# ASSESSING THE INTEGRATION OF ICT IN INSTRUCTIONAL PRACTICES AMONG TVET LECTURERS IN ENUGU STATE UNIVERSITIES

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**Abstract**

*This study examined the extent of the utilization of Information and Communication Technology (ICT) tools by technical vocational education and training (TVET) lecturers for instruction in Universities in Enugu State. Three research questions were raised in line with the specific objectives. The study employed descriptive survey research design. All 93 TVET lecturers in the public universities in Enugu State formed the population of this study. Purposive sampling was used to select 49 accessible and willing TVET lecturers from the two public universities in Enugu State. A structured questionnaire which was validated by three experts was used for data collection. The reliability of the instrument was assessed using the Cronbach's alpha coefficient, which yielded an overall value of 0.8. This indicates that the instrument is reliable. The data were analyzed using SPSS while mean was used to answer the research questions. The findings of the study revealed that, though the extent to which TVET lecturers in public universities in Enugu State utilize ICT is high, they still encounter some barriers to its utilization, and they make attempt to overcome the barriers. It was therefore recommended that the government should make standing policies that favour regular training of TVET lecturers to enable them acquire recent ICT skills for improved delivery of instruction to meet the constantly evolving needs of the 21st century education.*

***Keywords:*** *Instructional practices, University education, ICT tools, TVET lecturers.*

## Introduction

Education is universally recognized as a fundamental tool for societal progress, empowering individuals with the knowledge and skills necessary for personal growth, national development, and global competitiveness. Parankimalil (2012) defined education as a systematic process through which individuals acquire knowledge, skills, experience, and attitudes. According to Naik and Pandey (2021), education serves as a cornerstone for sustainable development by enabling individuals to contribute meaningfully to society and the economy. At the university level, education not only provides specialized knowledge but also prepares students for the workforce. Ahmed and Adamu (2022) argued that university education remains a critical pathway for professional and technical careers, fostering national development in areas such as cultural, political, economic, and technological transformation. Similarly, Adepoju et al. (2021) emphasized that research conducted at the university level accelerates national progress by providing innovative solutions to societal challenges. To achieve these goals, education must be tailored to equip individuals with relevant skills that align with the evolving needs of society. One such critical area is Technical and Vocational Education and Training (TVET), which equips individuals with practical expertise required in the workforce.

TVET is a specialized branch of education designed to equip students with the technical, vocational, and entrepreneurial skills required to succeed in the job market (Amadi & Onuoha, 2020; Subashini, 2015). TVET plays a vital role in addressing the skills gap in the

workforce and contributing to economic growth by providing individuals with knowledge and practical skills in fields such as agriculture, business, home economics, and information technology. Fadeyi et al. (2022) asserted that TVET lecturers are integral to the success of these programs, as they impart knowledge, skills, and workplace attitudes essential for economic and technological advancement. TVET lecturers must equip students with skills that meet the 21st-century demands of the job market, where approximately 80% of jobs require vocational skills (Abraham & Otuaga, 2017). Given the rapid pace of technological advancements and globalization, it is essential for TVET lecturers to utilize innovative teaching strategies to equip students with 21st-century skills that meet dynamic job market demands, where vocational expertise is increasingly indispensable.

Information and Communication Technology (ICT) has emerged as one of the most significant drivers of educational transformation, providing unprecedented opportunities for enhancing instructional delivery. ICT tools, including multimedia systems, online learning platforms, simulations, and virtual reality, can support diverse learning styles, improve student engagement, and deepen skills acquisition (Odeyemi et al., 2022; Subashini, 2015). The integration of ICT into teaching not only fosters interactive and participatory learning but also enables students to access vast resources and explore information beyond the classroom. Research has shown that ICT plays a pivotal role in bridging the gap between traditional learning environments and the demands of the digital age (Adepoju et al. (2021; Marcial & de la Rama, 2015). Specifically, in TVET, ICT can enhance both cognitive and psychomotor learning, helping students acquire essential knowledge and skills for the workplace (Abubakar et al., 2023; Widyartono et al., 2017). Consequently, leveraging ICT in TVET programs can significantly improve hands-on learning experiences, preparing students for modern job markets.

Despite the recognized potential of ICT to transform TVET, its integration into instructional delivery remains a significant challenge in many developing countries, including Nigeria. In particular, research has highlighted several barriers that hinder the effective use of ICT by TVET lecturers in Nigerian public universities. These barriers include inadequate electricity supply, unreliable internet connectivity, technophobia, resistance to change, and limited access to ICT training and technical support (Ikehi et al., 2014; Chukwuedo & Igbinedion, 2014; Chukwudi & Chukwudi, 2015; Olowe et al., 2022; Obasi et al., 2023). Additionally, the high cost of ICT resources and the lack of institutional support further constrain the adoption of ICT tools in teaching. These challenges prevent TVET lecturers from fully embracing innovative teaching methods that are critical for equipping students with essential skills for a competitive global workforce.

Although ICT infrastructure exists in many Nigerian universities, its utilization for instructional purposes remains minimal. A study by Onwuka et al. (2022) revealed that most TVET lecturers in Nigerian public universities face significant challenges in adopting ICT tools in their teaching. Similarly, Adeyemi et al. (2023) observed that despite the availability of ICT resources, many lecturers are hesitant to integrate these tools into their teaching due to limited training and lack of institutional incentives. Consequently, students often miss opportunities to acquire critical 21st-century skills, which undermines their readiness for modern workforce demands. In Enugu State, where this study is set, the situation is no different. TVET lecturers in the state's public universities face the same challenges as their counterparts across the country. The lack of widespread adoption of ICT in TVET instruction has led to a disconnect between the skills students are taught and the skills demanded by modern industries. As a result, graduates may struggle to secure employment or adapt to the changing demands of the workforce. This gap in the integration of ICT in TVET programs not only affects students' learning outcomes but also undermines the potential of TVET to contribute to national development.

The research gap in this area is clear: while recent studies have examined ICT barriers in Nigerian universities, few have focused specifically on TVET lecturers and their responsiveness to ICT for instructional delivery (Chukwuedo & Igbinedion, 2014; Ikehi et al., 2014; Onwuagboke et al., 2015; Amadi & Onuoha, 2020; Onwuka et al., 2022). Furthermore, limited research exists on the specific ICT tools employed by TVET lecturers in Enugu State and their impact on instructional quality. Existing studies have primarily focused on the availability of ICT infrastructure, but there is a lack of in-depth exploration into the actual utilization patterns and the effectiveness of ICT in enhancing TVET instruction in Enugu State (Chukwudi & Chukwudi, 2015; Eze et al. 2023; Okoye & Arimonu, 2016). This gap in the literature highlights the need for focused research that investigates the actual practices, challenges, and potential solutions to ICT integration in TVET teaching in Enugu State. This study seeks to fill this gap by examining the extent to which TVET lecturers in public universities in Enugu State utilize ICT tools for instructional delivery. The research will explore the barriers to ICT adoption, the types of ICT tools employed, and the impact of ICT utilization on teaching outcomes in TVET programs. By addressing these issues, the study aims to contribute to the body of knowledge on ICT in education and provide practical recommendations for improving instructional delivery in TVET. Ultimately, the findings will offer insights that can help policymakers, educators, and institutions improve ICT integration in TVET, enhancing the quality of education and preparing students for the demands of the 21st-century workforce.

**Purpose of the Study**

The general purpose of this study is to assess the extent to which ICT tools is been utilized by TVET lecturers for instructional delivery in Universities in Enugu State. Specifically, the study sought to:

1. determine the extent to which TVET lecturers utilize ICT tools for improved instructional delivery
2. ascertain barriers encountered by TVET lecturers in utilizing ICT tools for improved instructional delivery
3. determine the extent to which TVET lecturers attempt to overcome ICT barriers for improved instructional delivery

**Research Questions**

1. To what extent do TVET lecturers utilize ICT tools for improved instructional delivery?
2. What are the barriers encountered by TVET lecturers in utilizing ICT for instructional delivery?
3. To what extent do TVET lecturers attempt to overcome ICT barriers for improved instructional delivery?

**Methodology**

Descriptive survey research design was employed for this study. Descriptive survey research according to Bakare et al (2021) is concerned with the collection and description of data from a given population in a systematic way. Descriptive survey research was employed since data were collected from selected TVET lecturers in public universities in Enugu State on which generalization is made. The population of the study comprise all 93 TVET lecturers in the public universities in Enugu State. Purposive sampling technique was adopted to select 49 TVET lecturers who have taught for more than five years. This is necessary because it is expected that such lecturers must have been using ICT for delivery of instruction. A structured questionnaire developed by the researcher, was used for data collection. The questionnaire was rated on a four-point rating scale ranging from Very High Extent (VHE),

High Extent (HE), Low Extent (LE), and Very Low Extent (VLE). Out of the 49 questionnaires items administered, 47 were returned representing 95.9% return rate. Data collected were analyzed using mean on a decision mark of 2.5. This mean was used to answer the research questions. Hence, any response with a mean score of 2.5 and above is regarded to be of high extent, while any response with a score below 2.5 is regarded to be of low extent.

## Results

**Table 1**

*Mean Scores of Responses of TVET lecturers on the extent to which they utilize ICT for improved learning* ***N = 47***

| S/N | Item statements | $\bar{X}$ | Remark |
|---|---|---|---|
| | ***Cognitive Domain*** | 3.37 | VHE |
| **1.** | Use power point to present lectures | | |
| **2.** | Use interactive Starboard for lectures | 2.23 | VLE |
| **3.** | Correspond with students through online platforms discussions | 2.91 | VHE |
| **4.** | Adopt video conferencing for lectures | 2.14 | VLE |
| **5.** | Encourage students' usage of laptops in lecture halls to facilitate learning | 3.19 | VHE |
| **6.** | Make electronic materials/documents like power point slides, MS Word, software etc, available to students to facilitate further studies | 2.93 | VHE |
| **7.** | Accept assignments on electronic platforms | 2.98 | VHE |
| **8.** | Send lecture notes to students on electronic platforms where necessary | 2.74 | VHE |
| **9.** | Use simulations to reinforce students' retention of lectures | 2.28 | VLE |
| | ***Psychomotor Domain*** | | |
| **10.** | Use MS Excel, SPSS, Genstat, etc, to explain data analysis to students/ supervisees | 2.65 | VHE |
| **11.** | Use software packages like AutoCAD, Micro Station, Corel Draw, Spreadsheet, Mendeley, Genstatetc, to teach field-related skills | 1.72 | VLE |
| **12.** | Use various relevant simulations in practical class to teach skills | 2.02 | VLE |
| **13.** | Encourage students to visit YOUTUBE to practice skill-based content of multimedia materials personally produced and uploaded | 2.58 | VHE |
| **14.** | Conduct Computer Based Examination in course handled | 2.49 | VLE |
| **15.** | Use interactive Starboard to draw figures in a practical class to arouse students' interest | 1.81 | VLE |
| **16.** | Create instructional materials using ICT | 2.88 | VHE |
| **17.** | Assign students work that call for computer use | 2.63 | VHE |
| **18.** | Ask students to produce multimedia reports/projects | 2.91 | VHE |
| **19.** | Encourage students to check their results online | 3.33 | VHE |

***Note:*** $\bar{X}$ *=Mean of TVET Lecturers,* ***N*** *= Number of TVET Lecturers*

Data presented in table 1 reveal that items 1, 3, 5, 6, 7, 8, 10, 13, 16, 17, 18 and 19 had their mean scores ranging from 2.58 to 3.37. These values are greater than the decision mark of 2.50, which therefore means, the extent to which TVET lecturers utilize ICT for improved learning is to a very high extent based on the item statements. On the other hand, items 2, 4, 9, 11, 12, 14 and 15 had their mean scores ranging from 1.72 to 2.28, implying that the respondents posited that the extent to which they utilize ICT for improved learning is to a very low based on the item statements. The findings show a strong emphasis on cognitive learning, with lecturers effectively using ICT to support student engagement and understanding. However, the limited adoption of ICT tools in the psychomotor domain reveals a significant gap in the development of practical skills. Despite the availability of ICT resources, the underutilization of tools like simulations and field-specific software points to a need for enhanced training and support for lecturers.

***Table 2***

*Mean Scores of Responses of TVET lecturers on barriers they encounter in utilizing ICT for improved learning*

| S/N | Item statements | $\bar{X}$ | Remark |
|---|---|---|---|
| **20.** | Poor supply of electricity | **3.37** | **VHE** |
| **21.** | High cost of procuring of ICT tools | **3.12** | **VHE** |
| **22.** | Inadequate internet data connection in lecture halls | **2.63** | **VHE** |
| **23.** | Inadequate internet data connection in office areas | **2.84** | **VHE** |
| **24.** | Inadequate in provision of internet data connection in students' residence | **3.26** | **VHE** |
| **25.** | Technophobia | **2.93** | **VHE** |
| **26.** | Lecturers' computer self-efficacy | **2.93** | **VHE** |
| **27.** | Technicalities involved in planning for ICT related instructional materials | **2.81** | **VHE** |
| **28.** | Lack of adequate technical assistance | **3.42** | **VHE** |
| **29.** | Time constraints in teaching with simulations | **3.07** | **VHE** |
| **30.** | Inadequate time needed to learn using ICT gadgets, software, etc | **3.02** | **VHE** |
| **31.** | Lack of regular updating of software | **3.09** | **VHE** |
| **32.** | Large number of learners/students per class | **3.49** | **VHE** |
| **33.** | Resistance to change | **2.63** | **VHE** |

***Note:*** $\bar{X}$ *=Mean of TVET Lecturers,* ***N*** *= 47*

Data presented in table 2 reveal that all 13 items had their mean scores ranging from 2.63 to 3.49. These values are greater than the decision mark of 2.50, which therefore means, TVET lecturers opined that they actually encounter these barriers in utilizing ICT for improved instructional delivery. These findings underscore the importance of addressing infrastructure, training, and workload management to enhance ICT use in TVET.

***Table 3***

*Mean Scores of Responses of TVET lecturers on the extent to which they attempt to overcome ICT barriers for improved learning*

| S/N | Item statements | $\bar{X}$ | Remark |
|---|---|---|---|
| **34.** | Attend retraining programs on the use of ICT in teaching | **3.23** | **VHE** |
| **35.** | Attend workshops on the use of ICT in research | **3.19** | **VHE** |
| **36.** | Respond to students' challenges on ICT related issues | **2.51** | **VHE** |
| **37.** | Conduct practical classes with the aid of simulations | **2.45** | **VLE** |
| **38.** | Acquire more ICT skills for data analysis | **3.33** | **VHE** |
| **39.** | Surf the internet daily for recent field-related articles | **3.02** | **VHE** |
| **40.** | Liaise with technologists in the department to set-up ICT gadgets in preparation for lectures | **2.91** | **VHE** |
| **41.** | Answer students' questions via various online platforms | **3.14** | **VHE** |
| **42.** | Seek knowledge from colleagues on field-related software packages | **3.26** | **VHE** |
| **43.** | Login to university website to check for articles on the available e-repository | **3.44** | **VHE** |
| **44.** | Purchase internet data for extensive research to improve teaching | **3.33** | **VHE** |
| **45.** | Attempt discussions with ICT experts on how to improve computer self-efficacy | **3.40** | **VHE** |
| **46.** | Update software regularly | **3.16** | **VHE** |
| **47.** | Make use of alternative source of electricity like generator when necessary | **2.70** | **VHE** |

***Note:*** $\bar{X}$ *=Mean of TVET Lecturers,* ***N*** *= Number of TVET Lecturers*

Data presented in table 3 revealed that all items except item 37, had their mean scores ranging from 2.51 to 3.44. These values are greater than the decision mark of 2.50, which therefore means that the extent to which TVET lecturers attempt to overcome barriers to the utilization of ICT for improved instructional delivery is to a very high extent. On the other

hand, the respondents agreed that the extent to which they attempt to overcome conducting practical classes using simulations is to very low extent.

***Discussion***

The findings of the study on extent of ICT utilization revealed that TVET lecturers utilize ICT tools to a high extent for specific aspects of teaching and learning. Items such as fostering student engagement, delivering lectures, and promoting understanding showed mean scores ranging from 2.58 to 3.37. This indicates a strong emphasis on cognitive learning, aligning with studies that highlight the role of ICT in enhancing knowledge acquisition and critical thinking (Kumar & Kumar, 2021; Adebola et al., 2020). However, the finding of this study is not in consonance with that of Chukwunwendu (2016), which posited that TVET lectures often shy away from using ICT for delivery of instruction despite the presence and influence of ICT in public universities, and the demands of the swiftly changing educational system in the country. ICT tools like multimedia presentations, interactive whiteboards, and online resources allow lecturers to create engaging and student-centered learning environments, which are critical for improving academic performance and student retention (Omodan et al., 2022). Furthermore, the findings also reveal low mean scores (1.72 to 2.28) for items related to the psychomotor domain, such as the use of simulations, virtual laboratories, and field-specific software. This gap suggests limited adoption of ICT tools aimed at developing practical and hands-on skills, which are crucial for TVET students preparing for technical careers. The underutilization of such tools aligns with the findings of Ajayi and Oyinloye (2021), who reported that TVET institutions in developing countries often lack the necessary resources and expertise to integrate advanced ICT tools into practical teaching. Addressing this gap requires targeted training for lecturers and investments in ICT infrastructure specific to TVET disciplines (Igbinedion et al., 2021).

Similarly, the study identified significant barriers to ICT utilization, with mean scores ranging from 2.63 to 3.49. These include inadequate electricity supply, high costs of ICT tools, insufficient internet connectivity, and large class sizes. These barriers are consistent with findings from recent studies (Eze et al., 2022; Odukoya et al., 2020) that highlight infrastructural and systemic challenges in ICT adoption in Nigerian universities. Inadequate power supply and poor internet access have been identified as major constraints in Africa, limiting the ability of lecturers to integrate ICT into their instructional delivery effectively (Nwosu & Ugwoke, 2021). Human factors such as technophobia and resistance to change also emerged as significant barriers, indicating the need for capacity building and mindset shifts among lecturers. A study by Ogundele et al. (2023) emphasizes the importance of ongoing professional development programs to improve lecturers' confidence and competence in using ICT tools. Institutions must also provide technical support and create an enabling environment to encourage ICT adoption.

Despite the challenges, the findings reveal that TVET lecturers make significant efforts to overcome these barriers, with mean scores ranging from 2.51 to 3.44 for most items. These efforts include attending workshops, collaborating with colleagues, and exploring alternative ICT tools. This aligns with research by Okoye et al. (2022), which found that professional collaboration and self-directed learning are common strategies among educators seeking to improve their ICT skills. However, the study notes limited efforts in using simulations for practical classes, as evidenced by the low mean score for item 37. This highlights a persistent gap in addressing the psychomotor domain of learning. Simulations are essential in TVET for replicating real-world scenarios and providing students with hands-on experience (Alves et al., 2021). The low utilization of simulations may stem from inadequate training, high costs, or a lack of institutional support. As Umezinwa and Amadi (2023)

suggest, targeted investments in simulation technology and lecturer training can bridge this gap, ensuring that TVET students acquire the practical skills needed for the workforce.

### *Conclusion*

This study highlights the dual challenges of maximizing ICT utilization and overcoming barriers in TVET instruction. While lecturers have made strides in integrating ICT for cognitive learning, significant gaps remain in the psychomotor domain. Addressing these gaps requires a holistic approach involving improved infrastructure, targeted training, and supportive policies. These efforts will ensure that ICT becomes a transformative tool for TVET, preparing students for the demands of the modern workforce.

### *Recommendations*

Based on the findings of the study, it is recommended that the government, heads of institutions and policy makers should:

1. Policymakers and stakeholders in TVET should prioritize investments in reliable electricity supply, high-speed internet connectivity, and affordable ICT tools. This will address infrastructural barriers such as inadequate power and poor internet access, ensuring a conducive environment for ICT integration in teaching.
2. Professional development programs should be organized to build lecturers' skills and confidence in using advanced ICT tools, including simulations, virtual labs, and field-specific software. These programs should focus on both cognitive and psychomotor domains to enhance practical skills development among TVET students.
3. Institutions should create dedicated technical support teams to assist lecturers in overcoming technical challenges related to ICT use. This will help mitigate issues such as technophobia and resistance to change while promoting a supportive learning environment.
4. TVET institutions should encourage lecturers to explore and adopt innovative teaching methodologies that integrate ICT tools effectively. This includes incorporating simulations and other hands-on digital tools to bridge the gap in psychomotor skill development and better prepare students for the workforce.

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