Bridging the Generational Gap between the Teachers and Students in the Utilization of Modern Technology in the Teaching Methods in Public Secondary Schools in Delta State

# Bridging the Generational Gap between the Teachers and Students in the Utilization of Modern Technology in the Teaching Methods in Public Secondary Schools in Delta State

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## ABSTRACT

**Purpose:** The study focused on bridging the generational gap between the teachers and students in the utilization of modern technology in the teaching methods in secondary schools in Delta State. Two research questions were raised and two null hypotheses were formulated in the study.

**Methodology:** The descriptive survey design was used. The population for this study comprised all public secondary school principals and teachers in Delta State. The sample for this study was 1533 and it is made up of 100 principals and 1433 teachers in Delta State public secondary schools selected from 12 Local Government Areas. Principals represented 50% while teachers represent 10% of the population. A self developed questionnaire was design titled "Bridging the Generational gap between the Teachers and Students in the Utilization of Modern Technology Questionnaire (BGTSUMTQ)", validated and its reliability equally determined via a pilot study using test re-test reliability technique with a coefficient index of 0.96 was used. The research questions raised were answered using percentage for the study. The researcher employed descriptive statistic of mean scores and standard deviation to provide answers to the research questions while Pearson Product Moment Statistics was used to test the hypotheses at 0.05 level of significance.

**Findings**: The findings revealed that there are factors that are associated with the utilization of modern technology in teaching methods in public secondary schools in Delta State. The use of technology in education is influenced by the following factors such as teacher factor, organizational factor, technological factor and student factor. It also showed that there are strategies to be adopted to improve teachers and students in the utilization of modern technology in teaching methods in public secondary schools in Delta State.

**Unique contribution to theory, practice and policy:** Based on the findings, it therefore concluded that as a catalyst for massive change, technology has improved our existing understanding by assisting educators and students in making the most use of cutting-edge teaching techniques in Delta State public secondary schools.

**Keywords:** *Bridging, Generational gap, Modern Technology, Teaching Methods, Nigeria*

## Introduction

Education is the process of gaining valuable and applicable abilities, values, attitudes, and competences to help oneself, one's family, one's community, and the country as a whole. The Federal Republic of Nigeria (FRN, 2020) claims that education is the best tool available for bringing about social and national progress. The government aims to transform Nigeria into a nation that is "free and a democratic society, a just and egalitarian society, a united, strong and self-reliant nation, a great and dynamic economy and a land full of bright opportunities for all citizens" (FRN, 2020) by using education as the ideal tool for achieving the desired national development. But during the past 20 years, the accessibility and affordability of technology has increased, highlighting the difference between educators and students in the utilization of modern technology in teaching and learning.

In the 21st century, technology is a pervasive presence in teaching and learning in the classroom. Unintended consequences of a technologically rich classroom learning environment emerge due to the dichotomy between 21st-century learners' and teachers' perceptions of the need to use technology. Several factors affecting the generation gap between teachers and students in the utilization of modern technology in teaching methods such as characteristics of 21st-century learners, teacher's perceptions of modern technology, teachers' ability to use modern technology in their teaching method, students' ability to use modern technology independently, teacher training and the need to reshape pedagogy based on national education standards focused on technology use

Currently, half of secondary school students have access to the internet, and two thirds of pupils, particularly those from urban and rural areas, own an Android phone (Calvert, Rideout, Woolard, Barr & Strouse, 2015; DeBell & Chapman, 2023). A small percentage of students also own a computer at home (Balogun, 2023). Students spent nearly the whole day using PCs and Android phones to access the internet. The world is becoming more and more computerized; almost everything is mechanized, from manual to electronic commerce and banking. Technology is having an impact on even the educational system. The admissions procedure to post-secondary institutions is now conducted online. This is only a brief summary of some recent technological innovations. Technology has made laborious work easier for men by automating laborious tasks that were previously completed by hand. Additionally, because technology plays such a large part in simplifying teaching and learning, its importance in the education sector is gradually growing. This is because as technology advances, educators and learners gain in every aspect of education (Balogun, 2023).

Mahato (2017) claims that the use of technology in education has reached astounding proportions. Applications in educational settings increase along with the exposure of new generations to advanced technologies. With the rapid advancement of technology, there is an increasing need for qualified educators to meet the growing demand for using technology into teaching and learning

processes. According to Ovie (2020) in a research carried out title utilization of modern technology for effective teaching and learning in public secondary schools in Delta State. The findings revealed that there is a gap in the utilization of modern technology as a result of limited access, challenges in implementing educational technology in secondary schools and inadequate security to safe guard facilities.

However, the integration of modern technology in education refers to the use of computer-based communication that incorporates into daily classroom instructional process. In conjunction with preparing students for the current digital era, teachers are seen as the key players in using modern technology in their daily classrooms. This is due to the capability of modern technology in providing dynamic and proactive teaching-learning environment (Arnseth & Hatlevik, 2012). It is to improve and increase the quality, accessibility and cost-efficiency of the delivery of instruction to students, it also refers to benefits from networking the learning communities to face the challenges of current globalization (Albirini, 2016). Process of adoption of modern technology is not a single step, but it is ongoing and continuous steps that fully support teaching and learning and information resources (Young, 2013).

In another development, modern technology in education generally means technology-based teaching and learning process that closely relates to the utilization of learning technologies in schools. Due to the fact that students are familiar with technology and they will learn better within technology-based environment, the issue of modern technology in schools, specifically in the classroom is vital. This is because, the use of technology in education contributes a lot in the pedagogical aspects in which the application will lead to effective learning with the help and supports from ICT elements and components (Jamieson-Procter et al., 2013). It is right to say that almost all ranges of subjects' starts from mathematics, science, languages, arts and humanistic and other major fields can be learned more effectively through technology-based tools and equipment.

In addition, modern technology provides the help and complementary supports for both teachers and students where it involves effective learning with the help of the technology to serve the purpose of learning and learning (Jorge et al., 2013). Modern technology does not act as a replacing tool for quality teachers but instead they are considered as an add-on supplements needed for the better teaching and learning.

However, teachers' readiness and skills in using modern technology are playing essential role in the utilization of modern technology in teaching methods. Teachers need sufficient ICT skills to implement the technology and to have high confident level to use it in a classroom setting. Besides, teachers require insight into the pedagogical role of modern technology, in order to use it meaningfully in their instructional process (Hennessy et al., 2015). According to Winzenried, Dalgarno and Tinkler (2010) teachers who have gone through ICT course are more effective in teaching by using technology tools as opposed to those that have no experience in such training. A school in Ireland reported that teachers who did not develop sufficient confidence avoided using

ICT. Similar case happened in Canada, some teachers admitted they were reluctant ICT users because they bothered they might get embarrassed that the students knew more about the technology than they did (Hennessy et al., 2015).

However, it is perceived that there is a gap between teachers and students in the utilization of modern technology in teaching and learning (Mahato, 2017). Young (2013) identified some of the key aspects of this gap include:

**Digital literacy:** Students are often more familiar with technology than their teachers, having grown up with smart-phones and the internet (Winzenried, Dalgarno and Tinkler, 2010).

**Technology adoption:** Students are quicker to adopt new technologies, such as social media and online tools, while teachers may be slower to incorporate these into their teaching practices (Jorge et al., 2013).

**Pedagogical use:** Teachers may not fully utilize technology to support student learning, while students may be more likely to use technology for entertainment and socialization (Winzenried, Dalgarno and Tinkler, 2010).

**Access and equity:** Some teachers may not have equal access to technology, hindering their ability to effectively integrate it into their teaching.

Professional development: Teachers may require additional training and support to effectively integrate technology into their teaching practices (Balogun, 2023).

**Generational differences:** Different generations (e.g., Gen Z, Millennials, Gen X) have varying levels of comfort and familiarity with technology.

**Curriculum integration:** Teachers may struggle to incorporate technology into their curriculum, while students may be more likely to use technology to explore topics outside of the curriculum (Winzenried, Dalgarno and Tinkler, 2010).

This gap can lead to ineffective technology integration, limited student engagement, inequitable access to technology-enhanced learning experiences, teacher discomfort and frustration, missed opportunities for student learning and growth.

**Statement to the Problem**

Despite the widespread availability and potential of modern technology to enhance teaching and learning, many educators continue to rely on traditional methods, resulting in a significant gap between the technological advancements and their effective integration into teaching practices. It could be as a result of lack of digital literacy, resistance to change, limited resources, lack of training, organizational factors, technology-related factors and students' factors as such there is a generational gap between teachers and student such as digital literacy, technology adoption, pedagogical use, access and equity, professional development, generational differences and

curriculum integration. Thereby limiting the potential for improved student outcomes, increased engagement and enhanced educational experiences.

**Research Questions**

The following research questions were raised in the study:

What are factors associated with the utilization of modern technology in teaching and learning in public secondary schools in Delta State?

What are the strategies that can be used to improve teachers and students utilization of modern technology in teaching and learning in public secondary schools in Delta State?

**Hypotheses**

The following hypotheses were formulated in the study:

There is no significant relationship between the factors associated with the utilization of modern technology and teaching methods in public secondary schools in Delta State

There is no significant relationship between the strategies that can be used to improve teaching by teachers and those that can be used to improve learning among students in public secondary schools in Delta State.

**Purpose of the Study**

The main purpose of this study is to investigate strategies that can be used for bridging the generational gap between the teachers and students in the utilization of modern technology in public secondary schools in Delta State. Specifically, the purpose of the study is to:

Examine factors associated with the utilization of modern technology in teaching and learning in public secondary schools in Delta State

Find out the strategies that can be used to improve teachers and students utilization of modern technology in teaching and learning in public secondary schools in Delta State.

**Review**

**Technology in Education**

Using technology in the classroom has many benefits for helping students understand and retain the material being taught. For example, since many students are visual learners, projection screens that are connected to computers can be placed in classrooms so that students can view their notes instead of sitting down and listening to the teacher. The class set of courses is synchronized through the use of a good variety of technologies. When combined, these technologies provided resources to students in the form of exercises, examinations, and study questions that might help them continue their education outside of the classroom (Mustapha, 2018).

Since technology is already a part of the curriculum in schools, students are accustomed to using computers to create exhibits. They also use the internet to research a variety of issues related to the topics they will be writing about in their compositions and critiques (Brandstrom, 2017). Compared to someone who does not have access to technology in school, this gives the assurance that learners will not face any difficulties when utilizing it in the workplace after they graduate. It can help them create more robust and practical activities.

According to Toyama (2022) students are getting a more sophisticated route to these kinds of learning opportunities as a result of the ongoing technology improvements. Amazing and innovative technology is frequently introduced to the market, and as the needs of the current technology are met, it becomes widely available in educational settings, even for schools that may not have much financial support available to them. Technology has advanced significantly to assist children who have not yet started school (Mustapha, 2018).

On the other hand, a lot of individuals think that technology "spoils" children. For instance, they will choose to set up a calculator instead of sitting down and learning when to compute. Despite the experience, this has been controversial, even though it is still a necessary component of the social structure that exists today. By integrating it into the classroom, students will be prepared with the scientific knowledge and instruments they need to transition from school to the workplace. Without a doubt, technology is now essential to education as well as every other part of our life since it gives students access to more knowledge and encourages them to aim high in the job market (Mustapha, 2018).

**Roles of Technology in Education**

Technology has a wide range of possible applications in education, from supporting traditional teaching methods with its use as a tool to teaching in its entirety. Considering the statistics above, a lot of students found satisfaction in the application of technology in the classroom. The following functions of technology in education must be made clear, as Akinsola and Animashun (2020) pointed out:

With the aid of technology, students may learn in a calm setting.

It respects the investigation of a "classroom experience" without interfering with the conventional communication measure.

It helps pupils think through their advantages and disadvantages.

It helps the instructor assess students' skills in a fair and consistent way.

It permits the replication of the natural classroom sequence of events, which may not occur frequently in the real world.

It makes evaluation of complex to long-term classroom and inter-institutional synergy possible.

**Factors Associated with the Utilization of Modern Technology in Teaching Methods**

Technology performance is a complex process that relies on its uniqueness, the relationships between human resources, and educational environments. The use of technology in education is influenced by the following elements, according to Brandstrom (2017).

Teacher factor: Teachers are associated with a frequently stated collection of characteristics that impact the use of technology in education. The main element associated with the use of technology has consistently been recognized as the teachers' perspectives on the use of and comfort with it (Balogun, 2023). If a teacher does not hold on to positive beliefs about technology and is not required to use it in the classroom. In addition, variables that seem to support the appropriate use of current technology in teaching and learning methods, as well as the scarcity of teachers in Nigerian schools, are the teachers' instructional attitude and the philosophy they put into practice (Urien, 2024). The teachers are afraid of technological advancement as they need to keep upgrading. Whereas, the learners/students are conversant with the latest technology and can easily cross check whatever that is taught in the class at an instance. Teachers using analog methods to teach modern students create discouragement for learning. Balogun (2023) identified a few factors that teachers face while attempting to incorporate modern technology into their teaching methods:

Digital Literacy: Many teachers in Nigeria lack the necessary digital skills to effectively integrate technology into their teaching practices.

Resistance to Change: Some teachers may be hesitant to adopt new technologies due to fear of change or lack of confidence in their ability to use them effectively.

Limited Resources: Teachers may not have access to the necessary technology, internet connectivity, or technical support to effectively integrate technology into their teaching practices.

Lack of Training: Teachers may not receive adequate training or professional development opportunities to learn how to effectively use technology in their teaching practices.

Organizational factors: The goal of the school as an institution is to relieve tension that arises from operating outside of or surpassing the authority of conventional regulation, rather than to solve a specific problem. In a similar vein, they will unavoidably and obviously resist any change that places demand on current practices. This suggests that anything that seems like a definite improvement to outsiders may be viewed as terribly distressing by an organization if it requires society to change their morals and methods of operation. The introduction of new technology demands drastic adjustments to the curriculum, methods of instruction, distribution of resources, and potentially even a reorganization of the fundamental elements of education. More importantly, because of this fundamental resistance to change, organizations are thought to contain a formation that averts widespread utilization of computers (Akinsola and Animashun, 2020).

Technology-related factors: A variety of elements, including technology itself, influence how teachers use it. Contradictory ideas about the important impacts of technology on education should be used nowadays. This leaves the teachers in doubt about the appropriate ethical use of technology in education. Moreover, teachers find it challenging to stay up to date with the newest technological developments due to the always changing nature of technology. This is due to the fact that new gear and software are released every day, making it difficult and intimidating for teachers to keep up with this enigmatic technological beast. However, because technology is unpredictable and can malfunction at any time, most teachers find it less appealing. They also find it inconvenient to spend their limited time in front of students troubleshooting issues that they may or may not be able to resolve. Therefore, instructors may choose not to employ technology in the classroom if there is not a compelling need for it and if there is not consistent support (Jacobs, 2010).

**Students' factors:**

Digital Natives: Students in Nigeria are increasingly digitally savvy and expect to use technology in their learning.

Access to Technology: Many students have access to mobile devices and the internet, making them more connected than ever before.

Tech-Savvy: Students are often more familiar with technology than their teachers, and may be able to provide valuable insights and support in the classroom.

Engagement: Technology can increase student engagement and motivation, particularly if used in interactive and collaborative ways.

Students feel that with technology, they can know what the teachers know without putting into consideration the human experience of the teachers.

Strategies to Improve Teachers and Students in the Utilization of Modern Technology

Teacher Training: To improve teachers' digital literacy and familiarize them with contemporary technologies, offer frequent training, workshops, and professional development opportunities (Akinsola and Animashun, 2020).

Mentorship Programs: Assist teachers and tech-savvy students in utilizing technology in the classroom by matching them together.

Collaborative Lesson Planning: Promote collaboration between educators and learners to create lessons that integrate technology and accommodate various learning preferences (Balogun, 2023).

Student-Initiated Projects: Enable students to take charge of integrating technology by giving them leadership roles in initiatives, producing digital content, and offering peer support.

Flexible Learning Environments: Establish adaptable learning environments that can take into account different learning styles and technological capabilities so that students can work efficiently and pleasantly.

Parental Involvement: Assist parents in the process by giving them tools and knowledge about how to encourage their kids' usage of technology.

Resource Allocation: Make sure schools have access to the internet, the right equipment, and technical assistance so they may successfully incorporate technology into their teaching and learning methods (Prensky, 2018).

Curriculum Update: Update the curriculum often to reflect the value of technology in today's classrooms and to offer precise instructions on how to incorporate it (Akinsola and Animashun, 2020).

Technology assistance: To reduce downtime and annoyance, make sure there is enough infrastructure and technical assistance.

Generational Exchange: Plan occasions and exercises that allow educators and learners to interact and exchange views, ideas, and experiences on the use of technology.

Continuous Assessment: To pinpoint areas that need improvement, assess the success of integrating technology on a regular basis and get input from parents, teachers, and students (Balogun, 2023).

By implementing these strategies, secondary schools in Nigeria can bridge the generational gap and create a more inclusive, technology-rich learning environment that benefits both teachers and students. Technology will never be a threat to learning or replace the classroom teacher. However, since the teachers' generation and the learner's generation are different, teachers must meet the students where they are.

**Methodology**

The descriptive survey design was used. The population for this study comprised all public secondary school principals and teachers in Delta State. There are currently 479 public secondary schools in Delta State made up of 479 principals and 14,877 teachers in the twenty five (25) Local Government Areas of Delta State (see appendix). The sample for this study was 1533 and it is made up of 100 principals and 1433 teachers in Delta State public secondary schools selected from 12 Local Government Areas. Principals represented 50% while teachers represent 10% of the population (see appendix). The researcher use 10% for effective administration of the instrument. A self questionnaire self - designed and titled "Bridging the Generational gap between the Teachers and Students in the Utilization of Modern Technology Questionnaire (BGTSUMTQ)", face and content validity was employed and its reliability equally determined via a pilot study using test re-test reliability technique with a coefficient index of 0.96 and factorial vali was used. The research

questions raised were answered using percentage for the study. The researcher administered a total of 1,533 questionnaire to randomly selected principals and teachers from the selected public secondary schools in the study area and 1530 copies were retrieve. The researcher employed descriptive statistic of mean scores and standard deviation to provide answers to the research questions while Pearson Product Moment Statistics was used to test the hypotheses at 0.05 level of significance.

**Table 1: Mean Scores and Standard Deviation Analysis on Factors Associated With the Utilization of Modern Technology in Teaching Methods**

| SN | Factors Associated With the Utilization of Modern Technology | Mean | SD | Remark |
|----|-----------------------------------------------------------|------|-----|--------|
|    | Teacher factor | 2.96 | .83 | + |
|    | Organizational factors | 3.18 | .77 | + |
|    | Technology-related factors | 3.14 | .81 | + |
|    | Students' factors | 3.04 | .75 | + |
| Grand Mean Score |  | 3.03 | .79 | + |

Keys: + = Agree, - = Disagree

Data in Table 1 shows mean scores and standard deviation analysis on factors associated with the utilization of modern technology in teaching methods in public secondary schools in Delta State. The result shows that respondents agreed on all the items with mean scores above 2.50 benchmark for the study.

**Table 2: Mean Scores and Standard Deviation Analysis on the Strategies to Improve Teachers and Students in the Utilization of Modern Technology in Teaching Methods**

| SN | Strategies to Improve Teachers and Students in the Utilization of Modern Technology | Mean | SD | Remark |
|----|---|------|------|--------|
| | Teacher training | 2.94 | .84 | + |
| | Mentorship programs | 2.80 | .76 | + |
| | Collaborative lesson planning | 2.84 | .82 | + |
| | Student-initiated projects | 3.06 | .89 | + |
| | Flexible learning environments | 3.16 | .79 | + |
| Grand Mean Score | | 2.97 | .81 | + |

Keys: + = Agree, - = Disagree

Data in table 2 shows mean scores and standard deviation analysis on strategies to improve teachers and students in the utilization of modern technology in public secondary schools in Delta State. The result shows that respondents agreed on all the items with mean scores above 2.50 benchmark for the study.

**Table 3: Pearson "r" on Factors Associated With the Utilization of Modern Technology**

| Variables | N | X | DF | r-Cal. | r-Crit. | Level of Sign | Decision |
|-----------|---|---|----|--------|---------|---------------|----------|
| Factors associated with the utilization of modern technology | 1533 | 2.96 | 1530 | 0.132 | 0.062 | | |
| | | | | | | 0.05 | Significant |
| Teaching methods | | 2.82 | | | | | |

Data in table 3 revealed Pearson product moment correlation coefficient analysis on factors associated with the utilization of modern technology in teaching methods in public secondary schools in Delta State. The mean was 2.96 and 2.82 factors associated with the utilization of modern technology and teaching methods respectively. The calculated r - value was 0.132 while

the critical r-table value was 0.062 with DF of 1530 at 0.05 level of significance. Since the calculated r - value was greater than the critical r-table value, the null hypothesis is rejected. Thus, there is a significant relationship between the factors associated with the utilization of modern technology in teaching methods in public secondary schools in Delta State.

**Table 4: Pearson "r" on Strategies to Improve Teachers and Students in the Utilization of Modern Technology in Teaching Methods**

| Variables | N | X | DF | r-Cal. | r-Crit. | Level of Sign | Decision |
|---|---|---|---|---|---|---|---|
| Strategies to improve teachers and students in the utilization of modern technology | 1533 | 2.94 | 1530 | 0.067 | 0.062 | 0.05 | Significant |
| Teaching methods | | 2.82 | | | | | |

Data in Table 4 revealed Pearson product moment correlation coefficient analysis on strategies to improve teachers and students in the utilization of modern technology in teaching methods in public secondary schools in Delta State. The mean was 2.94 and 2.82 for strategies to improve teachers/students in the utilization of modern technology and teaching methods respectively. The calculated r - value was 0.067 while the critical r-table value was 0.062 with DF of 1530 at 0.05 level of significance. Since the calculated r - value was greater than the critical r-table value, the null hypothesis is rejected. Thus, there is a significant relationship on the strategies to improve teachers and students in the utilization of modern technology in teaching methods in public secondary schools in Delta State.

**Discussion of Findings**

Findings revealed that there are factors that are associated with the utilization of modern technology in teaching methods in public secondary schools in Delta State. This is in line with Brandstrom (2017) who asserted that technology performance is a complex process that relies on its uniqueness, the relationships between human resources, and educational environments. The use of technology in education is influenced by the following factors such as teacher factor, organizational factor, technological factor and student factor. Thus, there is a significant relationship between the factors associated with the utilization of modern technology in teaching methods in public secondary schools in Delta State. It also showed that there are strategies to be adopted to improve teachers and students in the utilization of modern technology in teaching

methods in public secondary schools in Delta State. This is in line with Akinsola and Animashun (2020) who noted that to improve teachers' digital literacy and familiarize them with contemporary technologies, offer frequent training, workshops, professional development opportunities teacher training, mentorship programs, collaborative lesson planning, student-initiated projects, flexible learning environments etc. Thus, there is a significant relationship on the strategies to improve teachers and students in the utilization of modern technology in teaching methods in public secondary schools in Delta State.

**Conclusion**

Based on the findings, it therefore concluded that as a catalyst for massive change, technology has improved our existing understanding by assisting educators and students in making the most use of cutting-edge teaching techniques in Delta State public secondary schools. Education will be significantly impacted by these changes. Over the course of the next ten years, advanced technology will enable greater interest in teaching approaches and make education accessible to a much wider audience worldwide. The skill sets of the next generation of workers will be affected by these profound technological changes. As a result, people everywhere will need to consider how to wisely utilize these new opportunities and ensure that competition in education is facilitated in education in Delta State in particular and Nigeria at large.

**Recommendations**

The suggestions that followed were made:

The collaborative and mobile technology instructional approaches should be incorporated into secondary school curricula, according to educational curriculum planners.

Principals and secondary school board management should ensure that teachers frequently employ contemporary teaching techniques in the classroom, particularly collaborative and mobile technology instructional approaches.

Since these methods—such as problem-based and collaborative learning—demand flip classrooms, the government should offer spaces that support active learning.

To encourage the use of the mobile learning strategy, all secondary schools should construct a functional information and communication technology center, sometimes known as a digital room.

To encourage teachers to adopt modern teaching methods and lessen their emphasis on teaching with old methods, an incentive reward system should be instituted.

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