Questionnaire (SAQ) developed specifically to measure students' attitudes toward Google Classroom. The WAEC Reading Comprehension section comprised 50 multiple-choice and essay questions designed to assess students' ability to understand and analyze written texts. The exam, which has been previously validated in Nigerian education contexts, served as a reliable measure of reading comprehension skills. The SAQ consisted of 5 items on a four-point Likert scale with

responses ranging from "Strongly Agree" to "Strongly Disagree." Reliability testing of the SAQ yielded a Cronbach's alpha coefficient of 0.76, indicating good internal consistency. The data collection process involved the cooperation of regular English language teachers in both schools. Teachers assisted with administering the pre-tests and post-tests, which used the same set of questions, and supervised the administration of the SAQ after the treatment. Before the treatment began, the researcher guided students in the experimental group through the process of setting up Gmail accounts, downloading the Google Classroom app from the Play Store/App Store, and navigating the platform. This ensured that all students were familiar with the platform's features before instruction commenced. The collected data were marked using the WAEC marking standard, and the data were further analyzed descriptively and inferentially. Descriptive statistics of mean and standard deviation were used to answer the research questions, while the inferential statistics of Pearson Product-Moment Correlation (PPMC) and independent samples t-tests were used to test the study's hypotheses at a significance level of 0.05. The pre-test scores were used as covariates for the post-test scores to control for any baseline differences between the experimental and control groups.

RESULT AND DISCUSSION

1. Research Question One: What are the effects of Google Classroom Treatment on the Reading Comprehension of Senior Secondary School Students in Ondo State?

Table 1 presents the descriptive statistics for the pre-test and post-test scores of students in the experimental group (taught using Google Classroom) and the control group (taught using conventional methods). The results indicate that students in the experimental group showed significant improvement in their reading comprehension after the treatment.

Table 1. Descriptive Statistics for Pre-test and Post-test Scores in Reading Comprehension

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-test	40	5.00	30.00	18.8750	10.03120
Post-test	40	15.00	50.00	29.9750	11.81587
Valid N (listwise)	40				

The results show that the mean post-test score of students in the LMS group (M = 29.98, SD = 11.82) was higher than the pre-test score (M = 18.88, SD = 10.03), suggesting that the use of Google Classroom had a positive effect on students' reading comprehension.

2. Research Question Two: What are the attitudes of secondary school students towards the use of Google Classroom for Reading Comprehension in Ondo State?

Table 2 shows students' attitudes towards the use of Google Classroom for reading comprehension. Findings revealed that students expressed positive attitudes toward the use of the platform, with mean scores on various items ranging from 2.60 to 3.20, respectively.

Table 2. Perceptions of Senior Secondary School Students Towards Google Classroom for Reading Comprehension

	N	Minimum	Maximum	Mean	Std. Deviation	Decision
I enjoyed being taught reading comprehension using Google Classroom than the traditional classroom	40	1.00	4.00	2.60	1.18	Accept
Google Classroom makes reading easy for me	40	2.00	4.00	2.80	.76	Accept
Through Google Classroom, I could read without being distracted by my friends	40	3.00	4.00	3.20	.41	Accept
Google Classroom makes me an independent reader	40	3.00	3.00	3.00	.00	Accept
Google Classroom is the best platform to be taught reading	40	3.00	4.00	3.20	.40	Accept
Valid N (listwise)	40					

The findings suggest that students found Google Classroom to be an effective tool for learning reading comprehension, as shown by their positive responses to the items.

3. Testing of Research Hypotheses

Research Hypothesis 1: There will be no significant difference between the performance of students taught reading comprehension using Google Classroom and the conventional classes.

A paired samples t-test compared the reading comprehension scores of students in the control and experimental groups. The results, as shown in Table 3, indicate a statistically significant difference in performance between the two groups, with the Google classroom group ($M = 29.98$, $SD = 11.82$) outperforming the control group ($M = 18.88$, $SD = 10.03$), $t(78) = 4.52$, $p < .001$. This suggests that students taught with the Google Classroom App performed significantly better than those taught using conventional methods. The effect size, calculated using Cohen's d, was 0.99, indicating a significant effect.

Table 3. Paired Samples t-Test Comparing Google Classroom and Control Group Performance

		Mean	N	Std. Deviation	Std. Error Mean	t-value	df	p-value
Pair 1	Control Group	18.88	40	10.03	1.59	4.52	78	< .001
	LMS Group 1	29.98	40	11.82	1.87			

This result leads to the rejection of the null hypothesis, affirming that the Google Classroom approach significantly improves students' reading comprehension.

4. Research Hypothesis 2: There will be no significant relationship between students' attitudes toward the use of Google Classroom and students' reading comprehension scores

The results, presented in Table 4, show no significant correlation between the two variables (r = .000, p = 1.000). Thus, the null hypothesis is retained, indicating that students' attitudes toward Google Classroom were not significantly related to their reading comprehension performance.

Table 4. Correlation between Students' Attitudes and Reading Comprehension Scores

Correlations

		Students Attitudes Google Classroom	R. Compr.
Students Attitudes to Google Classroom	Pearson Correlation	1	.000
	Sig. (2-tailed)		1.000
	N	40	40
Reading Comprehension Scores	Pearson Correlation	.000	1
	Sig. (2-tailed)	1.000	
	N	40	40

5. Effect of Google Classroom Treatment on the Reading Comprehension of Senior Secondary School Students

Research question one and the null hypothesis one affirmed the efficacy of utilizing Google Classroom to enhance the reading comprehension skills of secondary school students in Ondo State. The results indicated a substantial difference in the academic performance of students in reading comprehension within the state. Those who received instruction in reading comprehension through Google Classroom showed superior performance compared to their counterparts taught using traditional methods. These findings align with the conclusions of Oguguo et al. (2020), demonstrating that students instructed with Moodle outperformed those exposed to the CAI4ME Package. The success of Google Classroom is attributed to its capacity to spur students to engage and collaborate at any time and place, facilitating a deeper understanding of the subject matter. The diffusion of Innovative Theory (DIT) by M. Rogers (1962) supports these findings by explaining how Online Learning apps such as Google Classroom gradually gain acceptance in a given eco-system. According to this theory, as early adopters within a population, such as the students and teachers in this study, begin to use the Google Classroom App and experience its benefits, they influence others to adopt it as well. This gradual adoption process fosters a shift from traditional to digital learning methods, creating a ripple effect within the educational community as more stakeholders recognize its benefits.

The study's results are further corroborated by Ahmad (2013), who found that online learning apps enhance student performance, mainly when instructors adeptly use the platform for virtual guidance. Additionally, the current study's findings are consistent with those of Dulkaman and Ali (2016) and Daar et al. (2023), which highlighted that engaging in discussions on chat forums and utilizing Question-and-answer features through online Learning Apps fosters the accomplishment of student learning objectives. In the same vein, the result of this study is in line with the findings of Abdullah Saimi & Mohamad (2022) that Google Classroom is an excellent platform to kick-start online learning. However, the results of Feizabadi's (2016) study contradict the findings of this study. Despite demonstrating the effectiveness of the Online Learning App, specifically the Moodle software, in language learning, Feizabadi's study indicated no substantial difference observed between the experimental group (Moodle) and the control group (previous and standard programs). In the same vein, Ramly and Latiff (2021) also found that Google Classroom has no significant sign of effectiveness in terms of whole-classroom teaching.

6. Secondary School Students' Attitudes towards the use of Google Classroom for Teaching Reading Comprehension

Research question two and the null hypothesis two indicate that students preferred learning reading comprehension through Google Classroom over traditional classrooms. This outcome corresponds with Nurul, Jismulatif, and Dahnilsyah's (2022) findings, where students expressed a positive perception of Google Classroom in the context of listening comprehension subjects. The study further highlights that Google Classroom enhances students' ease of reading. This observation aligns with Liya's (2022) research, which reported that respondents found Google Classroom user-friendly, expressing interest and motivation in utilizing it for flipped English learning. Through Google Classroom, students can engage in uninterrupted reading, fostering independence in their reading habits. The study by Liya (2022) concluded that Google Classroom is particularly effective for teaching reading, contributing to collaborative learning among students, and nurturing autonomous learning. Teachers can digitally distribute reading assignments, enabling students to access texts from any device with an internet connection, thereby enhancing flexibility and convenience in the learning process. Similarly, the result of this study aligns with that of Padohinog, Balsicas, and Hingada (2022). Their study indicated that the majority of the students "moderately agree" with all of the statements and cited that Google Classroom is a convenient tool to use in their online classes. This may not be unconnected with the fact that the Google Classroom interface is easy to navigate, and as such, students expressed positive attitudes towards the tool. A similar study by Al Yakin, Obaid, Massyat, Muth, Nejrs, and Najim (2022), their study indicated positive attitudes towards the use of Google Classroom, and this is a result of the fact that Google Classroom is simple to use, and it is usually readily available. Because of this, students could learn at their own pace any day and at any time. Additionally, this study is in consonance with the findings of Quino (2022), who found that students agreed that Google Classroom is easy to access and valuable and supports communication, interaction, and instruction delivery in flexible learning. Their study further revealed that students were very pleased with Google Classroom as a teaching and learning tool because it promotes flexible language learning by helping students' complete assignments on time, encouraging participation in discussions, and motivating them to manage their time effectively. In the context of Google Classroom, the successful utilization of online teaching tools by students is intricately linked to their attitudes toward these technologies. As outlined by the Diffusion of Innovation Theory (DIT) by M. Rogers (1962), the adoption of any new innovation – including educational technologies – depends significantly on how the potential users perceive the innovation. For students to

effectively engage with online learning apps, they must view these systems as valuable, relevant, and worth their time and effort. This often requires a substantial perceptual shift, particularly if students have preconceived notions about the utility and effectiveness of such tools.

CONCLUSION

Reading comprehension is an important life skill, and therefore, nothing should hinder its learning. In the face of global challenges such as the COVID-19 pandemic, efforts must be made to reach out to school children who are still on the path of mastering this skill. During the COVID-19 lockdown, many developed nations transitioned to online learning. Through this, learning continued, but the situation was not the same in Nigeria, as learning came to a standstill in many parts of the country. The problem was made worse as a significant number of senior secondary school students in Nigeria possess internet-enabled devices that could have been converted to learning platforms during COVID-19, but Nigeria had no established Online Learning app to function in this capacity. Therefore, this study examined the effectiveness of using the Google Classroom App to teach reading comprehension in Ondo State, Nigeria. The study proved the effectiveness of teaching reading comprehension using LMS. The results not only prove that the platform is excellent but also indicate that students who were exposed to this treatment outperformed their counterparts who were taught with the conventional method. As noticed, students felt relaxed and were responsible for their own learning. According to their teachers, some students who were considered low performers did well via Google Classroom. Future studies on LMS may focus on other platforms such as Moodle, Schoology, and Canvass, among others. Based on the findings of this study, the following recommendations were made:

1. As the study indicated, there are both opportunities and drawbacks to using the platform provided by LMSs. As shown in the result of the research and students' attitudes, Google Classroom, an offshoot of LMS, was influential in teaching reading. Therefore, this study advocated for the use of LMS to teach reading among senior secondary school students since it resonates with the drive to push reading, ultimately literacy, beyond the four walls of the classrooms.
2. The government should organize training for teachers on how to use the LMS effectively. This should include understanding all features, managing content, and utilizing assessment tools.
3. While everyone agrees that phones can significantly distract students, diverting their attention away from classroom activities and lessons, technology is behind our doorsteps, and our students have access to mobile phones in their homes and leisure times, which are mainly used for non-academic purposes such as watching explicit content or engaging in one betting activities or the other. With this in mind, schools should allow controlled phone use. Notwithstanding, It is essential to implement clear and enforceable guidelines. This might include restrictions during certain times, designated areas for phone use, and consequences for misuse. Educating students about responsible phone use and digital citizenship is also crucial in managing the potential challenges Teachers could face. Thus, the teacher should be trained on how to effectively integrate phone use in their ESL pedagogy.

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