

Empowering vocational educators instructional delivery through information and communication technology training in universities

Honesta Chidiebere Anorue, John E. Ekuma, Timothy Onwumere Olinya, Lilian O. Nwandu
Department of Business Education, Faculty of Vocational and Technical Education, University of Nigeria, Nsukka, Nigeria

Article Info

Article history:

Received May 20, 2021
Revised Aug 31, 2023
Accepted Sep 17, 2023

Keywords:

Education
ICT
Instructional delivery
Training
Vocational technical education
Vocational technical educators

ABSTRACT

This paper explores ways of empowering vocational educators for effective instructional delivery through information and communication technology (ICT) training in tertiary institutions in Enugu State, Nigeria. A descriptive survey research design was used with a population of 63 respondents, comprising lecturers of computer education and business education from University of Nigeria, Enugu State University of Science and Technology, and Godfrey Okoye University. There was no sampling carried out due to the manageable size of the population. The researchers employed a structured questionnaire as a means of collecting data. The collected data were analysed using the mean (\bar{X}) and standard deviation. The findings of the study revealed that ICT training would help promote effective instructional delivery in universities in Enugu State. Also, various ICT skills are required by vocational educators for effective instructional delivery. Lastly, several challenges are constraining the ICT training for effective instructional delivery in universities in Enugu State. Based on the findings, the study recommends, among others, that universities should make provision for training and retraining of vocational educators on the use of new technological tools for proper integration in teaching and learning.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Corresponding Author:

Timothy O. Olinya
Department of Business Education, Faculty of Vocational and Technical Education, University of Nigeria
Nsukka, 41001, Nigeria
Email: timothy.olinya@unn.edu.ng

1. INTRODUCTION

Technological progression has brought with it advances and innovations in technologies capable of enhancing and repositioning the mode of learning and instructional delivery in tertiary institutions. The current form of delivery has been criticised for failing to match the demands of learning in a technologically advanced era [1]. Hence, the need to constantly keep abreast of new developments and knowledge required in education for efficiency and capacity building.

Education is the means to unchain ignorance. It is a key that brings about development economically, socially, and politically. This is why it has been the focus in most developing countries. An educational approach centred on the acquisition of practical skills guarantees the attainment of pertinent and conscientious knowledge [2]. This has to do with an ethical personality and a commitment to achieving success in life. Similarly, vocational, and technical education (VTE) is a type of education that emphasises giving students the skills, information, and training they need to pursue particular professions or industries. It is intended to give people the skills they need to enter specific professions and get them ready for the workforce. Vocational and technical education means various skill jobs that individuals could embark upon

based on ability, interest, and exposure to a complementary or relevant pedagogy for possible inquiry and development in the future due to innovations [3]. This suggests that VTE is a programme that gives people the skills they need, instills the proper mindset, establishes the proper work habits, and promotes systematic lifelong learning. Therefore, knowledge, skills, competencies, functional activities, abilities, and capabilities are all components included within the entirety of the definition of VTE training, which includes structural experiences gained through formal, on- and off-the-job training that have the ability to enhance the receivers' opportunity to secure jobs in numerous sectors of the economy or even become self-sufficient by creating jobs [4], as cited in Adeyemi [5]. Meanwhile, one of the major aims of VTE is to offer people the opportunity to improve themselves in their general proficiency [6], in terms of comprehending the ever-increasing complexity of technology.

VTE plays a crucial role in fostering a sustainable society by imparting specific skills, information, values, and attitudes to local individuals, enabling them to effectively engage in the contemporary economic sector [7]. This means that it is an educational approach that focuses on providing practical and hands-on training in specific trades, crafts, or technical skills. It is designed to prepare individuals for employment in various industries that require specialised skills. This also suggests that an individual receives training in order to improve his or her proficiency with regard to his or her current or future employment. Therefore, vocational educators would be capable of adapting seamlessly to the world of work provided that individuals possess the requisite knowledge, attitudes, and practical skills [8] after the training. Therefore, training in VTE has been fashioned out for an individual's competency to progress, which is associated with either the current or future occupation and provides on-the-job training for those already engaged in one form of job or another [9]. While vocational educators are those individuals or persons who inculcate in the learners the knowledge, skills, and aptitude to become self-reliant or function well in society from the training received.

VTE is all-purpose education, technological advances, specific scientific disciplines, and the attainment of basic skills or practical know-how, mastery, knowledge, and attitudes pertaining to professions in various segments of economic life. The centrality of information and communication technology or ICT to every aspect of VTE in learning and instructional delivery cannot be overemphasized. Life has been easier in recent times as a result of the invention of ICT. The utilisation of ICT has experienced a significant increase across various fields, encompassing education (such as e-learning facilitated by electronic communications, open learning through student-controlled courses, and the adoption of information technology-based teaching and learning approaches), infrastructures, companies, businesses, societies, and individuals' daily routines. ICT enhances the technological competency of educators needed for skill development through training. The realisation of the centrality of ICT in learning and the instructional delivery process necessitated the need for skill development and training on the part of educators, who are faced with challenges associated with unstable internet connections, educators' incompetency, and an inadequate pace of change and funding for the training from institutions, among others. It is obvious that universities were not frequently providing in-service training for educators who lacked the necessary ICT literacy prior to employment with the aim of gaining the skills and competencies required for teaching using technology. The supposed institution-building workshops for vocational educators that are occasionally held typically lack suitable preparation and follow-up activities to make the acquired information practical and valuable to both the educators and students of the institution. The availability, adequacy, and accessibility of these ICT training skills among educators have been issues of empirical inquiry. To this end, ICT training will be seen as a course of action or programme planned to facilitate educator's knowledge, skills, competency, mastery, and acquisition of functional skills necessary to contribute to societal development.

Training means the social, physical, and mental development of individuals [10]. Consequently, training could be designed to help educators improve their current and future performance by improving their capacity to perform productively in their workplace. Training is an ongoing and iterative procedure aimed at enhancing the competence and skill level of personnel [11]. Training is a systematic procedure aimed at enhancing the knowledge and expertise of personnel and facilitating the improvement and adaptation of their performance within the professional setting [12], [13]. This indicates that the purpose of training is to contribute value to the main resources of the organisation by enhancing the performance of individuals through investments in their development and empowering them to leverage their innate skills. Training is the process of being given a course of instruction with the view of acquiring specific skills regarding an exceptional job or profession through knowledge enhancement as well as attitude and behavioural modifications that improve the trainee's capacity to do activities successfully and competently in firms or institutions [14]. Training is the methodical implementation of formal procedures aimed at assisting individuals in acquiring the requisite information and abilities to effectively carry out their job responsibilities in a satisfactory manner [15].

Therefore, the primary goal of training and development should be to eliminate performance deficiencies, whether existing or prospective, that lead personnel to perform below expectations. Training

helps trainees gain new skills, both proficient and cognitive, thereby improving their performance. Based on the foregoing, it is clear that training is the practice of enlightening employees about essential job abilities and updating their knowledge base with cutting-edge skills and competencies. Training effectiveness and employee efficiency are determined by possessing information as well as skills from training activities and applying such knowledge and skills on the job [12]. The level of employee engagement in training and development programmes determines the efficacy of the practice and the performance of the employees [16]. Subsequently, efficacy in training is determined not only via suitable training methods and materials but also through training transfer [12], and only when training bridges the knowledge/skill gap and equips employees with a new set of competencies is it regarded as effective. Hence, in order for organisations to thrive in the present dynamic landscape and achieve a competitive edge, it is imperative to recognise employee development and training as a valuable instrument for cultivating employee competencies, improving productivity, and attaining a sustainable competitive advantage [17].

In the words of research by Aravamudhan and Krishnaveni [18], continual workforce training has both a qualitative and quantitative influence on a firm's or institution's overall performance through the increase of skills and competencies. At the centre of these cutting-edge skills and competencies in today's modern society is ICT. Recent studies linking different courses [19]–[21] found that the absence of training on digital literacy, pedagogic and instructive training on how to use ICT in the classroom, and a lack of interest in and training on specific course topics all made it hard to use new technologies in the classroom. Flexible education necessitates a rethinking of the ICT-based teacher training approach to facilitate learning anywhere, at any time [22], [23].

According to Oluwatobi and Abigail [24], there has not yet been a significant systemic transformation as a result of the integration of digital technologies in educational settings. Instead, it has mostly resulted in a few isolated cases of innovation, most of which have been the result of exceptional teachers using ICT to enhance their teaching strategies without necessarily setting up a comprehensive framework for lifelong learning. Nevertheless, becoming proficient in knowledge and skills pertaining to the adoption of ICT resources is of utmost importance in facilitating the educator's ability to enhance their research productivity and effectively engage in the teaching and learning process [25], [26]. Educators must explore techniques to include the interpretive and inventive possibilities of ICT into their training activities beyond the teaching of fundamental digital skills [22]. Training in ICT will allow the educators to make informed changes to their instructional delivery with the intention of improving student performance.

Instructional delivery means the process of facilitating communication and interaction between students and teachers, enabling them to engage in learning activities and collaborate with others in society and the dynamic environment. Instructional delivery refers to the pedagogical actions undertaken by an educator inside the classroom setting, aimed at facilitating the acquisition of knowledge and achieving academic requirements. This necessitates the exhibition of comprehensive knowledge in the specific field of study, together with the implementation of a wide range of efficient teaching techniques and technical resources that successfully captivate students [27]. Instructional delivery involves a variety of methods, techniques, or procedures employed by educators to efficaciously convey the content of a lesson to learners [28]. The author also highlights the importance of instructional delivery, which pertains to the intended utilisation of a teacher's expertise, knowledge, skills, and values to effectively impact and modify the learner's behavioural disposition.

The selection of the instructional delivery technique should be based on the explicitly defined objectives of the course. This implies that the assessment procedure plays a pivotal role in ascertaining the extent to which the specified learning outcomes of a lesson have been achieved after the instructional delivery. It occurs after the instructional delivery has concluded, providing an opportunity to assess the extent to which the target of the lesson has been met [29]. When an educator deliberately employs their training, knowledge, capacities, and principles to communicate information with the intention of modifying the behavioural stance of the student, they are engaging in the process of instructional delivery [28]. When it comes to improving student outcomes, effective instructional delivery covers all human interpersonal abilities employed by teachers in the classroom [1]. Innovative approaches include the use of ICT to train teachers to deliver lessons effectively.

Educators who effectively incorporate ICT into their instructional methods, acquired through formal professional development, have the potential to significantly enhance student performance [30]. Currently, it seems inevitable that the usage and reliance on digital technologies will continue to grow unprecedentedly [31]. Other studies [32], [33] found that the implementation of technology and the transformation of teaching practices among educators can be facilitated through the utilisation of high-quality professional training programmes. Research also revealed that ICT training programmes improve teachers' computer abilities and other technological skills acquired by educators, which are required but not sufficient for ICT integration into the teaching process [34], [35].

So, for these skills to develop, teachers need to go through training programmes that help them gain knowledge, skills, and good attitudes. These programmes are made possible by integrating technology well into their roles and responsibilities [36]. Furthermore, the study shows that teachers' low level of ICT usage is attributed to a lack of training [30], [37]. Significantly influencing teachers' levels of engagement in inadequate ICT proficiency, motivation, and confidence among teachers in adopting new technologies in teaching, all of which are related to the quality and level of educators' training programmes [30], [34], [38].

Consequently, ICT plays a central role in all aspects of our educational endeavours. In a similar vein, ICT encompasses a diverse array of technical tools and resources that facilitate communication as well as the production, transmission, storage, and management of data [39]. It is the application of current technology to help in the capture, processing, storage, retrieval, and sharing of data, whether numerical, textual, audio, or visual [40], [41].

In the field of education, ICT pertains to the practical use of different technologies in the processes of teaching and learning, whereas education for ICT relates to the creation of information or knowledge and the utilisation of communication technology for the specific objectives of learning and teaching [42]. This information serves as a fundamental basis for their professional progression and the learning of current skills essential for success in present-day society [43], [44]. Thus, ICTs, which include traditional mediums such as radio and television alongside contemporary technological tools such as computers and the internet, have demonstrated their efficacy as influential instruments for the purpose of educational transformation and reform. The aforementioned categories encompassed a range of offerings such as access providers, telecommunications services, products, media and broadcasting, and other related information and communication activities. Additionally, they incorporate contemporary technology-related products such as voice mail, fax, e-mail, electronic cellular phones, bulletin boards, the internet, and video conferencing [42], [45]. Different ICTs, when utilised properly, may help extend educational access, boost the significance of pedagogy in the increasingly digital workplace, and improve the standard of education by assisting and making teaching and learning an active process tied to real life [42]. The advantages of this innovative technique have been lauded by Buabeng-Andoh [35], cited in Onwuagboke *et al.* [1], who believes that ICT has significant potential for sharing knowledge, making education more real, and developing more efficient educational services.

Presently, educational institutions worldwide are integrating ICT into the pedagogical process sequentially to provide learners with the necessary knowledge and competencies to comprehend the intricacies of the educational landscape [42]. In a similar vein, Rahman [41] suggested that by integrating ICT into education, students may be taught to participate in the growth process in this period of fast change. Although ICTs provide instructors and students with greater flexibility in personalising learning and teaching to individual requirements, educators should be encouraged to educate or retrain continuously to keep up with technological changes. Thus, ICT has undoubtedly played a noteworthy role in improving VTE teaching and learning at higher institutions [46]. However, with the complete implementation of ICT training in VTE, both students and educators gain flexible employability skills that will allow them to easily integrate into the constantly changing job market [47]. This means that ICT plays a critical role in vocational and technical education, including updated skill development, training, and progress in all aspects of education and information delivery.

Globalisation has ushered in the advance of ICT, necessitating the creation of new teaching abilities, methodologies, and approaches by lecturers. In addition to possessing computer skills, individuals must also possess the capacity to produce online games, videos, interactive quizzes and collaborative projects [48]. It is imperative to provide vocational educators with training in various technical skills, such as the ability to set up passwords and login credentials for students and other users of the online platform [49]. Additionally, educators should be proficient in tasks such as composing email messages, attaching files, and possessing word processing skills such as typing, cutting, copying, pasting, naming, renaming, saving, and retrieving, among other essential functions according to the Annual Americas Conference on Information Systems (AMCIS) cited in Ugwoke *et al.* [48]: i) Use of the internet service provider very well; ii) Complete or fill online forms; know how to backup files; iii) Know how to install and maintain anti-virus; and iv) Other necessary software (Clemson Computing & Information Technology (CCIT) cited in Ugwoke *et al.* [48]. For effective ICT intervention, education and training are the major drivers for social, economic, technological delivery, and sustainability [50]. ICT training has the potential to promote instructional delivery. As a result, numerous studies have been conducted regarding educators' attitudes towards the utilisation of ICT for the purpose of enhancing the quality of instructional delivery [51], [52].

Moreover, with all the murkiness surrounding the future, the promise of technology shines so brightly that vocational educators hope that ICT training built with environmentally sound practices can support a healthy and happy instructional delivery. It is based on this vital fact that we develop new strategies for technology and advancement in ICT to cope with our demands for teaching and learning. Numerous

studies have shown that ICT-related training programmes improve teachers' computer skills, whether they are novices or seasoned professionals [53]–[55]. To achieve successful innovation integration, school administrators should seek support in order to identify and provide continuous training [56]. Considering the aim of ICT in education, which is to bring about rapid change through expanding and reforming the educational system and improving the relevance and education of high quality and training by increasing learners' motivation and engagement, there is a need to explore empowering vocational educators for effective instructional delivery through ICT training in the universities in Enugu State, Nigeria.

The purpose of the study focuses on preparing vocational educators for successful instructional delivery by providing ICT training in universities in Enugu State, Nigeria. The study specifically sought to determine vocational educators' perspectives on ICT training, ICT skills required by vocational educators, and difficulties limiting ICT-based trainings for successful instructional delivery in universities in Enugu State. The study was thereafter focused on the following research questions: i) What are the views of vocational educators on ICT training for effective instructional delivery in universities in Enugu State?; ii) What are the ICT skills required by vocational educators for effective instructional delivery in universities in Enugu State?; and iii) What are the challenges constraining ICT training for effective instructional delivery in universities in Enugu State?

2. RESEARCH METHODS

2.1. Research design

The study adopted descriptive survey research design. The chosen research design is deemed suitable for the study. It sought to methodologically gather data in order to provide a comprehensive description of a certing occurrence, scenario or population of individual respoendentrns.

2.2. Research area

The research was conducted in Enugu State, Nigeria. Enugu State is one of the five states in the South-East geopolitical zone of Nigeria. Enugu metropolis is made up of three local government areas, they are Enugu North, Enugu South, and Enugu East. Enugu State has six universities, four of which are privately owned, one of which is owned by the state government, and one by the federal government. The universities in Enugu State include the Federal University of Nigeria, Nsukka, the state-owned, Enugu State University of Science and Technology, Enugu and Private institutions such as Caritas University, Enugu, Godfrey Okoye University, Ugwuomu-Nike-Enugu State, Renaissance University, Enugu and Coal City University, Enugu. The occupations of the people include civil service, trading, artisanship, and farming.

2.3. Population and sample

The population is comprised of 63 vocational educators in business education and computer education from the universities in Enugu State. The educators were drawn from the three universities that offer both courses (business education and computer education) because of the perceived role of ICT in teaching and learning in the aforementioned departments. A total of 24 business educators drawn from business education, UNN. In addition, five business educators were chosen from the Business Education Department, at Enugu State University of Science, and technology (ESUT), and five from Godfrey Okoye University. For computer educators facets of the study, 23 educators selected from Computer Education Department, UNN; three educators from Enugu State University of Science and technology, and three educators from Godfrey Okoye University. There was no sampling carried out due to the manageable size of the population. All the business educators and computer educators drawn from three selected universities were involved in the study given a total of 63 respondents.

2.4. Research instrument

The researchers devised a structured questionnaire termed 'information and communication technology training for vocational educators questionnaire' (ICTTVEQ) to serve as the instrument for data collection. The instrument was partitioned into two distinct halves, denoted as part 1 and part 11. Section 1 requested personal information, while section 11 consisted of three distinct subsections (A, B, and C), each related to purposes 1, 2, and 3, respectively. Section A, which was designed to elicit information on vocational educators' views on ICT training for effective instructional delivery in universities in Enugu State, was structured on a 4-point response scale ranging from: strongly agree (SA=4); agree (A=3); disagree (D=2); and strongly disagree (SD=1). Section B was designed to ascertain the skills in ICT required by vocational educators for effective instructional delivery in universities in Enugu State and was structured on a 4-point response scale ranging from very highly required (VHR=4), highly required (HR=3), slightly required (SR=2), and not required (NR=1). Section C was also designed to find out the challenges constraining the ICT trainings for effective instructional delivery in universities in Enugu State and was

organised on a 4-point response scale ranging from: strongly agree (SA=4); agree (A=3); disagree (D=2); strongly disagree (SD=1). Three experts validated the instrument, one from computer education and two from the department of business education, all from the University of Nigeria, Nsukka. Their corrections and suggestions were used to produce the final copy of the questionnaire. The reliability of the instrument was determined by carrying out a pilot test using 20 business educators and computer educators from University of Nigeria, Nsukka. Cronbach Alpha method was used to determine the internal consistency of the instrument which yielded a reliability coefficient of 0.82.

2.5. Data collection techniques and analysis

The study was conducted with 63 copies of the questionnaire which were administered to the respondents. Out of 63 copies of the questionnaire administered, 60 copies were retrieved representing about 95% rate of return. Data collected were analyzed using mean and standard deviation. In answering research questions one and three, the interpretation of the mean responses was based on a criterion mean of 2.50. Accordingly, any item with a mean score equal to 2.50 and above implied agreed while any item with a mean score below the criterion (2.50) mean was adjudged as disagreed. In answering research question two, the interpretation of the mean responses was based on real limit of numbers where a mean of 3.50-4.00 implied very highly required, 2.50-3.49 denoted highly required, 1.50-2.49 implied slightly required, and 1.00-1.49 implied not required. The standard deviations for the items were used to determine how close the respondents' responses are to each other and to the mean.

3. RESULTS AND DISCUSSION

3.1. Research question 1: What are the views of vocational educators on ICT training for effective instructional delivery in universities in Enugu State?

Result in Table 1 shows that all the items had mean responses above the criterion mean of 2.50, which indicate that the respondents agreed to the items. The standard deviation for all the items ranged from 0.21 to 0.51, which portrays that the responses of vocational educators were not far from each other and from the mean. The grand mean response of 3.71 with a standard deviation of 0.41 also signifies agreement of the respondents to the items. Thus, the result implied that vocational educators viewed the items in Table 1 as the various ways of ICT training for effective instructional delivery in Universities in Enugu State.

Table 1. Mean and standard deviation of responses of vocational educators on their views on ICT training for effective instructional delivery in universities

S/N	Training on	N	\bar{X}	Std. Dev.	Remark
1	New trend in technologies	60	3.73	0.44	Agreed
2	Creation of web platform	60	3.88	0.22	Agreed
3	Engaging students with the use of e-learning, blended learning and flipped classroom	60	3.71	0.47	Agreed
4	The use of ICT tools	60	3.63	0.49	Agreed
5	The use of virtual white board	60	3.66	0.49	Agreed
6	Networking activities such as internet, e-mail, online marketing	60	3.72	0.47	Agreed
7	Computer literacy	60	3.71	0.46	Agreed
8	To digitally assess student's knowledge with ICT such as administering of test, scoring, and analysing the result	60	3.88	0.21	Agreed
9	Web conferencing, meeting, and webinar	60	3.71	0.47	Agreed
10	Creation of blog and website	60	3.80	0.41	Agreed
11	Creation of portfolios	60	3.72	0.23	Agreed
12	The ability to make use of e-learning platform such as Zoom, Goggle Meet, Goggle Classroom, and Moodle	60	3.72	0.47	Agreed
13	The ability to make use of presentation devices such as projector, HDMI/DVI/VGA adapter	60	3.42	0.51	Agreed
Grand mean and standard deviation		60	3.71	0.41	Agreed

Key: N=Number of respondents, \bar{X} =Mean, Std. Dev.=Standard deviation

The result of the finding revealed that new trend in technologies, creation of web platform, engaging students with the use of e-learning, blended learning and flipped classroom, the use of ICT tools, the use of virtual white board, networking activities such as internet, e-mail, online marketing, and computer literacy are vocational educator's views on ICT training. This research supports the findings of Wachiuri [40], who found that training plays a vital role in teachers' use of ICT. In other words, it is imperative for educators to actively participate in comprehensive training programmes that focus on the seamless integration of ICT into their instructional practices, concurrently with their ongoing coursework. It is in collaboration with

Hepp *et al.* [31], they found out that teacher professional development training programs were also important in improving students' learning quality. It also collaborates with the findings of Buabeng-Andoh [35] who found out that ICT training program develops teacher's competencies in ICT use. This therefore implies that educators should involve themselves in required training which will improve their ICT competence.

3.2. Research question 2: What are the ICT skills required by vocational educators for effective instructional delivery in Universities in Enugu State?

Result in Table 2 indicates that items 1-3, 7 and 9-12 had mean responses within the range of 3.50-4.00 which implies the skills are very highly required by vocational educators in effective instructional delivery. That is to say, word processing skills, spreadsheet skills, among others within the same range are the various ICT skills that are very high required by vocational educators for effective instructional delivery. On another hand, items 4-6 and 8 had mean responses within the range of 2.50-3.49, which depicts that the skills are highly required by the educators. In other words, electronic presentation skills and web site design skills, among others with the same range of mean responses, are the skills in ICT that are highly required by vocational educators for effective instructional delivery. The standard deviation for all the items ranged from 0.35 to 0.75, which shows that the responses of vocational educators were closed to each other and to the mean. Further analysis showed that the grand mean response of 3.61 with a standard deviation of 0.51 was within the range of 3.50-4.00. This implies that the items in Table 2 are the ICT skills required by vocational educators for effective instructional delivery in Universities in Enugu State. The study also revealed that word processing skills, spreadsheet skills, data base skills, electronic presentation skill, web site design skills, data management and Window Explorer skills and video conferencing skills are the potential skills vocational educators require in ICT training. This is in line with Cruthaka and Pinngern, [37], which note that providing lecturers with the appropriate training skills should help increase their technology competencies. However, Paudel [36] also assert that continuous ICT training is essential to help teachers keeping up with the development of ICT skills. The study is also in agreement with Chibueze *et al.* [30] which states that the technical vocational education and training lecturers required digital skills for enhancing classroom instructional delivery as well as assessment of classroom instruction.

Table 2. Mean and standard deviation of responses on the ICT skills required by vocational educators for effective instructional delivery in universities in Enugu State

S/N	Potential ICT skills required for training	N	\bar{X}	Std. Dev.	Remark
1	Word processing skills	60	3.69	0.45	VHR
2	Spreadsheet skills	60	3.63	0.50	VHR
3	Data base skills	60	3.63	0.49	VHR
4	Electronic presentation skill	60	3.33	0.48	HR
5	Web site design skills	60	3.48	0.60	HR
6	Data management and Window Explorer skills	60	3.49	0.62	HR
7	Video conferencing skills	60	3.63	0.55	VHR
8	Web editing skills	60	3.39	0.75	HR
9	Desktop publishing skill	60	3.81	0.41	VHR
10	Online collaboration skill	60	3.64	0.49	VHR
11	Online research skill	60	3.87	0.35	VHR
12	Creativity and analytical skill	60	3.72	0.43	VHR
Grand mean and standard deviation		60	3.61	0.51	VHR

Key: \bar{X} =Mean, Std. Dev.=Deviation, VHR=Very highly required, HR=High required

3.3. Research question 3: What are the challenges constraining the ICT training for effective instructional delivery in Universities in Enugu State?

Result in Table 3 shows that the mean responses for all the items were above the criterion mean of 2.50, which connotes that the respondents agreed to the items as the constraining the ICT trainings for effective instructional delivery. The standard deviation for all the items ranged from 0.59 to 0.90, which can be construed as the responses of vocational educators were not far from each other and from the mean. Also, the grand mean response of 3.28 with a standard deviation of 0.70 also implies that the respondents agreed to the items. This result can therefore be interpreted to mean that items in Table 3 are considered by vocational educators as the challenges constraining the ICT trainings for effective instructional delivery in Universities in Enugu State. The study revealed that limited accessibility of network connection, dearth of qualified ICT personnel, ICT infrastructural impediments such as internet facilities, projectors, interactive white board, shortage of technical experts or manpower to train the staff and the students, are the challenges constraining vocational educators towards ICT training. This is in line with the findings of Oluwatobi and Abigail [24] that majorities of the respondent (lecturers) have limited computer skills, cannot use technical computer

programs to complement their work and were not formally trained on the use of ICT rather they acquire their skills independently. The findings also agreed with the statement of Ghavifekr *et al.* [19], that educators have a significant gap in their knowledge and basic technical and pedagogical skills when it comes to employing technology in the classroom, and present utilization of technology is extremely low. The reasons behind this includes lack of access to technology, due to insufficient network connectivity and accessibility, poor technological assistance, lack of appropriate training, lack of time, and lack of teacher competency. The findings is also in agreement with the views of Ehujuo *et al.* [5] which found that attitudes and beliefs, inadequate training related to technology, support constraint, resistance toward technology in the classroom, and poor knowledge and skills opportunities were among the obstacles to ICT training usage among academic staff.

Table 3. Mean and standard deviation of responses the challenges constraining the ICT trainings for effective instructional delivery in universities

S/N	Challenges in ICT training	N	\bar{X}	Std. Dev.	Remark
1	Limited accessibility of network connection	60	3.50	0.61	Agreed
2	Dearth of qualified ICT personnel	60	3.26	0.62	Agreed
3	ICT infrastructural impediments such as internet facilities, projectors, interactive white board	60	3.34	0.59	Agreed
4	Shortage of technical experts or manpower to train the staff and the students	60	3.34	0.90	Agreed
5	Lack of encouragement from institutions for the training e.g., funding	60	3.33	0.59	Agreed
6	Educators' incompetence due to lack of training	60	2.98	0.73	Agreed
7	Inadequate awareness on the existing available ICT tools	60	3.18	0.87	Agreed
	Grand Mean and Standard deviation	60	3.28	0.70	Agreed

Key: N=Number of respondents, \bar{X} =Mean, Std. Dev.=Standard deviation

4. CONCLUSION

The university education is recognized in terms of facilitating conceptions of new knowledge, innovations and information communication technologies for overall socio-economic empowerment of individual and national integration. The role of ICT in teaching and learning process cannot be overvalued especially in Nigeria tertiary institutions where attention is directed at technological developments. ICT is a powerful tool that can be used to enhance and encourage educators towards improved knowledge and instructional delivery in the Universities. ICT training will enable learners and educators to work independently, gain new abilities, and deepen their understanding of their subject areas. ICT training is very important in raising the level of ICT resources with regards to continuous training to improve the way educators use facilities.

Universities ought to establish mechanisms for facilitating the training and retraining of vocational educators, specifically in the use of contemporary technological instruments, to ensure effective integration within the context of teaching and learning. Stakeholders in vocational technical education should make sure that ICT training is made compulsory for every member of staff. Vocational educators should engage themselves in self sponsored training in order to incorporate real learning such as case studies, simulation and also inclusion of emerging technologies.

ACKNOWLEDGEMENTS

All the respondents involved in this study, regardless of schools, the researchers greatly appreciate your support during the process of data collection. May God bless them all.

REFERENCES




- [1] B. B. C. Onwuagboke, T. K. R. Singh, and F. S. Fook, "Need for ICT integration for effective instructional delivery in Nigerian colleges of education," *Journal of Education and Practice*, vol. 6, no. 3, pp. 51–56, 2015.
- [2] A. N. Krishnakumaryamma and S. Venkatasubramanian, "Technology-mediated pedagogies for skill acquisition toward sustainability education," in *New Pedagogical Challenges in the 21st Century - Contributions of Research in Education*, InTech, 2018.
- [3] S. O. Olaitan, "Revaluating vocational and technical education in the national policy on education in Nigeria: strategies and prospects," *Vocational and Technology Education Journal*, vol. 2, no. 1, pp. 1–12, 2020.
- [4] C. C. Okorocho, "Vocational Technical Education in Nigeria: Challenges and the way Forward," *Business Management Dynamics*, vol. 2, no. 6, pp. 1-8, 2012.
- [5] O. A. Adeyemi, "Vocational Technical Education as a tool for sustainable development in Nigeria" *Engineering Research Journal*, Vol. 3, no. 5, pp.13-26, 2023.
- [6] R. Okoye and M. O. Arimonu, "Technical and vocational education in Nigeria: issues, challenges and a way forward," *Journal of*

- Education and Practice*, vol. 7, no. 3, pp. 113–118, 2016.
- [7] O. A. Adeyemi, “Vocational technical education as a tool for sustainable development in Nigeria,” *Engineering Research Journal*, vol. 3, no. 5, pp. 13–26, 2023.
 - [8] C. C. Kanu, “Changing the game from the inside-out: an exploration of how involved teachers can empower themselves to improve the image of technical and vocational education and training in Nigeria,” *Vocational And Technical Education Journal (VOTEJ)*, vol. 2, no. 2, pp. 1–20, 2020.
 - [9] I. J. Obidile, “Vocational and technical education (VTE) in the 21st century: the way forward,” *NAU Journal of Technology & Vocational Education*, vol. 1, no. 1, pp. 1–6, 2014.
 - [10] B. Ozkeser, “Impact of training on employee motivation in human resources management,” *Procedia Computer Science*, vol. 158, pp. 802–810, 2019, doi: 10.1016/j.procs.2019.09.117.
 - [11] M. H. Yimam, “Impact of training on employees performance: A case study of Bahir Dar university, Ethiopia,” *Cogent Education*, vol. 9, no. 1, Dec. 2022, doi: 10.1080/2331186X.2022.2107301.
 - [12] M. J. Sheeba and P. B. Christopher, “Exploring the role of training and development in creating innovative work behaviors and accomplishing non-routine cognitive jobs for organizational effectiveness,” *Journal of critical reviews*, vol. 7, no. 04, Feb. 2020, doi: 10.31838/jcr.07.04.49.
 - [13] R. Ibrahim, A. Boerhannoeddin, and K. K. Bakare, “The effect of soft skills and training methodology on employee performance,” *European Journal of Training and Development*, vol. 41, no. 4, pp. 388–406, May 2017, doi: 10.1108/EJTD-08-2016-0066.
 - [14] NwaforSimon, “Training and development: strategic impact on employees’ job performances,” *African Journal of Management and Business Research*, vol. 5, no. 1, pp. 50–60, 2022.
 - [15] M. Armstrong, *A handbook of human resource management practice*, 10th ed. Cambridge University Press (CUP), 2006.
 - [16] A. A. Raml, F. L. M. K. Anuar, I. Rosli, and S. A. Jamalidan, “The relationship of design, implementation, monitoring and evaluation in training and development towards employee performance in food and beverage industry,” *Global Business and Management Research: An International Journal*, vol. 10, no. 3, p. 714, 2018.
 - [17] M. N. Adamu, D. Mohammed, and J. Gana, “The impact of training and development on employee productivity in the 21st century,” *African Journal of Management and Business Research*, vol. 3, no. 5, pp. 41–58, 2022.
 - [18] N. R. Aravamudhan and R. Krishnaveni, “Establishing and reporting content validity evidence of new training and development capacity building scale (TDCBS),” *Management*, vol. 20, no. 1, pp. 131–158, 2015.
 - [19] S. Ghavifekr, T. Kunjappan, L. Ramasamy, and A. Anthony, “Teaching and Learning with ICT tools: issues and challenges from teachers’ perceptions,” *Malaysian Online Journal of Educational Technology*, vol. 4, no. 2, pp. 38–57, 2016.
 - [20] I. M. Gómez-Trigueros, M. Ruiz-Bañuls, and D. Ortega-Sánchez, “Digital literacy of teachers in training: moving from ICTs (information and communication technologies) to LKTs (learning and knowledge technologies),” *Education Sciences*, vol. 9, no. 4, p. 274, Nov. 2019, doi: 10.3390/educsci9040274.
 - [21] J. Valverde-Berrococo, M. R. Fernández-Sánchez, F. I. Revuelta Dominguez, and M. J. Sosa-Díaz, “The educational integration of digital technologies preCovid-19: Lessons for teacher education,” *PLOS ONE*, vol. 16, no. 8, p. e0256283, Aug. 2021, doi: 10.1371/journal.pone.0256283.
 - [22] P. R. Albion, J. Tondeur, A. Forkosh-Baruch, and J. Peeraer, “Teachers’ professional development for ICT integration: Towards a reciprocal relationship between research and practice,” *Education and Information Technologies*, vol. 20, no. 4, pp. 655–673, Dec. 2015, doi: 10.1007/s10639-015-9401-9.
 - [23] H. Cha, T. Park, and J. Seo, “What should be considered when developing ICT-integrated classroom models for a developing country?,” *Sustainability*, vol. 12, no. 7, p. 2967, Apr. 2020, doi: 10.3390/su12072967.
 - [24] O. Oluwatobi and A. ifeoma Abigail, “Information communication technology training needs of academic staff in universities in Ekiti state, Nigeria,” *Library Philosophy and Practice (e-journal)*, vol. 1, p. 1484, 2017.
 - [25] Y. Canales, “The relationship between instructional delivery and student engagement in selected classrooms: A cross case analysis,” The College of William and Mary in Virginia, 2020.
 - [26] T. C. Ezugoh, C. Ifesiokwu, and M. O. Eze, “Determination of information and communication technology (ICT) training needs of academic staff for bridging gaps in the 21st century management of colleges of education in Delta state,” *African Journal of Educational Management, Teaching and Entrepreneurship Studies*, vol. 6, no. 1, pp. 44–65, 2022.
 - [27] H. Wordu, V. Akor, and V. Ojorka, “Instructional delivery models and academic performance of agricultural science students in senior secondary schools in rivers state, Nigeria,” *International Journal of Education and Evaluation*, vol. 4, no. 9, pp. 72–82, 2018.
 - [28] J. C. Buseri and T. E. Dorgu, “The relevance of instructional materials for effective curriculum delivery in Nigeria,” *Journal of issues in professional Teacher Education (JTIPTE)*, vol. 2, no. 2, p. 9, 2011.
 - [29] S. Ghavifekr and W. A. W. Rosdy, “Teaching and learning with technology: effectiveness of ICT integration in schools,” *International Journal of Research in Education and Science*, vol. 1, no. 2, p. 175, Mar. 2015, doi: 10.21890/ijres.23596.
 - [30] O. T. Chibueze, A. C. Chinedu, and O. Oliver, “Digital skills required by technical vocational education and training (TVET) lecturers for instructional delivery in universities,” *Journal of home economics research (JHER)*, vol. 23, no. 1, pp. 128–141, 2015.
 - [31] P. Hepp K., M. À. Prats Fernández, and J. Holgado García, “Teacher training: technology helping to develop an innovative and reflective professional profile,” *RUSC. Universities and Knowledge Society Journal*, vol. 12, no. 2, p. 30, Apr. 2015, doi: 10.7238/rusc.v12i2.2458.
 - [32] R. Zhang and D. Zou, “A review of research on technology-enhanced peer feedback for second language writing based on the activity theory framework,” *Education and Information Technologies*, vol. 28, no. 6, pp. 6727–6753, Jun. 2023, doi: 10.1007/s10639-022-11469-8.
 - [33] S. Hennessy et al., “Technology use for teacher professional development in low- and middle-income countries: a systematic review,” *Computers and Education Open*, vol. 3, p. 100080, Dec. 2022, doi: 10.1016/j.cao.2022.100080.
 - [34] B. Wu, Y. Hu, X. Gu, and C. P. Lim, “Professional development of new higher education teachers with information and communication technology in Shanghai,” *Journal of Educational Computing Research*, vol. 54, no. 4, pp. 531–562, 2015, doi: 10.1177/0735633115621922.
 - [35] C. Buabeng-Andoh, “Factors that influence teachers’ pedagogical use of ICT in secondary schools: a case of Ghana,” *Contemporary Educational Technology*, vol. 10, no. 3, pp. 272–288, Jul. 2019, doi: 10.30935/cet.590099.
 - [36] P. Paudel, “Teachers’ skill and motivation in using information and communication technology,” *Prithvi Journal of Research and Innovation*, vol. 2, pp. 20–35, 2020, doi: 10.3126/pjri.v2i0.33431.
 - [37] C. Cruthaka and O. Pinngern, “Development of a training program for enhancement of technology competencies of university lecturers,” *International Journal of Educational Administration and Policy Studies*, vol. 8, no. 6, pp. 57–65, 2016.




- [38] M. Mafang'ha, "Teachers' experience on the use of ICT to facilitate teaching: A case of ilala district secondary schools," M.S. Thesis, The Open University of Tanzania, 2016.
- [39] O. Dele-Ajayi, O. D. Fasae, and A. Okoli, "Teachers' concerns about integrating information and communication technologies in the classrooms," *PLOS ONE*, vol. 16, no. 5, p. e0249703, 2021, doi: 10.1371/journal.pone.0249703.
- [40] R. N. Wachiuri, "Effects of teachers' experience and training on implementation of information communication technology in public secondary schools in Nyeri, Central District, Kenya," *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, vol. 20, no. 3, pp. 26–38, 2015, doi: 10.9790/0837-20372638.
- [41] A. Rahman, "ICT impact on socio-economic conditions of rural Bangladesh," *Journal of World Economic Research*, vol. 2, no. 1, p. 1, 2013, doi: 10.11648/j.jwer.20130201.11.
- [42] P. Ugwu and N. U. Kingsley, "The concept and application of ICT to teaching/learning process," *International Research Journal of Mathematics, Engineering and IT*, vol. 6, no. 2, pp. 10–22, 2019.
- [43] M. Liong, D. Y. Yeung, G. H.-L. Cheng, and R. Y. H. Cheung, "Profiles of ICT identity and their associations with female high school students' intention to study and work in ICT: A mixed-methods approach," *Computers & Education*, vol. 195, p. 104722, Apr. 2023, doi: 10.1016/j.compedu.2022.104722.
- [44] O. A. Oki, C. Uleanya, and S. Mbanga, "Echoing the effect of information and communications technology on rural education development," *Technology audit and production reserves*, vol. 1, no. 2(69), pp. 6–14, 2023, doi: 10.15587/2706-5448.2023.269698.
- [45] I. G. Abraham-Ibe, "Information and communication technology (ICT) and improved method of office management/administration," *African Scholar Publications & Research International*, vol. 23, no. 7, pp. 199–214, 2021.
- [46] A. T. Olutola and O. O. Olatoye, "Challenges of e-learning technologies in Nigerian university education," *Journal of Educational and Social Research*, Jan. 2015, doi: 10.5901/jesr.2015.v5n1p301.
- [47] C. Buabeng-Andoh, "An exploration of teachers' skills, perceptions and practices of ICT in teaching and learning in the Ghanaian second-cycle schools," *Contemporary Educational Technology*, vol. 3, no. 1, Mar. 2012, doi: 10.30935/cedtech/6066.
- [48] E. Ugwoke, N. I. Edeh, and J. C. Ezemma, "Business education lecturers' perception of learning management systems for effective teaching and learning accounting in universities in south-east, Nigeria," *Library Philosophy and Practice (e-journal)*, p. 2122, 2019.
- [49] A. Rahman, "Using students' experience to derive effectiveness of COVID-19-lockdown-induced emergency online learning at undergraduate level: evidence from Assam, India," *Higher Education for the Future*, vol. 8, no. 1, pp. 71–89, Jan. 2021, doi: 10.1177/2347631120980549.
- [50] N. Roztocky, P. Soja, and H. R. Weistroffer, "The role of information and communication technologies in socioeconomic development: towards a multi-dimensional framework," *Information Technology for Development*, vol. 25, no. 2, pp. 171–183, Apr. 2019, doi: 10.1080/02681102.2019.1596654.
- [51] O. I. Ikwuka, L. C. Onyali, O. P. Olugbemi, C. E. Etodike, I. C. Igbokwe, and E. J. Adigwe, "Teachers' attitude towards the use of ICT for quality instructional delivery in Onitsha north secondary schools, Anambra state, Nigeria," *International Journal of Academic Research in Progressive Education and Development*, vol. 9, no. 3, 2020, doi: 10.6007/ijarped/v9-i3/7980.
- [52] O. B. A. Walsan and J. N. B. Okanu-Igwela, "Issues, challenges and prospects in the use of educational technology for instructional delivery in the management of 21st university education in Nigeria," 2019.
- [53] M. K. Aydin, M. Gurol, and R. Vanderlinde, "Evaluating ICT integration in Turkish K-12 schools through teachers' views," *EURASIA Journal of Mathematics, Science and Technology Education*, vol. 12, no. 4, Feb. 2016, doi: 10.12973/eurasia.2016.1227a.
- [54] V. Vitanova, T. Atanasova-Pachemska, D. Iliev, and S. Pachemska, "Factors affecting the development of ICT competencies of teachers in primary schools," in *Procedia - Social and Behavioral Sciences*, vol. 191, pp. 1087–1094, Jun. 2015, doi: 10.1016/j.sbspro.2015.04.344.
- [55] D. Alt, "Professional and psychological precursors of instructional approaches used in distance learning during COVID-19," *Current Psychology*, Jul. 2022, doi: 10.1007/s12144-022-03406-2.
- [56] A. M. Johnson, M. E. Jacovina, D. G. Russell, and C. M. Soto, "Challenges and solutions when using technologies in the classroom," in *Adaptive Educational Technologies for Literacy Instruction*, New York, NY : Routledge, 2016.: Routledge, 2016, pp. 13–30.

BIOGRAPHIES OF AUTHORS






Honesta Chidiebere Anorue    is a lecturer and Ph.D. student at the Department of Business Education, University of Nigeria, Nsukka. She holds a master's degree in business education. The focus of her study is on technology and its applications in vocational education. She has researched and published in the areas of innovative teaching strategies, digital research proficiency in information and communication technology, and technological skills improvement, among others. She can be contacted by email: honesta.anorue@unn.edu.ng.






John E. Ekuma    is a lecturer and a master's student at the Department of Business Education, University of Nigeria, Nsukka. He has researched several papers working in the area of the innovative teaching strategies, consumer education and many more. He can be contacted by email: john.ekuma@unn.edu.ng.



Timothy Onwumere Olinya    holds a master's degree in business education and is currently a Ph.D student in business education. He is a lecturer in the Department of Business Education, University of Nigeria, Nsukka. He has researched and published in the area innovative teaching strategy, human capital development and empowerment of accounting personnel. He can be contacted by email: timothy.olinya@unn.edu.ng.



Lilian O. Nwandu    holds bachelor's and master's degrees in Business Education from University of Nigeria, Nsukka. She is currently running her Ph.D programme in the same department. She is a lecturer II in the Department of Business Education, Faculty of Vocational Technical Education, University of Nigeria, Nsukka. Her research area focused on innovative teaching methods, technology enhance learning and environmental management accounting practices. She has researched and published several paper work in the area of the utilization of open education resources, climate change implementation in vocational and technical education, triple helix model for achieving peace building, international trade and its role in peace building, a readiness institution on the adoption of technology enhanced learning in practical instruction delivery and many more. She can be contacted by email: lilian.nwandu@unn.edu.ng.