



Mobile learning applications and learning effectiveness in Christian Religious Studies in secondary schools in Calabar South Local Government Area, Cross River State, Nigeria

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Abstract

In this modern age of technological development and the current increase in scientific knowledge around the world, much demand is placed on the acquisition of skills through technology in improving students' learning of Christian Religious Studies in secondary school. This study investigated relationship between mobile learning applications and learning effectiveness in Christian Religious Studies in Calabar South Local Government Area, Cross River State, Nigeria. The study adopted descriptive survey research design. Two research questions guided the study while two hypotheses were formulated and tested. The population of the study consists of 919 SS II students in public secondary schools within the study area. Purposive and Simple random sampling technique were used to select 400 SS II students that constitute the sample. A well-structured and validated questionnaire titled 'Mobile Learning Applications and Learning Effectiveness Questionnaire (MLALEQ) were the major instruments for data collection. Pearson Product Moment Correlation was the statistical tools used for analysis of the data collected. Two hypotheses were tested at 0.05 level of significance. The result of the analysis revealed that there is a significant relationship between students' perception towards mobile learning applications and students' utilization of mobile learning applications and their learning effectiveness in Christian Religious Studies. Sequel to the findings of this study, it was recommended, among others that, teachers should encourage students to spend some time using the Mobile Learning App to improve their learning of Christian Religious Studies.

Keywords: Mobile Learning Applications, Learning Effectiveness, Christian Religious Studies

Introduction

In this era of globalization and technological revolution, all aspects of life have been touched and shaped by the use of mobile technology to access knowledge and improve lives. This modern age of technological development and the current increase in scientific knowledge around the world, more demand has been placed on the acquisition of skills through technology in improving students' learning of Christian Religious Studies in secondary schools. Because of the applications that are built in them - mobile applications technology has made smart phones not just useful for making calls and sending messages but also performing other functions such as academic, information sharing, and social networking, among others. This was evident in the works of Masiu and Chukwuere (2018) where it was stated that "The smartphone has also made students'

lives easier, as they can access their school information on the gadget through electronic learning (e-learning), and mobile learning (m-learning).” The development of smartphone keeps on evolving as human lives keep evolving. Due to the varying needs, demands, and tastes of smartphone users, the new version comes frequently with additional features (Alfawareh & Jusoh, 2014). These mobile applications can be integrated in the teaching of Christian Religious Studies to boost its teaching effectiveness in secondary schools.

Christian Religious Studies (CRS) is one of the subjects that needs to be enhanced through mobile learning apps to help students improve their learning in the subject. This may be due to its role in ensuring moral and spiritual well-being of individuals in the society. The key roles of CRS in equipping the individuals and ensuring high level of morality is made clear in the objectives of CRS at the senior secondary level which include; to provide more opportunities for Nigerian youths to learn more about God and thereby develop their faith in God; to enable the youths to accept Christ as their saviour; to help the youths develop Christian attitude and moral values such as humility, respect, love, justice, among others; to instill in the youths the spirit of tolerance, reconciliation, peaceful co-existence and non-violence as well as to develop and foster in the youths the spirit of respect for all people and human life (Universal Basic Education Curriculum (UBE), 2013). This implies that CRS is playing a vital role in society building.

Christian Religious Studies as defined by Eluu (2011) is the education for the development of spiritual, moral and mental growth of pupils or students. In essence, Christian Religious Studies is expected to give children an understanding of the universe and the interpersonal relationship between human beings and the supreme beings. Christian Religious Studies could also be defined as a social science subject that teaches students good moral behaviour, to fear God, knowledge and skills that will make them to contribute their quota in socio-economic and moral development in senior secondary schools. The inclusion of sound religious and moral values in the life of students invariably could help in the development of sound spiritual and moral being of the students.

The 21st Century required technological tools and applications to be integrated in the teaching/learning process to improve knowledge acquisition. Therefore, the need to improve in

students' learning of Christian Religious Studies is necessary. Since the knowledge of Christian Religious Studies gives confidence to students and helps them to expand their own sense of reasoning and belonging. Though Christian Religious Studies is an important subject in that it facilitates student to build up values, helps to encourage positive judgment and enable students to fight against discrimination. Students' learning outcomes seem not to be meeting the expectations of their parents and stakeholders in education in the subject. It is therefore imperative that students are well-grounded in the subject because it helps to streamline the thought, character, moral, and aspiration of the students. It also offers hope for the future, integrate, discipline, harmonious, and progressive society (Ikechukwu, 2014). Thus, students need to perceive the usefulness of mobile learning applications such as Ulesson, Smbibot, Nigeria learning passport among other mobile apps that help in enhancing their learning of Christian Religious Studies.

Students' perception towards mobile learning applications has bearings to their academic performance in the learning of History. This is because students from different education and cultural backgrounds may have different perceptions towards higher education particularly expectations related to teaching and learning (Xu, 2012). It is a fact that this may further affect students' academic decisions, expectations, and performance because of their different perceptions. Axelrod (2012) has found that students' perceptions of what constitutes effective instruction transcends time and mode of delivery. The author further notes that there are seven qualities that he believes are common elements of good teaching, and transcend time, place, discipline, and instructional type. These qualities are accessibility and approachability, fairness, open mindness, mastery and delivery, enthusiasm, humour, and knowledge and inspiration imparted. Therefore, the mentioned qualities are very important in considering students' perceptions.

Onuba (2022) stated that perception of mobile app can be determined by an individual's intention to use a system. Perceived usefulness is defined as the extent to which a person believes that using the system will enhance his or her job performance. Perceived ease of use is defined as the extent to which a person believes that using the system will be free of effort. This implies that,

enhancing effectiveness in Christian Religious Studies has bearings with the perceived usefulness of the mobile learning applications. Alwi, Ismail and Ahmad, (2016) captured the perception of students towards mobile learning applications. Majority of them agreed that this application is the alternative for learning and revising contents since it can be use offline once everything is downloaded.

Onuba (2022) further examined the influence of perception and attitude towards Mobile Learning Application (APP) on students' academic performance in General Studies. The results indicated that there was no significant influence of student's perception of Mobile Learning App on their academic performance. Similarly, Demir and Akpınar (2018) examined the effects of mobile learning applications on undergraduate students' academic achievement and attitudes toward mobile learning and animation development levels. Mobile learning has significantly positive effect on academic achievement compared to expository learning in the research. Masrom, Hasnaa, Mahmood, Zakaria and Ali (2017) assessed the use of mobile learning application, and the attitude of graduate students towards mobile learning. The results indicated that mobile learning is viewed positively among graduate students, and should be leveraged in promoting quality of teaching and learning.

Students' perceptions and utilization of mobile learning applications are crucial in their learning effectiveness in Christian Religious Studies. Al-Musawi, Al-Ani, and Al-Aghbari, (2019) examined the Sultan Qaboos University undergraduate students' perceptions and attitudes towards using m-Health app and its impact on improving their sports and health habits was investigated. The study revealed the students' positive perceptions and attitudes toward the use of the mobile health app - no statistically significant differences were found between the responses of either males or females, or the science and humanitarian colleges of the sample students.

Safie, Wahid and Idris (2017) carried out a study on evaluating student perception towards application of mobile learning and found that there was positive outcome, whereas m-learning do helps make the process of education more convenient and effective from the past and the use of mobile technologies can be effective aided learning tools in learning process. Hanif and Sunardi

(2018) carried out a study on students' access to and perception of using mobile technologies in the classroom: the potential and challenges of implementing mobile learning. The findings indicate that students are very familiar with mobile devices and their applications. The results also reveal that students have positive perceptions toward m-learning, and indicate that mobile technologies are widely used among them. Dashti and Aldashti (2015) found that students' perception to mobile learning is positive.

Again, utilization of mobile learning applications refers to the use of mobile learning applications to promote the learning of Christian Religious Studies. It is a very vital component in the learning of Christian Religious Studies. The use of mobile devices by students has grown in the last years (GMI, 2019). The massive use of mobile devices has created new forms of social interaction, significantly reducing the spatial difficulties that could exist, and today people can be reached and connected anytime and anywhere (Monteiro, Bento, Lencastre, Pereira, Ramos, Osório & Silva, 2017). This also applies to the school environment, where students bring small devices (smartphones, tablets and e-book readers) with them, which, thanks to easy access to an Internet connection, keep them permanently connected, even during classes. There is also a growing tendency among members of the academic community to use mobile devices in their daily activities (Oliveira, Tavares & Laranjeiro, 2017).

On the relationship between mobile learning applications and learning effectiveness, Omolade and Opesade (2017) reported that there is a link between use of mobile learning apps and academic engagement. The researchers went further to state that the use of mobile learning apps has the potential to improve academic activities and performance of students. The concept of mobile learning applications (apps) can be explained as the programmes or soft wares used on portable smartphones or other academic purposes. The use of mobile learning apps permits learning anytime, anyplace, and anywhere to improve students' knowledge. It is instantly accessible, anytime, anywhere, and helps to satisfy curiosity, to collaborate with others and enrich experiences (McQuiggan, Kosturko, McQuiggan & Sabourin, 2020). Using mobile learning apps makes

education outside the classroom sustainable because it gives opportunity for interaction and facilitates learning at students' convenience. Smart phones through which the apps are accessed and used have, therefore, become a status symbol for undergraduates.

Kaliisa and Picard (2017) observed that the use of mobile learning applications has increased in higher education. Specifically, it was noted that the use of mobile learning apps enhanced student and lecturer collaboration, students' access to course materials, greater students' control over their learning, student participation and engagement (Osang, Ngole & Tsuma 2013; Gachago, et al, 2015). However, Kaliisa and Picard (2017) added that there were challenges such as poor attitude among students and distractions. Schools and educators such as teachers and school administrators have utilized these devices to differentiate instructional strategies and methods and hence augment teacher led instructional methods of teaching to enhance the teaching and learning experiences (Tetzlaff, 2017). Similarly, Heflin, Shewmaker and Nguyen (2017) noted that the use of mobile technology in education provides educational stakeholders with opportunities to revisit the teaching and learning to meet modern development in technology which is different from the traditional pattern of educational delivery. This transformation in the teaching methods which is from teacher-focused to student-focused educational strategies has provided more flexible learning models and opportunities that provided both the teachers such as the faculty members and the students the access to multiple information sources. This is a shift from the well-known authority-based learning structure which was a common practice of teaching of the traditional methods of teaching and learning to a structure-based method which includes the use of mobile technologies to support the community of learners such as undergraduate students in universities (Hamm, Saltsman, Jones, Baldrige & Perkins, 2013).

In a study by Masrom, Hasnaa, Mahmood, Zakaria and Ali (2017) on the use of mobile learning application and the attitude of graduate students towards mobile learning. The results indicated that mobile learning is viewed positively among graduate students, and should be leveraged on to promote quality of teaching and learning. Similarly, Zawaideh (2017) examined the Effect of Mobile Learning on the Development of the Students' Learning Behaviors and

Performance. The results showed that mobile learning accrues positive effect on motivating the students towards learning. There was also a positive correlation mobile learning to increased academic performance. Finally, the results indicated that M-learning changed students' learning habits for the better. Abdul-Halim and Eh-Phon (2020) assessed mobile learning application impact towards student performance in programming subject. The results showed that there are several factors that affect students learning performance in programming that is, misunderstanding, lack of practices, poor logical thinking and problem solving, no prior knowledge, psychological disorder, less interest, ineffective teaching method and bad attitude. Olalere and Soyemi (2022) examined the Use of Mobile Learning Applications and Academic Engagement of Library and Information Science Students. The findings revealed that the level of academic engagement of students was high, the purpose of use of mobile learning apps was for academic activities but the level of use of mobile learning application was low.

In the majority of the public secondary schools in the research area, there has been an alarmingly high proportion of student failure and subpar performance in Christian Religious Studies. It is frightening and concerning that learners in Nigeria's public secondary schools do poorly in Christian Religious Studies, contributing to a high percentage of failure. Nigerians and educators have frowned and complained about the ineffective teaching and poor results of students in public examination especially West African Examinations Council (WAEC); as for many years students' performance is still not satisfactory encouraging. WAEC Chief Examiners' Reports (2016-2019 and 2020, respectively) showed that on the average, only 46% of the students obtained credit level passes in Christian Religious Studies, while the reports of WAEC 2020 showed that 55.24% of the students obtained credit level passes in Christian Religious Studies. This has clearly showed that candidates' performances have not been inspiring. This observation is just few among the many failures recorded on the subject in internally and externally administered examinations. It is against these backdrops that the researcher deemed it fit to investigate the influence mobile

learning applications on learning effectiveness in Christian Religious Studies in secondary schools in Calabar South Local Government Area, Cross River State, Nigeria.

Objective of the Study

The main aim of the study was to determine the relationship between mobile learning applications and academic performance in Christian Religious Studies in Calabar South Local Government Area, Cross River State, Nigeria. Specifically, the study sought to find out the relationship between:

- i. Students' perception of mobile learning applications and their academic performance in Christian Religious Studies
- ii. Students' utilization of mobile learning applications and their academic performance in Christian Religious Studies

Research questions

- i. What is the relationship between student's perception of mobile learning applications and their academic performance in Christian Religious Studies in Calabar South LGA?
- ii. What is the relationship between student's utilization of mobile learning applications and their academic performance in Christian Religious Studies in Calabar South LGA?

Research Hypotheses

- i. There is no significant relationship between students' perception of mobile learning applications and their academic performance in Christian Religious Studies.
- ii. There is no significant relationship between students' utilization of mobile learning applications and their academic performance in Christian Religious Studies.

Research Method

The study was conducted in some selected secondary schools in Calabar South Local Government Area of Cross River State, Nigeria. Calabar South is one of the 18 Local Government Areas of Cross River State. The climate is tropical and the vegetation is prominently tropical rain forest. Calabar South is located within longitude 8° 15' and 8° 25' East and latitude 4° 54' North and 4° 58' North. Calabar South is one of the 18 Local Government Areas in Cross River State. Calabar South is bounded by Calabar Municipality to the North, Kwa river to the East, Marina River to the West and Akpabuyo to the South.

The design adopted for the study was the descriptive survey research. The population of the study comprised of all the 919 SS II students in public secondary schools within the study area. Purposive and simple random sampling technique was used to select 400 SS II students from public secondary schools that constitute the sample. Two research questions guided the study while two hypotheses were formulated and tested. A well-structured and validated questionnaire titled 'Mobile Learning Applications Questionnaire (MLAS) and Christian Religious Studies performance test were used to collect the required data. Pearson Product Moment Correlation (PPMC) was used for the data analysis; at 0.5 level of significance.

Results of data analysis

Hypothesis one

There is no significant relationship between students' perception of mobile learning applications and their academic performance in Christian Religious Studies. The independent variable is students' perception towards mobile learning applications while the dependent variable is academic performance in Christian Religious Studies. To test this hypothesis, the mean, standard deviation of students' perception towards mobile learning applications and academic performance in Christian Religious Studies were computed and correlated using Pearson Product Moment Correlation Analysis. The result of the analysis is presented in Table 1.

Table 1: Summary of Pearson Product Moment Correlation of the relationship between the students' perception of mobile learning applications and academic performance in Christian Religious Studies (N=400)

Variables	X	SD	R-value	P.value
Students' perception of mobile learning applications	13.786	3.987	.653	.000
academic performance in Christian Religious Studies	15.876	4.876		

* Significant at .05, critical $r=.124$, $df = 398$

The result of data analysis as presented on Table 1 revealed that the calculated (R=.653: p=.000) is significant at .05 level of significance with 398 degrees of freedom. With this result, the null hypothesis which stated that there is no significant relationship between students' perception towards mobile learning applications and their academic performance in Christian Religious Studies was rejected. This result implied that students' perception towards mobile learning applications significantly relate with their academic performance in Christian Religious Studies. The positive r implied that the more students' have positive perception towards mobile learning applications, the more academic performance in Christian Religious Studies tend to be. On the other hand, when students have negative perception towards mobile learning applications, the lesser academic performance in Christian Religious Studies tend to be.

Hypothesis two

There is no significant relationship between students' utilization of mobile learning applications and academic performance in Christian Religious Studies. The independent variable is students' utilization of mobile learning applications while the dependent variable is academic performance in Christian Religious Studies. To test this hypothesis, the mean, standard deviation of students' utilization of mobile learning applications and academic performance in Christian Religious Studies were computed and correlated using Pearson Product Moment Correlation Analysis. The result of the analysis is presented in Table 2.

TABLE 2: Summary of Pearson Product Moment Correlation of the relationship between the students' utilization of mobile learning applications and academic performance in Christian Religious Studies (N=400)

Variables	X	SD	R-value	P.value
Students' utilization of mobile learning applications	12.987	2.987		
			.565	.000
academic performance in Christian Religious Studies	15.876	4.876		

* Significant at .05, critical $r=.124$, $df = 398$

The result of the analysis as presented in Table 2 revealed that the calculated ($R=.565$; $p=.000$) is significant at .05 level of significance with 398 degrees of freedom. With this result, the null hypothesis which stated that there is no significant relationship between students' utilization of mobile learning applications and their academic performance in Christian Religious Studies was rejected. This result implied that students' utilization of mobile learning applications significantly relate with students' academic performance in Christian Religious Studies. The positive r implied that the more students positively utilized mobile learning applications, the more their academic performance in Christian Religious Studies tends to be. On the other hand, the more students' negatively utilized mobile learning applications, the lesser academic performance in Christian Religious Studies tend to be.

Discussion of research findings

The discussion of findings was carried out according to the hypotheses stated as they relate to students' academic performance in Christian Religious Studies. Hypothesis one states that "There is no significant relationship between students' perception of mobile learning applications and their academic performance in Christian Religious Studies". The result revealed that students' perception towards mobile learning applications significantly relate with their academic performance in Christian Religious Studies. The possible reason is that mobile learning applications provide students with the flexibility to access learning materials anytime and anywhere. If students perceive these applications as easy to use and convenient, they are more likely to engage with course content

regularly, leading to better academic performance. Another possible reason is that students' familiarity and comfort with using mobile technologies can also impact their perception of mobile learning applications and, consequently, their academic performance.

Those who are more technologically proficient may perceive these applications more positively and leverage them more effectively for learning. The finding is in line with Xu (2012) who stated that students' perceptions of Mobile Learning Applications have bearings with their attitude towards learning of Language which as a result of different education and cultural backgrounds that may have different perceptions towards higher education particularly expectations related to teaching and learning. The finding also agreed with the study of Dashti and Aldashti (2015) which demonstrated that students' perception to mobile learning is positive. The finding is in consonance with Alwi, Ismail and Ahmad (2016) who found that majority of the students perceived Mobile Learning Applications to be useful in promoting their learning activities. The implication of this finding is that Christian Religious Studies teachers should encourage their students to integrate mobile learning applications in leaning the subject. This will go a long way to improve students' academic performance in Christian Religious Studies.

The finding is agreement with Safie, Wahid and Idris (2017) who found that there was positive outcome, whereas m-learning do helps make the process of education more convenient and effective from the past and the use of mobile technologies can be an effective aided learning tools in learning process. The finding supports Hanif and Sunardi (2018) who found that students are very familiar with mobile devices and their applications. The results also reveal that students have positive perceptions toward m-learning, and indicate that mobile technologies are widely used among them.

Hypothesis two states that "There is no there is no significant relationship between students' utilization of mobile learning applications and their academic performance in Christian Religious Studies". The result revealed that students' utilization of mobile learning applications significantly relate with students' academic performance in Christian Religious Studies. The possible reason is that many mobile learning applications incorporate interactive features such as quizzes, flashcards,

and multimedia content, which can enhance students' engagement and interest in Christian Religious Studies. Interactive learning experiences tend to be more effective in facilitating comprehension and knowledge retention.

Another possible reason is that mobile learning applications often incorporate gamification elements such as badges, rewards, and progress tracking, which can enhance students' motivation and engagement with the course material. Higher levels of engagement and motivation are associated with better academic performance in Christian Religious Studies. The finding is in agreement with Monteiro, Bento, Lencastre, Pereira, Ramos, Osório and Silva (2017) who stated that massive use of mobile devices has created new forms of social interaction, significantly reducing the spatial difficulties that could exist, and today people can be reached and connected anytime and anywhere.

This finding is in line with Omolade and Opesade (2017) who reported that there is a link between use of mobile learning apps and academic engagement. The researchers went further to state that the use of mobile learning apps has the potential to improve academic activities and performance of students. This finding corroborated with McQuiggan, Kosturko, McQuiggan and Sabourin, (2020) who stated that the use of mobile learning apps permits learning anytime, anyplace, and anywhere to improve students' knowledge. It is instantly accessible, anytime, anywhere, and helps to satisfy curiosity, to collaborate with others and enrich experiences.

Conclusion

Based on the findings of the study, it was concluded that students' perception and utilization of mobile learning applications have influence on their academic performance in Christian Religious Studies. The fact established in this study has it that students can enhance their learning of Christian Religious Studies when a proper designed technological learning application is used in the teaching and learning of the subject.

Recommendations

Based on the findings in the study, it was recommended that;

- To capitalize on the positive correlation between students' use of mobile learning applications and their academic performance in Christian Religious Studies, educational institutions should integrate mobile learning methodologies into the curriculum design. By incorporating mobile learning activities, assignments, and resources into the curriculum, educators can leverage students' familiarity with technology to enhance their engagement and comprehension of course materials. Furthermore, integrating mobile learning into the curriculum promotes active learning, allowing students to interact with the subject matter in dynamic ways, leading to improved academic outcomes in Christian Religious Studies.
- Given the importance of mobile learning in improving students' academic performance in Christian Religious Studies, educational institutions should invest in professional development programs for educators. These programs should focus on training instructors in effective strategies for integrating mobile learning technologies into their teaching practices. By equipping educators with the knowledge and skills to leverage mobile learning tools effectively, institutions can ensure that instructors are prepared to create engaging and impactful learning experiences for their students. Additionally, ongoing professional development opportunities can help educators stay abreast of emerging technologies and best practices in mobile learning, allowing them to continually enhance the effectiveness of their instructional methods in Christian Religious Studies.

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