

## Technology Enhanced Learning (Tel) as Instructional Delivery Tool for Personal Development of TVET Students in Coping with Economic Challenges

by

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### Abstract

*Over the years, traditional method of instructional delivery is majorly used in teaching and learning until recently, ICT was employed which TEL is an aspect. The need for quick and optimal learning has brought about the use of technology-enhanced learning as an instructional delivery tool in education. This research was carried out to determine technology-enhanced learning (TEL) usage in instructional delivery on the personal growth and development of students in Enugu state. Four research questions guided the study. Descriptive research design was adopted for the study, a structured questionnaire was used to collect response from 120 respondents which comprised of 95 students and 25 lecturers in universities in Enugu State. The data collected was analyzed using mean and standard deviation. The study found out that there are many technologies enhanced-learning tools for instructional delivery which includes multimedia, video conferencing etc. and that for effective use of TEL for personal growth and development of students, teachers must possess some technological skills such as; word processing skills, spreadsheets skills etc. The study also revealed setbacks limiting the use of TEL for instructional delivery for personal growth and development of students which includes; budget limitations on the provision of TEL, lack of professional training for teachers, poor network infrastructure etc. and the research also suggested solution to the setbacks as provision of loan and grants for universities, proper professional training of teachers in the use of TEL, provision network infrastructure for TEL devices etc.*

**Keyword:** Technology, Technology Enhanced Learning, Teaching and learning, Personal development, TVET, Economic challenges.

### Introduction

Technology is a collection of systems designed to perform some function at a certain time and place to facilitate the daily life of human beings. Elen and Clarebout (2016) view technology as engineering procedures that assist in the creation of new gadgets. The word technology is often used in common parlance to digital devices, online and blended systems, scientific artifacts, tools, and other facilitating objects (Brown and Sammut, 2012). Over the years, technology has been used in education to enhance learning. Kirkwood and Price (2014) viewed enhanced learning as improvement in the existing processes and the outcomes of learning. Therefore, enhanced learning increased learning rate of student as a result of right usage of processes of teaching or introduction

of new and effective ones. Learning will be considered “enhanced” if students gain more marks and have acquired more knowledge. The use of any technology to enhance or improve student learning is termed technology enhanced learning (TEL), According to Price and Kirkwood (2014), technology enhanced learning (TEL) is the application of information and communication technologies (ICT) to teaching and learning. According to Australian national university (ANU, 2022), TEL refers to the combination of pedagogical principles and practices that support student learning with the appropriate application of electronic communications and computer-based technology.

TEL encompasses modes of course delivery that use a diversity of technologies, such as multimedia, video and online

conferencing tools, podcasting, chat rooms and dedicated learning management systems. The use of TEL in instructional delivery has proven to be helpful in the personal growth and development of student both technologically and otherwise. Reviewed literature's revealed that students taught with TEL learn basic skills such as reading, writing, and arithmetic better and faster; engages students more and makes them spend quality time on basic learning tasks than students who use a more traditional approach.

Technology enhanced learning (TEL) offers educators a way to individualize curriculum and customize it to the needs of individual students so all children can achieve their potential. It helps student in retention of things taught and master the use of communication media to express their ideas more clearly and powerfully, as well as minimize absenteeism, lower dropout rates, and motivate more students to continue in their education. Students who regularly use TEL take more pride in their work, have greater confidence in their abilities, and develop higher levels of self-esteem.

Tinio (2022) asserted that use of TEL in instructional delivery has a positive impact in terms of acquisition and absorption of knowledge as it promote active, creative, collaborative, integrative and evaluative learning that leads to the personal growth and development of the students. In the view of Ali, Haolader & Muhammad (2018) TEL gives students the opportunity to operate, store, control and retrieve data of previous lessons thus providing the avenue for relearning of what had been taught/forgotten.

TVET is meant to equip its recipients with; basic skills needed to build upon to accomplish whatever task or job one is assigned in the future, desires skills for self-reliant and personal growth. However, the students of TVET still struggles to makes end meet after graduation which maybe as a result of the conventional approach used during their

instructional delivery. In order to achieved personal growth and development among Technical and Vocational Education and Training (TVET) students in their chosen carrier, TEL present the easiest way possible to achieve it but notwithstanding, there are some challenges that must be overcome in terms of procurement and utilization of TEL tools.

### **Purpose of the Study**

The general purpose of the study was to assess Technology Enhanced Learning (TEL) as instructional delivery tool for personal development of TVET students in coping with economic challenges. Specifically, the study sought to assess:

1. Technology enhanced learning (TEL) tools used by teachers as instructional delivery tool for personal development of TVET students.
2. Skills needed in the use of TEL as instructional delivery tool for personal development of TVET students in coping with economic challenges.
3. The setbacks to the use of TEL as instructional delivery tool for personal development of TVET students.
4. Solution to the setbacks of TEL usage as instructional delivery tool for personal development of TVET students

### **Methodology**

The study adopted a descriptive research design. The researcher saw it necessary to use this design because he used a representative sample of the population. The study was carried out in Enugu state, Nigeria. Enugu state has seven universities of which one is a federal University, two is a state-owned university and four private universities, Enugu state is chosen because of the observed poor implementation of Technology-enhanced learning in teaching and learning of automobile technology in the state and this inform the researcher choice of carrying out the study there.

The population for the study was 120 respondents which comprises of 95 students and 25 lecturers of the Department of Industrial Technical Education and Mechanical Engineering of University of Nigeria. There was no need of sampling because of the the manageable population. A structured questionnaire was used for data collection for the study. The questionnaire was divided into two parts. The first part sought for general information of the respondents, i.e, personal data of the respondents, while the second part sought for the information based on the four research questions formulated for the study. The second part was subdivided into section A-D in line with the research questions stated for the study. A four-point rating scale was provided for the respondents to make their response as follow; Strongly Agree, SA - 4 points, Agree, A – 3 points, Disagree, D – 2 points, Strongly Disagreed, SD - 1 point respectively. The draft of the instruments was face validated by three experts in the Department of Industrial Technical Education (ITE), Faculty of Vocational and Technical Education (VTE), University of Nigeria,

Nsukka. The reliability of the instrument was ascertained by administering 20 questionnaires to staff and students from other state which comprised of 5 lecturers and 5 students in Anambra state and 5 lecturers and 5 students in Abia State which is outside the study area, the Cronbach alpha method was used to determine its reliability. The overall reliability coefficient of the instrument was 0.75 in the four clusters. The researcher involved one (1) research assistant who went round the universities in Enugu state with him and administer the questionnaire which was retrieved at the same spot from the respondents. All the data was collected and analyzed using inferential statistics. Mean scores and standard deviation (SD) was employed in answering the 4 research questions. SPSS was used to analyze the data. Based on the four points rating scale the mean was placed on 2.5. This means that only items with a mean of 2.5 and above was accepted and or regarded as high while item with mean scores less than 2.5 were rejected and considered low.

## Results

**Table 1: The mean responses and standard deviation on the technology enhanced learning (TEL) tools used by teachers as instructional delivery on personal growth and development of TVET students**

S/N	Items: Technology enhanced learning (TEL) tools used as instructional delivery on personal growth and development of TVET students	Mean	SD	Remark
1.	Multimedia	3.58	0.67	Agreed
2.	Video conferencing	3.16	0.80	Agreed
3.	Podcasting	3.10	0.62	Agreed
4.	Chat rooms	3.10	0.75	Agreed
5.	Learning management system (LMS)	3.16	0.70	Agreed
6.	Smart classroom	3.50	0.67	Agreed
7.	Google classroom management system	3.35	0.68	Agreed
8.	Blogs	2.63	0.94	Agreed
9.	Lecture slide	3.24	0.73	Agreed
10.	Online assessment	3.14	0.71	Agreed
11.	Facebook	2.45	0.83	Disagreed
12.	WhatsApp	2.63	0.89	Agreed
13.	Pinterest	2.50	0.79	Agreed

14.	Instagram	2.13	0.77	Disagreed
15.	YouTube	3.47	0.83	Agreed

Table 1 shows that the respondents agreed that item numbers 1,2,3,4,5,6,7,8,9,10,12,13 and 15 with mean rating of above 2.5 are effective TEL tools. While items numbers 11 and 14 with mean rating below 2.5 are not effective TEL tools.

**Table 2: The mean responses and standard deviation on the skills needed in the use of technology enhanced learning (TEL) tools used in instructional delivery on personal growth and development of TVET students in coping with economic challenge.**

S/N	Items: Skills needed in the use of technology enhanced learning (TEL) tools used in instructional delivery on personal growth and development of TVET students in coping with economic challenges	Mean	SD	Remark
16.	Word processing skills	3.61	0.52	Needed
17.	Spreadsheet's skills	3.03	0.63	Needed
18.	Database skills	3.06	0.70	Needed
19.	Electronic presentation skills	3.45	0.53	Needed
20.	World wide web navigation skills	3.18	0.80	Needed
21.	E-mail management skills	3.04	0.76	Needed
22.	Digital cameras knowledge	3.06	0.69	Needed
23.	File management & windows explorer skills	3.18	0.66	Needed
24.	Downloading software from the web knowledge - including e-books	3.23	0.64	Needed
25.	Installing computer software onto a computer system	3.13	0.87	Needed
26.	Video conferencing skills	3.20	0.78	Needed
27.	Computer related storage devices knowledge	3.36	0.72	Needed
28.	Personal digital assistant knowledge	3.20	0.63	Needed
29.	Educational copyright knowledge on the use of educational videos and other TEL tools	3.20	0.75	Needed
30.	Computer security knowledge	2.84	0.87	Needed

Table 2 shows that most of the respondents agreed to all the items listed this indicate that these skills are needed by TVET students in the use of technology enhanced learning (TEL) tools for effective teaching and learning. From the table it can be seen that items (16-30) were accepted based on the decision that they have mean ratings greater than 2.50 cut off point by the respondent. The table 2 also show that the standard deviation of the items is within the ranges of 0.52 and 0.87, this indicate that the mean values of the respondents were not far from another in their responses.

**Table 3: The mean responses and standard deviation on the setbacks to TEL usage in instructional delivery on personal growth and development of TVET students**

S/N	Items: Setbacks to TEL usage in instructional delivery on personal growth and development of TVET students	Mean	SD	Remark
31.	Budget limitations on the provision of TEL	3.43	0.62	Agree
32.	Lack of professional training for teachers	3.53	0.58	Agree
33.	Poor network infrastructure	3.28	0.77	Agree
34.	Resistance to change by schools and teachers	2.88	0.91	Agree
35.	No devices in place to utilize technology in curriculum	2.95	0.89	Agree
36.	Devices and software used being unreliable	3.14	0.84	Agree
37.	Administrators don't see the need for more technology	2.98	1.00	Agree

Table 3 shows that most respondent agreed to the item listed as challenges, this indicate that respondents view the listed items as setback to the usage of TEL in teaching and learning of TVET courses, from the table 3, it can be seen that all items were accepted based on the decision that they have mean values

greater than 2.5 cutoff point by the respondents. The table 3 also shows that the standard deviation of the items is within the ranges of 0.58 and 1.00, this indicate that the mean values of the respondents were not far from another in their responses.

**Table 4: The mean responses and standard deviation on the solution to the setbacks to TEL usage in instructional delivery on personal growth and development of TVET students.**

S/N	Items: Solution to the setbacks to TEL usage in instructional delivery on personal growth and development of TVET students	Mean	SD	Remark
38.	Provision of loan and grants for universities	3.44	0.65	Agree
39	proper professional training of teachers in the use of TEL	3.59	0.63	Agree
40	Provision network infrastructure for TEL devices	3.56	0.53	Agree
41	Accommodating change by universities and teachers	3.43	0.56	Agree
42	Provision of devices for utilization of technology in curriculum	3.53	0.63	Agree
43	Procurement of reliable TEL devices and software	3.38	0.66	Agree
44	Education of administrators on the benefit of TEL	3.53	0.50	Agree

Table 4 shows that most respondent agreed to the item listed as solution to the setback, this indicate that respondents view the listed items as solution of the setbacks to TEL usage in instructional delivery on personal growth and development of students, from the table 4, it can be seen that all items were accepted based on the decision that they have mean values greater than 2.5 cutoff point by the respondents. The table 4 also show that the standard deviation of the items is within the ranges of 0.50 and 0.66, this indicate that the mean values of the respondents were not far from another in their responses

### Discussion of Findings

Technology enhanced learning (TEL) tools for effective teaching and learning of automobile technology; the research revealed that technology-enhanced learning tools required for effective teaching and learning are in line with Osinem et al (2022) that TEL tools include Google classroom, learning management system (LMS), and BLOVS (blogs, lecture slides, online assessments, videos and social media). Technology enhanced-learning tools has proven to be

effective in teaching and learning of technical and abstract courses in TVET for example, in teaching of engine system and how it works which a student cannot actually see, YouTube has through its animation and educational videos which will help students see and understand engine system and how it works easily and faster. Other TEL tool like podcast has proven its worth in helping students to learn theoretical aspect of technology by simply listening to recorded lecture. Technology enhanced learning tools has helped to connect students to teachers, fellow students and educational resources in and outside their school through online conference, Google classroom, learning management systems (LMS) etc. Therefore, it can be concluded that these TEL tools are of great importance in teaching and learning of technology as it provides different avenue for which TVET students can learn either by watching of educational videos, engaging in an online discussion, listening to recorded lectures or practicing with TEL tool.

Skills needed in the use of technology enhance learning (TEL) for effective teaching and learning by TVET students to be able to

use TEL effectively; they must possess the required skills, which is in line with ANU (2022) that for effective use of technology, users must possess the skills necessary to perform activities expertly with the technology. The research revealed the skills needed by students to be able to use these TEL tools which are connected to research conducted by Maceli & Burke (2016). Their research revealed the skills needed in a workplace involving technology which includes Word processing skills, Spreadsheet's skills, Database skills, electronic presentation skills, World wide web navigation skills, E-mail management skills, Digital cameras knowledge etc. It is worthy to note that these skills do not encompass all the skills needed teachers and students in entirety but the skill required to be able to use TEL in teaching and learning. Therefore, it is good for teachers and students to have good communication, listening, reading skills for TEL to work effective.

Setbacks to the use of technology enhance learning as instructional delivery tool for personal development of TVET students for effective teaching and learning; TEL is effective in teaching and learning but there are some setbacks associated with them. In line with the study, Burke and Foulger's (2014) revealed that availability of TEL tools, institutional vision and attitude towards innovative technologies to support learning, state of network infrastructure etc can greatly determine TEL uptake and impact on institutional practices. Johnson et al (2016) also revealed that the setbacks range from acquisition to integration of TEL. Procurement, repair and maintenance of technology-enhanced learning infrastructures are the main setback to TEL usage. TEL tools are inexpensive since they may be just a free app like youtube, twitter etc or a free website as google classroom, webinar etc but the cost of usage is quite expensive, one has to subscribe for data, buy gadgets that support these tools

and pay for training. Some of these tools like facebook, youtube, twitter etc can also cause distraction when not used properly thereby influencing negatively the implementation of technology enhanced learning in educational system.

Solution to the setback in the use of tell for effective teaching and learning; for teachers and students to be able to use TEL effectively in teaching and learning, the setbacks of TEL needs to be solved, the study revealed that for TEL to be used effectively, the solution to the setbacks which is in line with Mishra & Koehler (2006) and Johnson et al (2016) that for TEL to be utilized effectively, Teachers must be trained in the use the TEL, funds should be obtained via non-traditional sources (e.g., crowd funding, grants), exploit the expertise of master teachers in professional learning communities, request training on newly adopted educational software directly from software companies and ensure that adequate technical, administrative, and peer support is available to teachers during the implementation.

### **Conclusion**

It is through effective education program that the nation education and technological development objective can be best achieved. The use of Technology in education has motivated and engages students to learn more and improve on their skills. TEL tools such as Google classroom, youtube, podcast, etc has change the way student view learning as they can now learning both in and outside the classroom. For TEL to be used effectively in teaching and learning, teachers and students must possess certain level of technical skills in the use of TEL. Training is one of the conditions which can influence teacher effectiveness and student achievement in the use of TEL, therefore teachers especially must be trained to be able to use TEL effectively to achieve a directed goal. for a teacher to deliver instruction to his or her student using TEL tool, challenges outlined in

the study must be overcome, this study clearly outline several challenges which are budget limitations on the provision of TEL, Lack of professional training for teachers, poor network infrastructure, resistance to change by schools and teachers, no devices in place to utilize technology in curriculum. Devices and software used to be unreliable, administrators should see the need for more technology.

It is not just sufficient to outline the challenges, some suggestion for the solution has been stated to include; provision of loan and grants for universities, proper professional training of teachers in the use of TEL, provision network infrastructure for TEL devices, accommodating change by universities and teachers, provision of devices for utilization of technology in curriculum,

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- procurement of reliable TEL devices and software, education of administrators on the benefit of TEL.
- Recommendations**
- Suggestions made based on the results of the study will improve teacher's effectiveness in using TEL tools, majorly the government as well as the educational stakeholders should help procure modern TEL tools as teaching tools for teaching trades in universities. This will help teacher to constantly practice and adapt to the use of technology enhance learning tools for teaching TVET, also teachers should have access to regular training in order to improve their skills through the use of modern teaching aid to overcome these challenges.
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