EVALUATING SENIOR SECONDARY SCHOOL STUDENTS' ENGAGEMENT IN THE USE OF DIGITAL TECHNOLOGIES FOR LEARNING IN ARGUNGU LOCAL GOVERNMENT

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Abstract

The paper primarily assessed the extent of senior secondary school students' engagement with digital technologies for instructional purposes. It also examined the motivating factors influencing students' use of digital technologies for learning, the challenges they encounter, and possible solutions to these challenges. The study adopted a survey research design, with 150 structured questionnaires randomly distributed to students from selected secondary schools in Argungu Local Government Area. Four research questions guided the study, and the data collected were analyzed using descriptive statistics, specifically mean and standard deviation. The findings revealed that both students and teachers had limited knowledge of how to effectively use digital technologies to support teaching and learning. Other challenges identified included the high cost of digital devices, internet subscription fees, unstable internet connectivity, and irregular electricity supply. Based on these findings, the study recommended the provision of reliable internet connectivity, stable electricity, and adequate digital technologies. It also emphasized the need for seminars and workshops to train both teachers and students on the effective and responsible use of digital technologies in facilitating teaching and learning.

***Keywords*:** Digital technology, engagement learning, senior secondary, school, student

Introduction

Globally, there was swift embrace of ICT utilization and other related digital technologies by all and sundry due to paradigm shift from traditional method of accessing information to the use of digital technologies. Despite the clamouring for utilization of ICT in facilitating pedagogic experiences in many schools, chalkboard, whiteboard, textbooks, charts, radios/televisions and films are being used as instructional materials. Very few institutions can boast of computers, internet and other related facilities. ICT in education is made up of knowledge sharing and transmission, which does not necessarily involve physical contact between teachers and students (Orie, 2017). Population explosion of students in Nigerian public secondary schools and the trend of learning styles via engagements with the use of digital technologies compel students to become digitally oriented.

There seemed to be some existing challenges confronting students from adequate engagement of digital technologies for learning. The use of newer technologies was challenged with high cost of devices and their judicious usage; which may have detrimental effects on their deployment and engagement for learning. Global Information Technology Report (2012) attested to some challenges plaguing students from engaging digital technologies as inadequate access to digital library, digital classrooms, computer laboratories, computer and other ICT related facilities, internet connectivity, epileptic power supply, wireless applications, multimedia systems and the problem of multimedia courseware development among others.

Kabiru (2019) observed that absence of information about approaches to incorporate ICT to improve the educational program, challenges in coordinating and utilizing diverse of ICT devices and in accessibility of fund was a significant impediment to fruitful engagement of ICT in various learning institutions in Nigeria. Kennedy (2023) opined that ICT should be fused in a specialized way in order for improvement of instructors and ICT program should be sufficiently robust to upgrade teachers' activity in schools.

The deployment and engagement of instructional technology has continued to play a major role for academic experiences within and outside the classroom. Digital technologies are powerful instructional devices that help to improve learning in various ways. The use of these technologies enables instructors to easily generate instructional materials and provides new methods to learn and collaborate (Haleem, Javaid, Qadri & Suman, 2022). The use of digital technologies provide easy access to information, retention of information, enhance increased storage of information and improved presentation of information, thereby enable learning to be more interactive, easy to disseminate and arouses interest towards learning (Grainger, Liu & Geertshuis, 2021; Lacka &Wong, 2021). It facilitates creativity, thereby encouraging cutting edge thinking individually and learning outside the traditional techniques. Both developed and developing nations of the world adopts remote learning technologies by using combinations of radio, television, online and mobile platforms to teach and learn.

The emergence of digital era and the use of Internet connectivity worldwide facilitate instructional designers, students and teachers to use advanced digital technology’s potential to revolutionise education in such way that effective and efficient instruction is accessible available to everyone and everywhere (Varea, González-Calvo & García-Monge, 2022; Carvalho, Monteiro & Martins, 2022). Traditional classroom instructions fall short of providing an immediate learning environment, faster evaluations, and more engagement; which digital learning tools and technology fill this void via judicious engagements (Vakaliuk, Spirin, Lobanchykova, Martseva, Novitska, & Kontsedailo, 2021). The use of laptops, smart phones and other related digital technologies are becoming very popular among the general public and most especially students in facilitating teaching and learning of various concepts within and outside the classrooms. Some of the efficiencies that the digital technologies provide are simply unrivalled by traditional learning methodologies.

The flexibility of technology and non-intrusive nature of digital technologies make learning more

appealing, individualistic and collaboratively used for learning. Integrating technology into education provides students with an engaging learning experience, allowing them to remain more interested in the subject without being distracted. The utilization of projectors, computers, and other related digital devices makes teaching-learning more fascinating and entertaining for students. Student learning can become more dynamic and engaging by establishing tasks in class that incorporate technology resources, oral presentations, and group participation (Haleem, Javaid, Qadri & Suman, 2022). The use of digital technologies and the internet-enabled gadgets like laptops, smartphones, tablets, Chromebooks, etc. by the students facilitate rapid comprehension of concepts than the use of "chalk and talk". Instead of taking notes on what the teacher has taught, most of the curriculum is delivered virtually to students through engaging and interactive platforms. The use of the internet has extended the options for the transmission and access to educational information thereby resulted in the rise of new communication channels. Students learn many concepts and topics on their own by using internet-enabled resources and digital classrooms to update and upgrade their knowledge banks.

Digital technologies have emerged as the savior of education in this critical time (Javaid, Haleem, Vaishya, Bahl, Suman & Vaish, 2020). It assists in developing abilities that will require students' professional performance, such as problem-solving, thinking structure creation, and process comprehension (Araújo, Knijnik & Ovens, 2021); and help to improve the classroom environment by making teaching-learning process become more fascinating and captivating (Seale, Colwell, Coughlan, Heiman, Kaspi-Tsahor & Olenik-Shemesh, 2021).

However, some challenges encountered were the newness and acceptance of these devices for teaching and learning. Digital technologies seemed to become a formidable strategy used by both teachers and students to manage initially since traditional instructors are hesitant to include contemporary technology and gadgets in school. Some teachers envision the deployment and engagement of newer technologies as distractions rather than intelligent learning devices (Vakaliuk, Spirin, Lobanchykova, Martseva, Novitska, & Kontsedailo, 2021). Therefore, this study aimed at investigating the Nigerian Senior Secondary School students' utilization of digital technologies for learning, related motivating factors for students' engagements of digital technologies for learning, challenges facing students on the use of digital technologies and perceived solutions to the challenges hindering students from engaging digital technologies for learning.

Statement of Problem

Many schools still rely on traditional teaching methods like chalkboard and textbooks, limiting the integration of digital technology into education. The high cost of digital devices, coupled with inadequate ICT infrastructure and unreliable power supply, further restricts students' access to digital learning tools and resources. Additionally, lack of proper teacher training in ICT integration prevents the effective use of digital technologies in the classroom, hindering students' learning experiences. In view of the above problems, this study investigated the engagements of Senior Secondary School students in the use of digital technologies for learning, related

motivating factors for students' engagements of digital technologies for learning, challenges facing students on the use of digital technologies and perceived solutions to the challenges hindering students from engaging digital technologies for learning.

Research Questions

The following research questions were set to guide the study in relation to senior secondary school students in digital technologies for learning in Argungu Local Government, Kebbi State:

1. Do secondary schools students use digital technologies for learning?
2. What are the motivating factors for students' engagement in digital technologies for learning?
3. What are the challenges facing students on using digital technologies towards learning?
4. What are the possible solutions to the challenges hindering students from engaging digital technologies for learning?

Objectives of the Study

The study aimed at investigating the engagements of senior secondary school students in digital technologies for learning in Argungu Local Government, Kebbi State. This can be achieved through the following specific objectives:

1. To find out the extent to which secondary schools students engage with digital technologies for learning.
2. To identify the related motivating factors for students' engagement in digital technologies for learning.
3. To determine the challenges facing students while using digital technologies for learning.
4. To find out the possible solutions to the challenges hindering students from engaging digital technologies for learning

Methodology

The study adopted a descriptive survey design. The target population comprised all senior secondary school students in Argungu Local Government Area of Kebbi State. A purposive sampling technique was employed to select five senior secondary schools based on the availability of computer laboratories. From these schools, 30 students were randomly selected, giving a total sample size of 150 respondents. Data were collected using a researcher-designed questionnaire developed to obtain respondents' views on the utilization of digital technologies for learning, motivating factors influencing students' engagement with digital technologies, challenges

encountered, and possible solutions. The instrument was subjected to both face and content validity through the review of three educational technologists. A pilot test was conducted using 20 students drawn from the sampling frame. The reliability of the instrument was established using Cronbach's Alpha, which yielded a coefficient of 0.67. Data collected during the main study were analyzed using mean and standard deviation.

Results

The responses of senior secondary school students on the utilization of digital technologies for learning, the motivating factors influencing their engagement, the challenges hindering their usage, and the possible solutions to these challenges were examined. Data were collected and analyzed using frequency counts, mean, and standard deviation to assess the level of engagement among secondary school students in Argungu Local Government, Kebbi State.

Research question 1: Do secondary schools students use digital technologies for learning? Table 1: Frequency of use of digital technologies for learning

S/N	Item	Mean	S.D
1	Computer	2.54	1.59
2	Internet	2.56	1.60
3	Projector	2.40	1.54
4	Camera	2.52	1.59
5	Mobile Phone	2.73	1.65
	Grand Total	**2.55**	**1.60**

Table 1 revealed that use of Mobile Phone has the highest mean of 2.73 and standard deviation of 1.65; followed by internet with 2.56 mean and 1.60 S.D; also, computer has the mean score of 2.54 and S.D of 1.59; camera has mean of 2.52 and S.D of 1.59; while the use of projector has the lowest mean of 2.40 and S.D. of 1.54. The grand mean scores for the utilization of digital technologies is 2.55 and S.D. of 1.60. Therefore, it was inferred that students makes use of the digital technologies in facilitating learning.

Research question 2: What are the motivating factors for students' engagement of digital technologies for learning?

Table 2: Motivating Factors for Students' Engagement of Digital Technologies

S/N	Item	Mean	SD
1	Use of digital technologies improves learning	3.10	1.76
2	It facilitate learning individually anytime and anywhere	2.52	1.59
3	It enhances engagement of students to explore varieties of concepts	2.71	1.64
4	Use of digital technologies increases students motivation towards learning	2.10	1.45
5	The use of digital technologies facilitate collaborative learning	2.53	1.59
	Grand Total	**2.59**	**1.61**

Table 2 shows the motivating factors for students' engagement in digital technologies for learning. The use of digital technologies improves learning has the highest mean of 3.10 and Standard deviation of 1.76; digital technologies enhances engagement of students to explore varieties of concepts has the mean of 2.71 and S.D. of 1.64; the use of digital technologies facilitate collaborative learning has mean of 2.53 and S.D. 1.59; digital technologies facilitate learning individually anytime and anywhere has mean of 2.52 and S.D. of 1.59; use of digital technologies increases students' motivation towards learning has the lowest mean of 2.10 and S.D. of 1.45. The grand mean score of 2.59 and Standard Deviation of 1.61 revealed students' consideration as motivating factors on engagement of digital technologies for learning.

Research question 3: What are the challenges facing students on using digital technologies towards learning?

Table3: Challenges facing students on the use of digital technologies

S/N	Items	Mean	S.D
1	Students' inadequate knowledge on the use of digital technologies	2.20	1.48
2	Digital technologies are not easily affordable due to their high cost	2.73	1.65
3	Inadequate knowledge hinder some teachers to use digital media for teaching	2.64	1.62
4	Subscription to the internet is not affordable	2.65	1.63
5	Unstable internet connectivity to engage digital technologies for Learning	2.63	1.62
6	Erratic nature of electricity mostly hinder their use for learning	2.53	1.59
	Grand Total	**2.56**	**1.60**

The table 3 revealed the challenges facing the use of digital media as thus: digital technologies are not easily affordable due to high cost has the highest mean of 2.73 and 1.65 S.D, Subscription to the internet is not affordable has mean 2.65 and S.D 1.65, also, inadequate knowledge hinder some teachers to use digital media for teaching has mean of 2.64 and 1.62 S.D; unstable internet connectivity to engage digital technologies for learning has mean of 2.63; erratic nature of

electricity mostly hinder their use for learning has mean of 2.53 an S.D of 1.59. Students' Inadequate knowledge on the use of digital technologies has the lowest mean of 2.20 and S.D 1.48. The grand mean of challenges facing the use of digital technologies is 2.56 and S.D. of 1.60. Therefore, it can be inferred that aside that the students are not having sufficient knowledge on the use of digital technologies, digital technologies are not easily affordable due to high cost, subscription to the internet is not affordable, unstable internet connectivity, erratic nature of electricity and inadequate knowledge hinder some teachers to engage the use of digital technologies for teaching.

Research question 4: What are the possible solutions to the challenges hindering students from engaging digital technologies for learning?

Table 4: Perceived Solutions to the Challenges

S/N	Items	Mean	S.D
1	Attending seminar and trainings on the use of digital technologies	2.74	1.66
2	Students' self-development to acquire technical skills on the use of digital technologies	2.67	1.63
3	Internet Subscription provider should improve on the connectivity	2.63	1.62
4	Subscription to the internet should be subsidized and affordable to learners	2.50	1.58
5	Professional development on update teacher's skills and knowledge on the use of digital technologies should be encouraged	2.55	1.60
6	School administrators should procure the needed digital technologies for use	2.75	1.66
7	Constant supply of electricity through generating plant or solar source	2.65	1.63
	Grand Total	**3.01**	**1.73**

Table 4 shows the analysis on the solution to the challenges facing the using of digital technologies in secondary schools. Attending seminar and trainings on the use of digital technologies has the mean of 2.74 and 1.66 S.D; then the statement that school administrator should procure the needed digital technologies for use has the highest mean of 2.75 and S.D of 1.66, also students' self-development to acquire technical skill on the use of digital technologies has mean 2.67 and S.D of 1.63; while constant supply of electricity through generating plant or solar source with mean 2.65 and 1.63 S.D; Internet subscription provide should improve on the connectivity has mean of 2.63 and 1.62 S.D.; while professional development on update teacher's skills and knowledge on the use digital technologies should be encouraged has mean 2.55 and 1.60 S.D. The statement subscription to the internet should be subsidized and affordable to learners has the lowest mean of 2.50 and S.D. of 1.58. The grand mean of solution to the challenges facing the use digital media for learning is 3.01 and 1.73 S.D. The implication is that challenges facing students towards the use of digital technologies can be remediated via the suggested solutions.

Discussions

The research investigated the utilization of digital technologies by Senior Secondary School students for learning, the motivating factors influencing students' engagement with digital technologies, the challenges hindering their use, and possible solutions to those challenges.

Research Question 1: Utilization of Digital Technologies for Instruction

The findings of this study aligned with Haleem, Javaid, Qadri, and Suman (2022), who reported that digital technologies are frequently utilized because they provide easy access to information, enhance retention, support increased storage, and improve the presentation of information. These benefits make learning more interactive, facilitate knowledge dissemination, and stimulate interest in learning (Grainger, Liu & Geertshuis, 2021; Lacka & Wong, 2021). Both developed and developing nations adopt remote learning technologies by combining radio, television, online, and mobile platforms for teaching and learning. This study also concurred with Lacka and Wong (2021) that frequent utilization of digital technologies fosters creativity, encourages innovative thinking, and supports learning beyond traditional techniques.

Research Question 2: Motivating Factors for Students' Engagement

The study corroborated Javaid, Haleem, Vaishya, Bahl, Suman, and Vaish (2020), who noted that learning becomes more dynamic and engaging when tasks incorporate technology resources, oral presentations, and group activities. The use of digital technologies and internet-enabled devices such as laptops, smartphones, tablets, and Chromebooks facilitates rapid comprehension of concepts compared to the traditional "chalk and talk" method. Instead of relying solely on note-taking, much of the curriculum is delivered virtually through engaging platforms (Haleem, Javaid, Qadri & Suman, 2022). Students independently explore concepts and expand their knowledge using digital classrooms and online resources. Moreover, digital technologies help develop essential professional skills such as problem-solving, structured thinking, and process comprehension (Araújo, Knijnik & Ovens, 2021), while also enriching the classroom environment and making the teaching–learning process more captivating (Seale, Colwell, Coughlan, Heiman, Kaspi-Tsahor & Olenik-Shemesh, 2021).

Research Question 3: Challenges Facing Students in Using Digital Technologies

The study agreed with Vakaliuk, Spirin, Lobanchykova, Martseva, Novitska, and Kontsedailo (2021) that students face persistent challenges in effectively engaging with digital technologies. Some teachers perceive new technologies as distractions rather than learning tools (Kennedy, 2023). High costs of devices and their maintenance also limit access. The Global Information Technology Report (2012) identified additional barriers, including inadequate access to digital libraries, classrooms, computer laboratories, ICT facilities, poor internet connectivity, unstable electricity supply, and limited multimedia systems. Kabiru (2019) similarly noted difficulties in coordinating ICT devices and inadequate funding as major obstacles to effective integration of ICT in Nigerian schools.

Research Question 4: Possible Solutions to the Challenges

The study supported Kennedy (2023), who suggested that ICT should be integrated in specialized ways to enhance teachers' effectiveness. ICT programs should include regular seminars and training sessions to improve teachers' digital competencies, while students should also develop technical skills for self-directed learning. Digital technologies can foster essential professional skills such as problem-solving and structured thinking (Araújo, Knijnik & Ovens, 2021) and improve the classroom environment (Seale, Colwell, Coughlan, Heiman, Kaspi-Tsahor & Olenik-Shemesh, 2021). To overcome challenges, internet connectivity must be expanded, and subscription costs should be subsidized to ensure affordability (Kennedy, 2023; Vakaliuk et al., 2021). Professional development programs should regularly update teachers' skills and knowledge (Varea, González-Calvo & García-Monge, 2022). School administrators are encouraged to procure the necessary digital technologies and ensure stable electricity through generators or renewable energy sources such as solar power (Carvalho, Monteiro & Martins, 2022).

Summary/Conclusion

The findings of the study revealed that most students frequently utilize available digital technologies to facilitate learning. In terms of motivating factors, access to digital technologies for enhanced learning, the opportunity to explore diverse concepts individually at any time and place, and the potential for collaborative learning were identified as the key drivers of students' engagement with digital technologies. However, several challenges were observed. Many students lacked sufficient knowledge of how to effectively use digital technologies. Affordability was also a major issue, as the high cost of devices and internet subscriptions limited access. In addition, unstable internet connectivity, erratic electricity supply, and inadequate teacher competence in using digital technologies hindered effective integration into teaching and learning. To address these challenges, the study suggested several solutions: organizing seminars and training sessions for both teachers and students on the effective use of digital technologies; encouraging students to engage in self-development to acquire technical skills; improving internet connectivity and making subscription costs more affordable; promoting professional development programs to update teachers' skills and knowledge; ensuring that school administrators procure the necessary digital resources; and providing a constant power supply through generators or solar energy sources.

Recommendations

To address the challenges confronting students in the use of digital technologies for learning, the following recommendations are proposed:

1. The government should organize seminars and workshops for teachers and students on the effective and judicious use of digital technologies in teaching and learning.

2. Students should be encouraged to pursue self-development initiatives to acquire technical skills in the use of digital technologies.

3. Teachers should be supported through continuous professional development programs to enhance their knowledge and skills in integrating digital technologies into instruction.

4. Internet service providers should ensure stable and reliable internet connectivity.

5. Network providers should subsidize internet subscription costs to make access affordable and inclusive for students.

6. School administrators should procure and maintain adequate digital technologies to support learning.

7. Constant electricity supply should be ensured, either through standby generators or renewable energy sources such as solar power

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