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# A Descriptive Survey of Technology's Role in the Classroom and Effect on the Students' Learning.

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**Abstract:** In this paper, we carried out an in-depth study of the various roles of technology in classroom and the effects on the students' learning. The study was conducted using descriptive survey research design. A sample of 300 teachers and students of secondary school was randomly selected from six secondary schools in Awka south Local Government Area of Anambra State, Nigeria. The data for this study was collected using questionnaire titled Technology's Role and Effect Questionnaire (TREQ) which explored the roles of technology in classroom and the effects on the students' learning. Data was analyzed using percentages and mean scores. Result shows a good number of ways in which technology has facilitated classroom teaching and learning. It also pointed out some of the positive and negative effects of technology on students' learning while exploring the various means of overcoming these negative effects. The study concludes that although technology can make or mar students' learning, its positive impact supersedes its adverse effect on students' learning and as such recommended that technology-based education should be encouraged and adopted in various schools to promote students' learning.

**Keywords**: Classroom, Learning, E-learning, Education, Technology, Gamification,

## I. Introduction

Presently, educators are faced with a great task of providing quality education that can withstand the test of time for the twenty-first century students (Harris 2016). It entails providing all the technical and educational facilities needed for students to excel in this innovative era.

The use of technological equipment in school learning system has positively impacted learning as it helps to promote engagements, properly equip teachers, enhance lesson planning and encourage personalized learning.

Technology is a very crucial element in the life of every student and it's incorporation into the classroom learning has conributed immensely to student's academic growth, although there are few flaws associated with it. Since the introduction of technology in school systems, students have become more eager and committted to learning and this has greatly enhanced teaching and learning.

Using computers and other technological tools has been proven to make students more proactive as well as being more involved in the learning process (Halverson, R. & Shapiro, R. B., 2012, Kovács P.T. et al 2015, Osadchyi V.V. et al, 2021). With this, the teachers guide them through the learning process thereby improving their learning efficiency.

Researchers have shown different merits and dismerits of integtaing technology into classroom learning. Christian Louis Lange once said that technology is a useful servant as well as dangerous master. The effective use of computer and other technnological tools in learning has brought a lot of changes to the educational sector, thus, creating more learning opportunities. teachers as well as students have benefactors from these positive changes accrued for technological innovation in education.

Today, teachers apply technological tools during classrooms learning and this has increased students' interest towards learning. The Internet of Things (IoT), which is one of the most cost-effective technology is now being applied in educatinal system. It has also proven to be a powerful technique for providing an exceptional learning experience for everybody (Keengwe, M. and Bhargava, 2014, Dreimane, R. and Upenieks, 2022, Rogers, P.L. 2000).

Incorporation technological into learning has also lifted a lot of barriers facing educational system, especially distance barrier as both students and teachers can now communicate in real time using advanced technological tool. However, care should be taken to ensure that technoloy serves the purpose of facilitating teaching and learning rather than replacing the teachers.

### Statement of the Problem

Passive learning has been the norm in conventional classrooms. The students tend to do more of listening and taking notes instead of being actively involved in the learning systeml. This method often leads to reduce students' engagement and ability to reason critically as they are not motivated to participate actively in classrooms through asking of questions, class discussion and other

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inspiring knowledge practices. Applying digita tools in classroom learning will assist greatly in improving students' engagement, critial reasoning skills, teachers' lesson plans and personalized learning.

Poor interaction between the teacher and students is another vital issue associated with conventional classroom setting. As a result of this the teachers often find it difficult to ascertain specific needs of a student owing to their concentration on the entire class rather than the individual. In other words, students most times do not get the required attention and assistance from the teachers. Proper integration of digital learning tools will greatly promote student's motivation and engagement during classroom learning.

Another problem prevalent in conventional learning system is inadequate experiential learning. Most times the syllabus does not really contain information on the technological phenomenon of the real world and skills needed for the students to be employable in their career. However with the availability of personalized e-learning system, students can learn, explore and experiment independently.

**Purpose of the Study**

This aim of this work is to discover the various roles of technology in the classroom and their effects on students' learning. We focused on examining the perceptions of people as regards the roles of technology in the classroom and the impact on students' learning. By so doing we were able to identify the various roles played by technology in classrooms, discover the various ways in which technology has influenced students' learning. For the purpose of this study, technology includes only educational technology, i.e. internet and other computer-aided tools.

To achieve this aim, the following objectives were put in place:

i. Identification of the various roles played by technology in classroom.

ii. Discovering the various ways in which technology has positively influenced students' learning.

iii. Exploration of the negative influences of technology on student's learning.

iv. Ascertaing various ways to overcome the negative effect of technology on students' learning.

**Research Question**

The following research questions were raised to guide the study:

1. What are the roles of technology in classroom?
2. To what extent does technology positively influence students' learning?
3. In what ways does technology negatively influence students' learning?
4. What are the remedies to the negative effects of technology on students' learning?

**II. Review of related works**

Technology is a very vital tool needed in the development of skills required for students' exceptional performance, which include problem-solving ability, creative thinking and comprehension. These skills and abilities acquired by students will go a long way to facilitate their successful career life.

Instructional materials and technological tools help in the enhancement of the classroom teaching, as they constitute greatly in making the process of teaching and learning more interesting. It helps schoool systems to be more flexible and provide customized curriculum that is centered on the needs of individual student (Dufour, C. et al, 2010, Dudar, V.L. et al, 2021).

With technology based education, children become more engaged in the learning process. This is because young people are currently used to digital gadgets and integrating them into classroom would certainly help to awaken their interest and intensify their level of involvement. Technology based learning promotes students' engagement in learning such that their attention are focussed on the teaching without any distraction. The use of projectors, computer systems, and other technical equipment in the classroom makes learning enticing and pleasurable for students. Also initiating tasks involving the use of digitals resources, oral presentations and team participation makes students' learning more dynamic and enthralling. Participation can also go beyond oral communication, (Pen prase, B.E., 2018, Kryukov, V., and Gorin, A. 2017).

The web technologies such as wikis, podcasts and blogs help learners to create content, connect with others, review work from others and further their studies. Applying digital tools also makes it easier to utilize skills and techniques such as gamification and flipped classrooms to optimize classroom learning. In fact learning platforms are evolving as instructive tools that combines different methods to ensure students are presented with quality knowledge and technology makes the teaching more engaging and significant (Borthwick, A.C. 2015).

**Features of a Technology-Based Classroom**

The various features of a technology-based learning are shown in 2.1 below:

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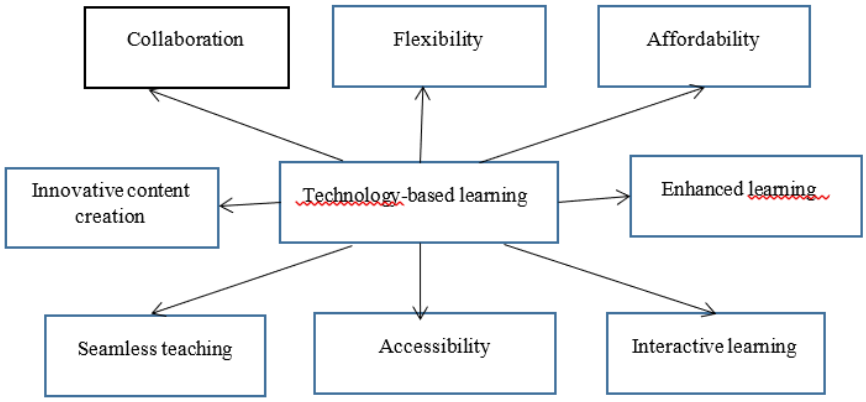


Figure. 2.1. Features of Technology-Based Learning.

Learning applications and web contents are usually used in teaching to help students improve their learning experience. Electronic classroom are made up of two major components, the technology and feedback loops. The feedback loops enable students to receive instant feedback from their instructors. Powerpoint presentations, video / audio presentations, e-learning system and so many other electronic approaches are used to enhance educational system
(Ozdamli, F. and Cavus, N. 2021), thereby making classroom learning is very participatory.

In conventional classroom system, teachers often employ tools such as graphs, colour charts and different models to facilitate students understanding. However, these methods are considered obsolete with the integration of technology in education as classroom learning has gone beyond book reading, writing on the board, coping notes and explaining concepts ( Lacka, E. et al, 2021).

**Roles of Technology in Classroom**

As the world continies to evolve, everything including education is also being transformed to meet up with the trend. Technological innovation is rapidly taking over every field of human endeavours and as a result educational technology has become the order of the day.

Having technology incorporated into classroom will be very beneficial to educational system in the following ways:

- **Gives room for better understanding:** with the aid of technology, students can basically have access to every information and resources needed for better comprehesion of diverse topics. **S**tudents have been able to handle problems in specific topics with just a simple click since the technology was incorporated into learning. With the help of different available search engines, learners can quickly search the web for the required information. Also the provision of emails and other instant messages chanels have made contributed immensely in making learning process easier for sudents. With these mediums, they can always connect with their teachers to get necessary assistance as reagards their education.
- **Encourages Students' Participation:** Proper integration of technology into classroom makes the learning process more engaging, **as s**tudents tend to be more zealous to participate and take more control in the learning process.
- **Exploring Complex Matters:** Difficult, complex and challanging tasks often encountered in the course of learning have been melowed down by incorporating technology into learning process. Nowadays, it has become easier for both teachers and students to have access to all the materials and resources required to explore and tackle these complex matters encountered during learning.
- **Saves time:** Time saving is one of the most important benefit obtained from the use of technology in educational sector. With the great number of apps made available to aid teachers in teaching and attendance taking, a lot of time is being conserved for other assignments. For example, with the help of automated attendance system, students can independently sign in for the class as they enter while the teachers prepares for her teaching. Also, with the integration of technology in education, students can now access their assignments, exams and results online, thus saving a lot of time and energy. These days different apps have been made available to provide instructors with students' status reports, which assist them in viewing the progress of each student. These reports grerated by the apps also show recommendations for improvement, aiding instructors to easily identify student's area of difficulties timely enough. This enables the learners get adequate assistance and attention needed.
- **Use of Combined Learning Methodologies:** Digital learning facilitates easy adaptation to various learning techniques. It is capable of accomodating all types of learning method conversant with any student ranging from reading, lectures, illustration and recording. Instructors can also combine these techniques to adequately impact knowlede to suit students' need. Through technological means, students can study at their convenient time through audiobooks, online games, videos

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and other online learning materials. Students and tutors also get current information as these online resources are updated regularly.

**Effects of Technology on Students' Learning**

- **Makes the earning process more engaging:** Technology has greatly impacted teaching and learning system. With digital tools, the teachers are able to deliver lessons more creatively and interactively, makeing it possible for students to actively participate in the learning process.
- **Prepares studends for the future**: the world has become digitized and as such, it has become of paramount importance that student be equiped with the knowledge of technology. The use of technical tools for teaching makes the students accustomed to basic programs and technology that would be needed for their future career.
- **Better connection with students**: one significant effect of technology on students' learning is that it provides the instructors with the opportunity to connect with themselves as well as the students and this heps in building a community with the students.
- **Enhances collaboration**: for learning process to be engaging, a lot of collaboration is required. And technological tools provides the students with an enabling environment to interact with one another and learn from each other.
- **Enhances learning process**: technology offers a great number of techniques for teaching and learning which can assist teachers administer lessons effectively to a large number of audience. It is the goal of every good teacher to reach as many students as possible and to achieve this, it is very vital that digital tools are incorporated into classroom learning.
- **Improves teacher productivity and efficiency:** the use of digital tools in classroom has been found to improve teachers' productivity and efficiency. It assists them in expanding learning opportunities for the growth and development of their students and increases students'engagement. It also helps them improve their teaching methods and encourage personalized learning.
- **Promotes** p**ersonalized learning:** With avaiability of internet**, c**lasses can be held entirely online using personal computers or mobile devices or through the use of hybrid method of learning which combines e-learning with face-face learning. In either of these methods, students can learn at their own pace and they can make use of the uploaded course material as well as resources from the web for better understanding of important concepts.
- **Sharpens students' critical thinking:** Depending on the type and context of use, technology can improve students' critical thinking skill as it has the ability of engaging multiple senses and encouraging students' commitment to learning. Also proper use of technology can boost students' performance, confidence and motivation as well as aid them to apply the knwoledge acquired into real-life scenario.

**Challenges of Technology on Students' learning**

The challenging factors of incorporating technology into classroom are mainly grouped into two, which are external and internal factors. These groups are related to one another and to the level of usage ot technology (Tezci, 2011). Some of the external factors influencing the effective integration of technology in clasrooms include lack of computers, software and other digital equipments, insufficient time to plan lessons and poor administrative and technical support (Chen, 2008). Al-Ruz and Khasawneh (2011) opined that availability of technology and support are very crucial in the integration of technology into classrooms, stating that high support and availability of technology increase the efforts of instructors towards integrating technology in classroom teaching.

Sang et al. 2011 stated that a lot of internal factors also influence the outcome of integrating technology in learning. These factors as relates to instructors include the ability to comprehend the use of technology, beliefs that conflict with the use of technology, mindset, perceptions, motivation, digital knowledge and skills, readiness etc. (Al-Ruz and Khasawneh 2011; Chen 2008; Lin, Wang and Lin 2012; Sang et al. 2011; Tezci 2011).

Brinkerhoff (2006), is also of the opinion that there are some bottlenecks associated with incorporating technology into classroom learning, pointing out that a lot of students do not have access to digital equipments. He also stated that the poor financial status of most schools and communities constitute even more to the difficulties faced in incorporating technology into classroom learning.

Also as part of factors militating against the use of technology in teaching and leraning are the problem of excessive screen time, the efficacy of the use of technology by the instructors and the issue of the fairness of technology.

Furthermore, in as much as some students excel in online learning system, a good number of them still find it difficult to cope due to inadequate support, especially for students who were previously lagging behind in conventional classroom setting. Similarly, some instructors also find online education challenging, especially in places where it has not been the norm (Bennett, S. et al 2012).

It has also been observed that using low-tech approach for teaching can drastically affect learning. Due to the lower cost of low-tech solutions and poor financial status of some impoverished nations, schools tend to employ this approach. To ensure that learning is not mared in any way, careful investigation should be carried out to identify situations that requires high-tech or low-tech solutions and apply them accordingly.

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## III. Methodology

Methodology involves the systematic and theoretical analysis of methods adopted in a particular field of study. It deals with the theoretical analysis of the methods and principles of a domain of knowledge. Basically, it encompases the concepts of research design, area of the study, population of the study, sample and sampling technique, data collectio instrumentn, validation of the Instrument, Method for administration of the instrument and method of data analysis.

### Research Design

The study was carried out using descriptive survey design. This approach is mainly applied when people's opinions and perceptions on existing facts, conditions and events are required. For this study, the opinions and perceptions of instructors and students from different schools were sought in order to determine the roles of technology in classroom and the effect on students' learning.

### Population of the Study

The population are teachers and students of the following secondary schools in Awka south local government Area of Anambra state: Kenneth Dike Memorial Secondary school Awka, Amaenyi Girls Secondary School Awka, Community Secondary School Mbaukwu, Community Secondary School Isiagu, St. John of God Secondary School Awka, Community Secondary School NIbo. The sample was obtained by stratified random sampling. On the whole, the population of the study is two thousand (2000) respondents.

### Sample of the Study

The sample of this study was obtained from six secondary schools in Awka south local government Area. Fifty (50) students and teachers were randomly sampled in each school regardless of the class, age, sex and socio economic status. The recommended sample size of 368 for population of 9000 is advisable to ensure reasonable representation. In this research, 300 samples were selected for this research as the population is less than 9000. To ensure appropriate representation, samples were selected randomly from six secondary schools in Awka south local government area of Anambra.

### Instrument for Data Collection

The instrument used for the data collection was a questionnaire, which was well structured to elicit the necessary information to address the purpose of the study and research questions. The questionnaire has tow sections. The first section(A) deals with respondents' bio-data while the second section (B) is focused on items directly relating to the roles of technology in classroom and effect on students'learning..

Section A is made up of four items while section B is made up of four parts, each part comprised items that addressed a specific research question. The items have multiple response options wherein respondents were requested to indicate the options most acceptable to them, using a five point rating scale of: Very Big Extent (VBE), Big Extent (BE), Small Extent (SE), Fairly Small Extent (FSE), and Very Small Extent (VSE) representing 5,4,3,2 and 1 respectively.

## IV. Method of Data Analysis

The data derived from the questionnaire were analyzed using percentages and mean scores Percentages were used to analyze data collected from section 'A' of the instrument which dealt with the personal data of respondents and mean of means were used to answer the research questions.

### Decision Rule

The following boundary limits were employed for item options on the research instrument:

| Response Category | Option | Real Number Limit |
|---|---|---|
| Very Big Extent (VBE) | 5 | 4.5 - 5.00 |
| Big Extent (BE) | 4 | 3.5 - 4.49 |
| Fairly Small Extent (FSE) | 3 | 2.5 – 3.49 |
| Small Extent (SE) | 2 | 1.5 – 2.49 |
| Very Small Extent (VSE) | 1 | 0.05 – 1.49 |

### Presentation and Analysis of Data

The aim of this analysis was to provide answers to the research questions. Mean of means was applied in analyzing these research questions. The presentation was done in tables and by sections/parts according to the research questions posed in chapter one.

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**Analysis of Research Questions**

**Research Question one**

What roles does technology play in classroom?

Table 1**:** Mean Responses of Respondents on to what roles does technology play in classroom?

| S/No | Technology Roles item | Mean | Remarks |
|---|---|---|---|
| 1 | Technology brings about better comprehension | 3.63 | BE |
| 2 | Technology helps in exploring complex matters | 3.68 | BE |
| 3 | Technology encourages Interactivity and class engagement | 3.59 | BE |
| 4 | The use of technology is time-saving | 4.62 | VBE |
| 5 | Technology allows Combined learning methodologies | 3.70 | BE |
| Mean of means | | 3.84 | BE |

The result in table 1 shows that items 1,2,3 and 5 have mean scores indicating high extent (BE) and item4 has mean score indicating very big extent (VBE). This indicates that respondents posited that all the items mentioned are roles of technology in classroom.

**Research Question 2**

To what extent does technology positively influence students' learning?

Table 2: Mean Responses of Respondents on How technology positively influences students' learning?

| S/No | Positive Influence on Students' Learning item | Mean | Remarks |
|---|---|---|---|
| 6 | Technology allows Personalized Learning Opportunities | 4.00 | BE |
| 7 | Collaboration is made possible with technology | 3.32 | FSE |
| 8 | Technology Sharpens Students' Critical Thinking | 4.02 | BE |
| 9 | Technology Prepares Students for the Future | 4.00 | BE |
| 10 | Technology Provides a More Engaged Learning Environment | 4.02 | BE |
| Mean of means | | 3.87 | BE |

The result in Table 2 above shows that items 6, 8, 9and 10 have mean ratings of 4.00, 4.02. 4.00 and 4.02 respectively, indicating big extent while Item 7 has mean of 3.32 which shows fairly small extent. The mean of means of table 2 is 3.87 indicating big extent, therefore Table 2 reveals that, technology influences students' learning positively in high extent.

**Research Question 3**

In what ways does technology negatively influence students' learning?

Table 3: Mean Responses of Respondents on the ways technology negatively influence students' learning?

| S/No | Negative Influence item | Mean | Remarks |
|---|---|---|---|
| 11 | Some students come from low-income families and do not have access to technological devices. | 3.67 | BE |
| 12 | low-tech interventions for "instruction at the appropriate level" can significantly affect learning | 4.03 | BE |
| 13 | Lack of adequate knowledge to handle technological tools can affect learning | 3.89 | BE |
| 14 | Some technology-based learning tools can distract the students | 3.62 | BE |
| Mean of means | | 3.80 | BE |

The result in Table 3 shows that item numbers 11, 12, 13 and 14 have means ranging from 3.62 to 4.03 and the mean of means for Table 3 is 3.80, indicating big extent. This implies that the respondents posited that all the items mentioned are the ways technology can negatively affect students' learning.

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**Research Question 4**

5. What are the remedies to the negative effect of technology on students' learning?

Table 4: Mean Responses of Respondents on remedies to the negative effect of technology on students' learning.

| S/No | Remedies to the negative effect of technology on students' learning | Mean | Remarks |
|---|---|---|---|
| 15 | Government provision of technological tools will improve learning | 4.22 | BE |
| 16 | Organizing In-house training on how to use technological tools will enhance learning. | 4.01 | BE |
| 17 | Monitoring students properly to ensure minimum distraction will boost students' learning. | 4.12 | BE |
| Mean of means | | 4.11 | BE |

In Table 4, all the items are rated big extent with means ranging from 4.00 to 4.22. With a mean of means of 4.11, which indicates big extent, it can be inferred that if the above solutions are put in place, student's learning will be greatly improved.

**V. Summary of Major Findings**

The analysis of data collected from the field for this study is as follows:

1. Technology plays a good number of significant roles in classroom. Some of which include:
   - Better understanding
   - Helps in exploring complex matters
   - Encourages Students' Participation
   - Time-saving
   - Allows Combined learning methodologies
2. The mean ratings of respondents on the extent at which technology positively influence technology is big, indicating that integration of technology in classroom has greatly improved student learning.
3. Result in table 3 above shows that although integration of technology in classroom can improve student's learning, it has few adverse effect on students' learning.
4. The mean ratings of respondents on the remedies to the negative effect of technology on students' learning is big. This indicates that if these remedies are put in place, students' learning will be greatly improved.

**VI. Result and Discussion of the Findings**

Table 1 presents the ratings of respondents on the roles of technology in classroom. The ratings are 3.63, 3.68, 3.59, 4.62 and 3.70. All items are shown to be of big extent (BE), except item number 4 which was even rated very big. This indicates that the respondents are of the opinion that technology plays all the above mentioned roles in classroom.

The analysis of items in Table 2 which deal with research question 2 shows that the extent at which technology positively affect students' learning is of big extent. This scenario explains the opinions of respondents on the need to integrate technology in classroom to improve students' learning. The revelation in Table 2 calls for concerted efforts by government and schools to provide the necessary technological tools to promote learning in our various schools.

Table 3 sought to establish the negative effect of technology in classroom. The table pointed out that lack of knowledge, lack of finance and student's distractions problem are some of the ways in which integration of technology in classroom negatively affect students' learning.

Table 4 which is on the remedy to the negative effect of technology on students' learning recorded ratings of 4.22, 4.01 and 4.00 for items 15,16 and 17 respectively with a mean of means of 4.07. This denotes big extent and implies that if the above remedies are put in place, students' learning will be greatly improved.

**VII. Conclusion**

The conclusion, based on the findings of the study is that technology plays important roles in the classroom and has positively influenced students' learning in an enormous way. It is also evident from the finding that although technology has some demerits in student learning, its merits cannot be overemphasized. Also it is observed that if the measures proffered in the findings are properly taken the negative implication of technology on learning will be eradicated. Based on this, the study recommends that

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schools should integrate technology in their classroom teaching and learning and ensure that all the measures are put in place to ensure students' learning is not negatively affected in any way. Also the government and school owners are encouraged to make adequate supply of technological tools to schools to assist low-income students as well as occasionally organize train the trainer workshop to familiarize the teachers with current technological innovations in order to enhance students' learning.

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**Appendix 1**

**Questionnaire**

Section A

Personal data

Below are some items with multiple options intended to elicit information on your personal data. Kindly tick in the boxes provided, the option that suits you. Please be assured that the information requested are purely for research purposes and will be treated with absolute confidentiality.

1. **Gender**
   (a) Male
   (b) Female
2. **Level of Education**
   (a) Senior secondary
   (b) Junior secondary
3. **Location of school**
   (a) Urban
   (b) Rural
4. **Professional status**
   (a) Student
   **(b)** Teacher

**Section B**

Section B deals with the various roles of technology in classroom. The section has five parts, with each part addressing a specific research question. The parts contain items and each item has five options as follows:

- Very big Extent (VBE)
- Big exent (BE)
- Fairly small extent (FSE)
- Small extent (SE)
- Very small extent (VSE).

In each item, kindly tick option in the column that best suit your opinion. Please, be rest assured that your responses will be used purely for research purposes.

You are please, requested to indicate the extent to which you agree with each of the under-listed items.

Part A: The roles technology play in classroom?

1. Technology brings about better comprehension

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

+

+

2. Technology helps in exploring complex matters

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|

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| | | | | |
|---|---|---|---|---|
| | | | | |

3. Technology encourages Interactivity and class engagement

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

4. The use of technology is time-saving

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

5. Technology allows Combined learning methodologies

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

Part B: The extent technology positively influences students' learning

1. Technology allows personalized learning opportunities

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

2. Collaboration is made possible with technology

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

3. Technology sharpens students' critical thinking

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

4. Technology prepares students for the future

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

5. Technology provides a more engaged learning environment

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

Part C:

Negative effects of technology on students' learning.

1. Poor accesibilty of digital equipment affect learning

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

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| | | | | |
|---|---|---|---|---|
| | | | | |

2. Low-tech interventions for "instruction at the appropriate level" can significantly affect learning

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

3. Lack of adequate knowledge to handle technological tools can affect learning

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

4. Some technology-based learning tools can distract the students.

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

Part D: Remedies to negative effect of technology on students' learning

**1.** Government provision of technological tools will improve learning

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

**2.** Organizing In-house training on how to use technological tools will enhance learning.

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

3. Monitoring students properly to ensure minimum distraction will boost students' learning.

| VBE | BE | FSE | SE | VSE |
|---|---|---|---|---|
| | | | | |

**Appendix 2**

**Scores of the Respondents on the Questionnaire**

**Scores of respondents on the technology roles related items**

| S/No | **Technology roles related items** | | | | | Total |
|---|---|---|---|---|---|---|
| | VBE | BE | FSE | SE | VSE | |
| 1 | 80 | 105 | 60 | 35 | 20 | 300 |
| 2 | 106 | 70 | 60 | 51 | 13 | 300 |
| 3 | 83 | 100 | 50 | 44 | 23 | 300 |
| 4 | 98 | 81 | 61 | 4O | 20 | 300 |
| 5 | 100 | 80 | 70 | 30 | 20 | 300 |

**Scores of respondents on Positive effect of technology related items**

| S/No | **Positive effect of technology related items** | Total |
|---|---|---|

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| | VBE | BE | FSE | SE | VSE | |
|---|---|---|---|---|---|---|
| 1 | 140 | 70 | 50 | 30 | 10 | 300 |
| 2 | 80 | 77 | 60 | 25 | 58 | 300 |
| 3 | 132 | 100 | 30 | 18 | 20 | 300 |
| 4 | 128 | 104 | 29 | 20 | 19 | 300 |
| 5 | 130 | 107 | 21 | 24 | 18 | 300 |

**Scores of respondents on negative effect of technology related item**

| S/No | **negative effect of technology related item** | | | | | Total |
|---|---|---|---|---|---|---|
| | VBE | BE | FSE | SE | VSE | |
| 1 | 90 | 70 | 100 | 30 | 10 | 300 |
| 2 | 132 | 100 | 30 | 20 | 18 | 300 |
| 3 | 112 | 98 | 50 | 25 | 15 | 300 |
| 4 | 100 | 80 | 50 | 45 | 25 | 300 |

**Scores of respondents on remedies of negative effect related item**

| S/No | **remedies of negative effect related item** | | | | | Total |
|---|---|---|---|---|---|---|
| | VBE | BE | FSE | SE | VSE | |
| 1 | 160 | 80 | 35 | 15 | 10 | 300 |
| 2 | 150 | 60 | 50 | 22 | 18 | 300 |
| 3 | 135 | 87 | 49 | 24 | 17 | 300 |

**Appendix 3**

**Weighted Means of Respondents on the Questionnaire Items**

**Mean responses of respondents on the technology roles related items**

| S/No | **technology roles related items** | | | | | Total | Weighted mean |
|---|---|---|---|---|---|---|---|
| | VBE | BE | FSE | SE | VSE | | |
| 1 | 400 | 420 | 180 | 70 | 20 | 1090 | 3.63 |
| 2 | 530 | 280 | 180 | 102 | 13 | 1105 | 3.68 |
| 3 | 415 | 400 | 150 | 88 | 23 | 1076 | 3.59 |
| 4 | 784 | 324 | 183 | 80 | 20 | 1391 | 4.63 |
| 5 | 500 | 320 | 210 | 60 | 20 | 1110 | 3.70 |

**Mean responses of respondents on Positive effect of technology related items**

| S/No | **Positive effect of technology related items** | | | | | Total | Weighted Mean |
|---|---|---|---|---|---|---|---|
| | VBE | BE | FSE | SE | VSE | | |
| 1 | 700 | 280 | 150 | 60 | 10 | 1200 | 4.00 |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 400 | 308 | 180 | 50 | 58 | 996 | 3.32 |
| 3 | 660 | 400 | 90 | 36 | 20 | 1206 | 4.02 |
| 4 | 640 | 416 | 87 | 40 | 19 | 1202 | 4.00 |
| 5 | 650 | 428 | 63 | 48 | 18 | 1207 | 4.02 |

**Mean responses of respondents on of negative effect related item**

| S/No | **negative effect** related item | | | | | Total | Weighted Mean |
|---|---|---|---|---|---|---|---|
| | VBE | BE | FSE | SE | VSE | | |
| 1 | 450 | 280 | 300 | 60 | 10 | 1100 | 3.67 |
| 2 | 660 | 400 | 90 | 40 | 18 | 1208 | 4.03 |
| 3 | 560 | 392 | 150 | 50 | 15 | 1167 | 3.89 |
| 4 | 500 | 320 | 150 | 90 | 25 | 1085 | 3.62 |

**Mean responses of respondents on remedies of negative effect related item**

| S/No | **remedies of negative effect** related item | | | | | Total | Weighted mean |
|---|---|---|---|---|---|---|---|
| | VBE | BE | FSE | SE | VSE | | |
| 1 | 800 | 320 | 105 | 30 | 10 | 1265 | 4.22 |
| 2 | 750 | 240 | 150 | 44 | 18 | 1202 | 4.01 |
| 3 | 675 | 348 | 147 | 48 | 17 | 1235 | 4.12 |