INFLUENCE OF TECHNOLOGICAL LEARNING SPACE ON TEACHING AMONG PRIMARY SCHOOL TEACHERS IN SAGAMU LOCAL GOVERNMENT AREA OF OGUN STATE, NIGERIA

OGUNSAKIN Oluwasegun Dare, OGUNDIRAN Olusegun O., Ph.D & OGUNSAKIN Olamide Deborah

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OGUNSAKIN Oluwasegun Dare
Department of Peace and Security Studies
Ekiti State University, Ado-Ekiti, Nigeria
Email Address: segunogunsakin4r@gmail.com
Phone number: +2348133893764

OGUNDIRAN Olusegun O., Ph.D
Department of Chemistry
Sikiru Adetona College of Education,
Science and Technology Omu-Ajose
Email Address: olusegunogundiran1@gmail.com
Phone Number: +2348035808727

&

OGUNSAKIN Olamide Deborah
Department of Guidance and Counselling
National Open University of Nigeria
Email Address: olamidedebby95@gmail.com
Phone Number: +2348133893764

Abstract
The research study examined the Influence of Technological Learning Space in Teaching among Primary School Teachers in the Sagamu Local Government Area of Ogun State, Nigeria. With the trend of technological learning space in the world, there is a need for the teachers in public and private schools in Sagamu local government and Ogun state, in general, to be encouraged to use all various digital tools for their learning and teaching. Meanwhile, the study used transformative learning theory to explain the current need for technological learning space for education by teachers living in low-income communities in Ogun state, Nigeria. The study engaged in primary and secondary data through the distribution of a questionnaire to fifty teachers, and information was critically analyzed. From the result, it was discovered that technological learning space positively affects teaching among primary school teachers in the Sagamu. It was concluded that government should invest more in technology-based instruction and create an ecosystem of innovations in the education system in Ogun State, Nigeria. Training teachers to be technologically inclined should be prioritized by stakeholders and government and build up the accessibility to quality education for all children in Nigeria.
Keywords: Technology, Learning, Primary school, Teachers, Nigeria

Introduction

The world is changing rapidly as modern technology invades homes and schools. It is important to note that we live in a digital village where almost every aspect of our lives is affected by technology. Technological learning spaces exist in the classroom from a social perspective because students have interacted with them from such a space. It is useful for teachers to recognize and embrace it to carry out their pedagogical practices effectively like their counterparts in developed countries (Aina and Ogundele, 2014).

Through many results, technological learning space provided the needed activities for teachers to teach in and outside the classroom effectively. In Nigeria, as in other developing African nations, the teaching profession is full of controversy and backlash. Public perceptions, low salaries,

government bureaucracy, and weak policy enforcement have made teachers classless (Ugwu, 2022). Using technology-based methods remains important as the world moves towards sustainable best practices for teachers to succeed in their teaching profession (Adelowo, 2020).

The technology learning space can be designed for small or large group learning where innovation and digital media are key. It encourages project-based and inquiry-based learning, where students, including teachers, work together to create opportunities for research and problem-solving. Many teachers and individuals engaged in interaction development to create better relationships in academic work. The technological learning space contains diverse people that procure linear action to share the understanding of existing ideas. Meanwhile, this innovation in learning space allows people from small to big groups to work effectively. For instance, each component of this includes either software or hardware that enhances innovative learning and training, for instance, a webcam, media production hardware, and software. The global way of ensuring that teachers perform well in delivering their professional services still boils down to this innovation of transformation in learning and teaching (Cheung, Kwok, Phusavat, and Yang, 2021).

The smart way of learning and teaching a 21st-century pedagogy rest on how teachers and other educators griped the innovation from online circles. As the world is moving higher in producing best practices in teaching and research, the Ogun state teachers, especially the Sagamu local government community of teachers, must flow along in learning beyond the classroom. Digital and technological learning spaces are springing up, which can assist teachers in teaching due to the current real-life and easy-to-use technological tools (Singh & Hassan, 2017). When we push the goals of seeing better and more exposed teachers in the primary schools in Sagamu local government and Ogun state in general, the need comes for technology development in the classroom and various environments that will upscale the good for the education sector in Ogun state. Meanwhile, many advanced countries consider well the need to create opportunities for teachers to impact the community that will eradicate poverty of illiteracy and pushes for a good impact on the well-being of their society. Creating accessibility and sustainability in teacher education will accelerate the education system to a higher level. For example, the Nigerian government is doing its best to ensure that teachers meet the global standard, but the reverse is the case of poor results from learners in various schools in the country (International Commission on the Futures of Education, 2021). Many learners in Nigeria struggle with literacy and numeracy skills due to low academic achievement (Mott MacDonald, 2022).

The core of the development and training of teachers through the use of technological learning space will enable development in the education sector in Nigeria. It is important to know the various educational goals that will continue to be a paramount need for schools in the Ogun state because teacher education is constantly faced with several dilemmas arising from educational expansion, politics, technological developments, and societal changes. The prevailing crisis in Nigeria's education system and society, characterized by unemployment, poverty, corruption, crime, indiscipline, and lack of capacity utilization in must be tackle to see to the development of the education sector (Ogunyinka., *et al.* 2015).

The emergence of various teaching and learning technologies has brought a new face to the classroom. The contemporary age classroom needs a new beginning of teachers with ICT-appropriate status and mindsets to support the teaching process (Mormah and Bassey, 2021). Modern technologies are bringing fundamental changes to the lives of 21st-century students, who are the most frequent users of new technologies and online services (OECD, 2016). Therefore, this study will investigate the influence of technological learning space on teaching among primary school teachers in Sagamu local government area, Ogun State.

Purpose of the Study

This research study aims at assessing the influence technological learning space on

teaching among primary school teachers in the Sagamu local government area of Ogun State. Meanwhile, the specific objectives will be achieved of the study are to:

1. examine the use of technological learning space among primary school teachers in Sagamu local government area based on gender;
2. determine teachers' perception towards technological learning space among primary school teachers in Sagamu local government area; and
3. Assess the influence to which technological learning space affects teaching among primary school teachers in the study area.

Research Questions

The following research questions were raised for the study:

1. Will there be a significant difference in the use of technological learning space among primary school teachers in Sagamu local government area based on gender?
2. Can there be relationship between the teachers' perception of technology learning space and effective teaching among teachers in Sagamu local government area?
3. Will there be influence to which technological learning space affects teaching among primary school teachers in Sagamu local government area?

Hypotheses

For this research, three research hypotheses were formulated, and they include the following:

1. There is a significant difference in the use of technological learning space among primary school teachers in the Sagamu local government area based on gender.
2. There is a relationship between perception towards technological learning space and effective teaching among primary school teachers in Sagamu local government area.
3. There will be significant influence to which technological learning space affects teaching among primary school teachers in the study area.

Conceptual Discourse

Technological Learning Space

Technological learning space is intentionally designed with innovation and digital instrument that makes it comfortable for teachers and students to use seamlessly without disrupting class or losing valuable study time. The coronavirus pandemic has highlighted the value of digital tools and platforms that provide students with learning opportunities anytime, anywhere, enabling students to explore topics, share work, and complete projects together wherever they are. Now, educators and administrators have a unique opportunity to build on the digital learning momentum created during the transition to distance learning by continuing to explore the use of more advanced technology as schools reopen (Eggebrecht-Weinschreider, 2020).

The technological learning space has brought new ideas about learning to improve teaching for teachers and educators worldwide. Spaces are a significant opportunity for higher education to make students and learners more successful. Through the use of information technology, today's learning spaces have the potential to serve a new learning paradigm while meeting the needs and expectations of teachers and other research communities. Because education is the vital mission of any given good government, learning and the space in which it occurs are ultimately important (Brown, 2005). The technological learning space is a critical policy framework supporting full and partial online learning access. It also eliminates availability requirements and supports extended broadband access. Technology learning also contributes to students' access to smartphones and tablets. This has shifted to specialized learning materials (Bailey et al., 2013).

The integration of technological learning space in education refers to the use of ICT-based innovation incorporated into the daily development process in the classroom. In terms of preparing students for today's digital era, teachers are seen as key players in using ICT in their daily teaching. This is because of the ability of the technological learning space to provide a dynamic and proactive environment for teaching

and learning (Arnseth and Hatlevik, 2012). Although the goal of technological learning space is to enhance the quality, accessibility, and cost-effectiveness of learning for students, it also demonstrates the benefits of networked learning communities to meet the challenges of contemporary globalization (Albirini, 2006). The technological learning space adoption process is not a single step but a continuous step that fully supports teaching and learning resources and information resources (Young, 2003).

Types of Technological Learning Spaces for Teachers

In understanding the functionality of the technological learning space, there are several types of technological learning spaces which are used by teachers, educators, lecturers, and researchers in the classroom and any other venue.

1. Podcasting

Podcasting is about creating and publishing audio, video, and narration in multimedia. This type of technological learning space can be used with teaching, power point presentations, discussions, and collaborative learning techniques. Diverse learners can view innovative audio and video files via the intranet or the internet (Hill and Nelson, 2011).

2. The Virtual Interactive Classroom (VIC)

A virtual classroom is an online learning and teaching environment where teachers and students can present course material, engage and interact with other virtual classroom members, and collaborate in groups. While there can be found difference from a virtual class is that it occurs in a synchronous living environment (Barron, 2020). Examples include Massive Open Online Courses MOOC, Bootcamps, among others.

3. Internet Protocol Television (IPTV)

This type of technological learning space is passing and broadcasting television programs on the internet engaging the Internet Protocol (IP). IPTV provides teachers and learners with dynamic features to enhance the user experience compared to traditional television broadcasts such as high-frequency, satellite, and cable television. IPTV uses broadband as a transmission medium which is very efficient compared to previous types of transmission (Techopedia, 2011).

4. Digital Video Recorder (DVR)

A digital video recorder (DVR) is a tech device that records video in digital format to a disk drive, Universal Serial Bus (USB) flash drive, Secured Digital memory card, Solid State Drive, or other local or network mass storage device. This term includes direct-to-disc set-top boxes, portable media players, recordable television gateways, and digital video cameras (Zacky, 2014).

5. Mobile learning technology

Mobile learning through our phones is another new micro-communication tool created by technology. Brink (2011) states that mobile learning can go hand in hand with social networking on the learner's mobile device. Teachers can send students assignments, notifications, or information via short messages.

6. Google Classroom

This free mixed-learning platform was developed by Google for educational institutions, aiming to simplify assignment creation, distribution, and assessment. The main goal of Google Classroom is to package the process of giving files between teachers and learners students (Okmawati, 2020).

7. Learning Management System (LMS)

This technological learning space is designed to identify learning and teaching gaps through analytics and reporting. The Learning Management System (LMS) focuses on delivering online learning but supports various applications and acts as a space for online content, including asynchronous and synchronous courses. In higher education, LMS can offer classroom management for teacher-led or

reverse classroom learning (Phillipo, 2018). Modern LMS incorporates intelligent algorithms to provide automated course recommendations based on user skill profiles and extract metadata from course materials to make those recommendations more accurate **(**Aldahwan and Alsaeed, 2020).

8. Zoom for Teaching

Zoom is one of the contemporary preferred video conferencing platforms. Zoom provides a platform for online collaboration and meetings, combining full video and audio-conferencing capabilities with content sharing and cloud recording.

Importance of Technological learning space

Using technological learning space for learners and teachers in the classroom will improve learning. Coleman (2009) states that educational software and programs can improve learning. Improve student understanding, achievement, critical thinking, and problem-solving skills (Bowen, 2010). This is pointy true for students who have learning difficulties. Learning and using technology in the classroom will increase student engagement and awareness. Wang *et al.* (2010) argue that interacting with technology in the classroom will increase active learning and accountability. However, on this side of the world, there is a great need to learn more about integrating technology into classroom learning. We teach students to provide them with knowledge in a positive way. This will help them understand and apply the topic's content in real life. Also, the support in ensuring that the use of technological learning space by teachers makes learning to be interesting and supports interactive learning with learners. Guzman and Nussbaum (2009) found that this would increase teacher productivity and student learning outcomes. This is achieved if the teacher can speak the language of technology that motivates learners to learn and understand.

Theoretical Framework

Transformative learning theory Jack Mezirow

Transformative learning theory is a great approach to teaching adults and young adults. Transformative learning theory, also called transformative learning, targets the point that learners can blend their thinking based on new information. This theory was proposed by Jack Mezirow in 1990 and centered on adult learning development. Jack Mezirow founded this learning theory in 1990 and discovered it after researching older women returning to school. His early research found that adults did not apply their old understandings to new situations and that new perspectives helped them gain new insights into things as they changed. Mezirow also believes that students have important learning and teaching opportunities related to their previous experiences and that critical reflection and review can change their understanding (Halupa, 2015).

This theory connects with the ability of teachers to be trained via the technological way of delivering quality teaching in the classroom. Learning through the space by the teachers is arguably an adult means of training. Meanwhile, the transformative learning theory connotes that learning is about change and putting up better relations with the content that has been learned. This approach works well for older students because children do not go through the same transformations with their learning experiences and life experiences (Simsek, 2012). Adult students can draw from childhood experiences and change those beliefs and understandings through critical reflection to understand what they need to believe and understand as adults.

Review Of Related Literature

Gender Issue on Technological Learning Space among Teachers

Gómez-Trigueros & Yáñez de Aldecoa (2021) stated that it should be noted that the differences between male and female teachers' inappropriate use of technology make it clear that they are not sufficiently trained to provide proper instruction in DC. More specifically, research results show that female teachers are unable to select, evaluate, and use the most appropriate digital technologies for teaching tasks inside and outside the classroom. Studies show that male teachers use technological tools more in their teaching and learning than their female counterparts (Kay, 2006; Wozney. *et al.*, 2006).

Magaji et al. (2020). focus on the gender enrollment gap and its impact on professional and specialist teacher education in Northern Nigeria. This article analyzes gender access to vocational and technical education programs at Aminu Saleh College of Education, Azare, Bauchi State, Nigeria, during three academic sessions from 2013/2014 to 2015/2016. Meanwhile, the research results show that there is a large gender gap both in access to teacher education institutions in general and to professional and technical teacher education programs in particular. The results show that a small proportion of women are enrolled and trained as vocational and technical education teachers, despite their role in promoting scientific literacy and technological independence, particularly in the Northeast, where concrete plans are being made to rebuild strongly affected insurgency areas.

Similarly, Markauskaite (2006) examined gender differences in self-reported technological learning space experience and technological competence among first-year teacher candidates. This study shows significant differences between men and women regarding technological learning space, technical skills, and situational and longitudinal resilience. Male scores are higher. Jamieson-Proctor *et al.* (2006) studied the integration of technological learning space by teachers in schools in Queensland. The results of 929 teachers indicated that female teachers were less likely to integrate technology into their lessons than male teachers.

Perception of teachers towards technological learning space and Effective teaching

With the development of learning technology at the end of the 20th century, the education system changed rapidly (Ghavifekr and Rosdy, 2015). This is due to the ability of technology and innovation to provide a proactive, easy-access, and holistic learning and teaching environment. Currently, Ministries of Education worldwide offer many facilities and training to increase the use of modern technology in teaching and learning. A large budget has been set aside to provide teachers with the tools needed to improve the education system. Despite best efforts, most countries face a similar problem where teachers need to maximize the use of the technology provided (Albirini, 2006). This is a serious problem because many previous studies have shown that using technological learning space in teaching and learning can improve student performance (Nakayima, 2011; Jamieson-Proctor *et al.*, 2013).

Furthermore, previous research (Cassim and Obono, 2011) showed a high relationship between teacher trust and technological learning space use. The function of the teacher is becoming increasingly important, especially in the use of technological learning space in pedagogy, which can improve student achievement, creativity, and thinking skills.

Observing the research by Bas *et al.* (2016) to design a scale to measure teachers' perceptions of innovation in the teaching and learning process in the classroom. The research sample consisted of 200 Turkish volunteer teachers. This study developed a new scale to measure teachers' perceptions of ICT in teaching and learning. The report concludes that any action to implement educational technology will only be successful if teachers have a positive view (i.e., attitudes, beliefs, etc.) towards the action or educational technology.

Effects of Technological Learning Space on Effective Teaching

Chien *et al.* (2014) research shows that students are classified as having high hope of integrating technological learning space into the classroom as a new generation is born and grows with technology and can be defined as a digitally born phenomenon. The younger the students, the higher their expectations for integrating technological learning space in the classroom. It has also been shown that technological learning space integration mainly depends on personal factors, defined as self-perception. This study also shows the adoption of technological learning space by teachers and students in and outside the classroom, who are more likely to use technology outside the classroom. They found that the barriers to integrating technology into the classroom were teacher beliefs, competencies, and attitudes, which reduced the level of technological learning space integration (Ghavifekr and Rosdy, 2015)

The results of previous research by Cox and Marshall (2007) indicated that teachers only need a traditional, centralized approach when developing technological skills in the classroom. Teachers have high confidence and competence in using various technologies in the classroom, even though they are not a sample of the technology used. This is because they believe that technological learning space is a tool that can help in the learning process, especially in practical practice. This factor reforms teaching methods to integrate technological learning space to create and build knowledge for students. Research shows that the relationship between competence and self-confidence can reflect a balance between learning and a pedagogical-focused approach to technology career development. In this way, school management can ensure teachers receive adequate support in integrating technological learning space classes.

Methodology

This research study adopted the descriptive survey method to obtain and analyze the various respondents' data. The sample size of this research study consists of fifty (50) teachers who will be given a questionnaire to fill out. This study adopted a simple random sampling technique to obtain participant data. A survey questionnaire with a total of 15 items was used as the main instrument in this study to investigate the effects of technological learning space on teaching among primary school teachers in Sagamu, Ogun state, Nigeria. All data collected from respondents were combined for analysis using the Statistical Package for Social Sciences (SPSS) version 21. The analysis included descriptive and inferential analysis of the three hypotheses.

Hypotheses Testing

Hypothesis One:

H_o1: There is a significant difference in the use of technological learning space among primary school teachers in the Sagamu local government area based on gender.

Table 1: Summary table of t-test for independent measures showing difference in the **use of technological learning space among male and female primary school**

	Gender	N	Mean	Std. Deviation	Levene's Test		df	t	Sig. (2-tailed)
					F	Sig			
Academic	Male	25	20.0000	.00000	9.485	.003	50	11.490	0.000
Performance	Female	27	15.0370	2.24433					

Source: Authors computation (2022) aided by SPSS 26

A test for differences using the independent sample t-test was used to determine if there would be a significant difference in the use of technological learning space among primary school teachers in Sagamu local government area based on gender. Levene's test for equality of variances was used to determine whether the difference in the use of technological learning space among male and female primary school teachers in the Sagamu local government area is significant. The test indicated that the variances for the two groups – male and female were unequal (F = 9.485, sig. = 0.03). The result indicates that the mean of male teachers (M = 20.000, SD = 0.000) is statistically significantly higher (t = 11.49, df = 50, P= 0.000) than the mean of female teachers (M = 15.037, SD = 2.244). Since the significant value is less than 5% significance, we accept the alternative hypothesis and conclude that there is a significant difference in the use of technological learning space among male and female primary school teachers in the Sagamu local government area.

Hypothesis Two

There is a relationship between teachers' perception towards technological learning space and effective teaching among primary school teachers in Sagamu local government area.

Correlations Table 2: Pearson correlation result showing the relationship between teachers' perception towards technological learning space and effective teaching among primary school teachers

		Perception of the use of technological learning space	Effective Teaching
Perception of the use of technological learning space	Pearson Correlation	1	.980**
	Sig. (2-tailed)		.000
	N	52	
Effective Teaching	Pearson Correlation	.980**	.1
	Sig. (2-tailed)	.000	
	N	52	52

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

Pearson Product Moment Correlation was conducted to determine the relationship between teachers' perception toward technological learning space and effective teaching among primary school teachers. The Pearson Correlation (r = .980**, n =52, p = 0.000) shows a significant positive relationship between teachers 'perception toward technological learning space and effective teaching among primary school teachers in Sagamu local government area. Therefore, the null hypothesis is not rejected, and it concluded that a significant positive relationship exists between teachers' perception towards technological learning space and effective teaching among primary school teachers in Sagamu local government area.

Hypothesis three

There will be significant influence to which technological learning space affects teaching among primary school teachers in the study area.

Table 3a: Model Summary

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
l	.992**	.985	.984	.34311

a. Predictors: (Constant), Use_of_technological_learning_space

The model summary in table 3a shows the correlation coefficient and coefficient of determination. The result shows that the *R* value of .992[a] indicates a high degree of correlation while the R^2 value of .985indicates that 98 % total variation recorded in influencing teaching was explained by changes in the use of technological learning space.

Table 3b: Anova[a]

Model		Sum of Square	Df	Mean Square	F	Sig.
l	Regression	378.806	1	378.806	3217.692	.000[b]
	Residual	5.886	50	.118		
	Total	384.692	51			

a. Dependent Variable: Effective Teaching

b. Predictors: (Constant), Use_of_technological_learning_space

Table 3b shows the significance of the model (model fit). The coefficient of 3217.692 and significance value of 0.000 prob.< *0.05*), shows that overall, the regression model statistically and significantly predicts teachers effective teaching.

Table 3c: Regression results of the effect of Technological learning space on teaching among primary school teachers

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
l	(Constant)	.208	.307		.677	.501
	Use_of_technological_ learning_space	.990	.017	.992	56.725	.000

a. Dependent Variable: Effective Teaching

Table 3c shows a regression analysis of the influence of Technological learning space on teaching among primary school teachers. The coefficient of the use of technological learning space is .990 while the std errors is .017. Meanwhile the t-value of the variables is 56.725, respectively. From the result, it can be inferred that technological learning space can significantly (t =56.725, prob. = 0.000) predict changes in effective teaching. Since the significant value is less than 0.05 level of significance, technological learning space has positively affected teaching among primary school teachers in Sagamu local government area.

Discussion of Findings

The research looked at the influence of technological learning spaces on teaching among primary school teachers in Ogun State's Sagamu local government area. According to the research, the technology learning environment has brought new concepts about learning to improve teaching for instructors and educators globally. Spaces represent a tremendous potential for higher education to improve student and learner achievement. Through information technology, today's learning spaces can serve a new learning paradigm while satisfying the demands and expectations of instructors and other scholarly groups. Because education is a critical mission of every decent government, learning and the environment in which it takes place are crucial (Brown, 2005).

The results of hypothesis one demonstrated a considerable disparity in the utilization of electronic learning spaces between male and female primary school educators in the Sagamu local government area. Gender had a significant impact on the utilization of technology learning spaces among primary school teachers in the Sagamu local government area. This means that to achieve progress in the use of technological learning, the gender interaction impact must be recognized while advocating for the continuous use of technology to advance the frontier of education in Nigeria. This shows that using electronic learning environments in the classroom for learners and teachers will boost learning. The findings support Coleman's (2009) claim that learning may be enhanced through educational software and applications. Enhance students' comprehension, performance, critical thinking, and problem-solving abilities (Bowen, 2010). This is particularly true for students who struggle with learning. Students' knowledge and involvement will rise as they learn about and use technology in the classroom. According to Wang et al. (2010), using technology in the classroom will promote active learning and accountability.

According to results from the second hypothesis, primary school teachers in Sagamu local government area have a favorable teachers' perception of technology learning spaces and effective teaching practices. The results support Cassim and Obono's (2011) conclusion that there is a strong correlation between teacher trust and the utilization of electronic learning spaces. The role of the teacher is expanding, especially with

the introduction of electronic learning environments in pedagogy, which can boost students' academic performance, creativity, and thinking abilities. The results also back up Bas et al. (2016)'s claim that a scale should be created to gauge instructors' opinions on innovation in the classroom's teaching and learning process. There were 200 Turkish volunteer teachers in the research sample. This research created a new scale to gauge instructors' feelings about using ICT in the classroom. The paper concludes that any effort to deploy educational technology will only succeed if instructors have a favorable opinion of it (attitudes and beliefs).

Findings from hypothesis three shows that technology learning spaces have favourably influence teaching among primary school teachers in Sagamu local government area. The results are in line with those of Chien et al. (2014), who discovered that students are categorized as having high aspirations of incorporating electronic learning spaces into the classroom as a new generation is born, matures, and uses technology and may be described as a digitally born phenomenon. Ghavifekr and Rosdy (2015) found that the adoption of technological learning spaces by teachers and students in and outside the classroom is increasing, with both of whom are more likely to use technology outside the classroom, which is consistent with the finding that technological learning space integration mainly depends on personal factors, defined as "self-perception." They discovered that teacher beliefs, competencies, and attitudes were the obstacles to technology integration in the classroom, decreasing the degree of technological learning space integration.

Recommendations

1. The federal and state government should support all gender in training on ICT and other technology-based tools for sustainable performance.
2. The authorities should know that motivating and rewarding all primary school teachers to use technological learning space both in and outside the classroom is important.
3. The government and other stakeholders in the education sector should support that technological learning space tools be included in check curriculum design so that all teachers and learners can easily use them.

Conclusion

The finding implies a significant difference in the use of technological learning space among primary school teachers in the Sagamu local government area based on gender. This shows a significant positive relationship between teachers' perception toward technological learning space and effective teaching among primary school teachers in Sagamu local government area. Moreso, the finding maintained that technological learning space would significantly influence teaching among primary school teachers in Sagamu local government area of Ogun State.

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