

**INFLUENCE OF LECTURERS' DIGITAL COMPETENCE ON STUDENTS' SKILLS
ACQUISITION IN INDUSTRIAL TECHNOLOGY EDUCATION IN RIVERS STATE
UNIVERSITIES**

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Abstract

This study examined the influence of levels of lecturers' digital competence on students' industrial technology skills acquisition in Rivers State universities. The study adopted a descriptive survey research design. The population comprised 416 Year 3 and Year 4 Industrial Technology Education students from Rivers State University and Ignatius Ajuru University of Education. A census approach was adopted, while 236 properly completed questionnaires were used for data analysis. Data were collected using a researcher-developed instrument titled *Questionnaire on Lecturers' Digital Competence and Students' Industrial Technology Skills Acquisition*. The instrument was validated by experts in Industrial Technology Education and Measurement and Evaluation, while a Cronbach Alpha reliability coefficient of 0.76 was obtained. Mean and standard deviation were used to answer the research questions, while Z-test was used to test the null hypotheses at the 0.05 level of significance. The findings revealed that lecturers' technical digital competence positively influenced students' industrial technology skills acquisition, with an average mean of 2.59 for students from Rivers State University and 2.75 for students from Ignatius Ajuru University of Education. The findings also showed that lecturers' pedagogical digital competence positively influenced students' industrial technology skills acquisition, with average means of 2.64 and 2.66 for Rivers State University and Ignatius Ajuru University of Education, respectively. However, the Z-test results indicated no significant difference between the mean responses of students from the two universities regarding technical digital competence and pedagogical digital competence. The study concludes that students in both universities generally perceive lecturers' technical and pedagogical digital competence as beneficial to their acquisition of industrial technology skills, and that their perceptions do not differ significantly across the two institutions. It was recommended, among others, that universities should strengthen continuous professional development programmes that equip Industrial Technology Education lecturers with practical technical and pedagogical digital competencies for effective industrial technology instruction.

Keywords: Digital Competence, Technical Digital Competence, Pedagogical Digital Competence, Industrial Technology Skills Acquisition, Industrial Technology Education

Introduction

Lecturers' digital competence has been defined variously by scholars, though a common thread runs through these definitions. Lysova et al. (2020) conceptualised digital competence as a composite of technical skill, pedagogical judgement, and information literacy, dimensions that together describe an individual's capacity to select, use, and reflectively integrate digital tools into professional practice. Babalola, Kayii and Ben-George (2026) and Medeshova et al. (2024) similarly described it as the confident and critical use of digital technologies for teaching, learning, and professional engagement, while Mishra and Koehler (2006) framed it more directly at the classroom level, treating digital competence as a constellation of skill-linked dispositions, including technical proficiency, pedagogical integration, and information management, that predict the quality of technology-mediated instruction.

From the researcher's standpoint, what these definitions share, and what distinguishes lecturers' digital competence from mere digital access or awareness, is an emphasis on the demonstrated, graduated capability of the lecturer rather than on the mere availability of digital infrastructure. For lecturers in Industrial Technology Education programmes, digital competence is best understood as a leveled construct, ranging from basic operational familiarity with digital tools such as computer-aided design software, simulation packages, and digitally controlled workshop equipment, through confident pedagogical integration of those tools into workshop and laboratory instruction, to a reflective, information-literate use of digital resources to design learning experiences, rather than as a fixed, present-or-absent attribute. This distinction matters for the present study because it means that lecturers' digital competence can, in principle, vary by degree and be measured along a continuum, making the relationship between differing levels of that competence and the industrial technology skills students acquire a legitimate and assessable line of enquiry (James-Ngochindo & Kayii, 2026).

Beyond definition, the literature offers useful elaboration on how lecturers' digital competence develops and why it varies among individuals. Oluwasina et al. (2025) argued that digital competence is shaped substantially by institutional support and continuous professional development, that is, by whether lecturers have access to structured training and the opportunity to practise digital tools in authentic instructional settings, rather than being a fixed trait acquired once and retained indefinitely. Medeshova et al. (2024) similarly found, in a related analysis, that the strength of the relationship between digital competence and instructional outcomes is contingent on institutional and situational factors, not something automatically activated by the mere presence of digital devices in the classroom or workshop. Lee and Meng (2021) further demonstrated that self-efficacy and deliberate practice mediate the translation of technical digital skill into effective professional use, reinforcing the view that lecturers' digital competence, though partly internal to the individual, is nonetheless responsive to the quality of training, mentorship, and institutional investment a lecturer receives. Taken together, these perspectives suggest that students' industrial technology skills acquisition is unlikely to be strengthened by the mere presence of digitally competent lecturers alone; it requires that such competence be deliberately and consistently translated into classroom and workshop practice.

Lecturers' technical digital competence, the first dimension of digital competence considered in this study, relates to students' industrial technology skills acquisition by determining how confidently and correctly a lecturer can operate the software applications, hardware, digital platforms, and digitally enabled workshop equipment that underpin industrial technology instruction, computer-aided design and drafting, simulation, digital measurement and diagnostic tools, and computer-controlled machines among them. In principle, students taught by technically proficient lecturers should acquire industrial technology skills more readily, since demonstration and modelling are central to skill-based workshop instruction. Whether this translates into stronger skills acquisition, however, depends on how that technical competence is deployed in the classroom and workshop, as private technical proficiency is conceptually distinct from the demonstrated, guided practice that builds student skill.

Lecturers' pedagogical digital competence, the second dimension, bears on students' industrial technology skills acquisition through its capacity to help lecturers design practical learning activities, sequence workshop practice, and give targeted feedback using digital tools. Because the acquisition of industrial technology skills depends on structured, scaffolded, hands-on practice rather than passive observation, competence that is only technical without pedagogical translation is theorised to leave student skills acquisition largely unaffected. Yet this relationship is only as strong as the lecturer's ability to convert technical know-how into instructionally sound tasks; technical fluency without pedagogical design may leave students no better equipped than before.

Lecturers' information and communication digital competence, the third dimension, relates to students' industrial technology skills acquisition by supporting the lecturer's capacity to source, evaluate, and communicate digital technical information, such as manuals, specifications, drawings, and safety data, and to model appropriate digital communication and data-handling practices for students to emulate. Confidence in evaluating and communicating digital information is a recognised component of comprehensive digital competence, and this dimension is theorised to strengthen student outcomes by modelling professional information practices rather than merely operating software or equipment. As with the other two dimensions, however, the link between this competence and students' skills acquisition is expected to depend on whether lecturers deliberately model and require these practices in the course of instruction, rather than possessing them only as a private capability (Azonwu & Jones, 2022).

The foregoing conceptual linkages find partial support, and partial complication, in the empirical literature. Simorangkir (2025), examining lecturers' technological capability alongside their pedagogical competence, found that digital competence in technical operation, pedagogical design, and information management significantly predicted the quality of technology-mediated instruction, lending support to the theorised link between lecturers' digital competence and student technology-skills outcomes. Lee and Meng (2021), however, found that digital-competence readiness for Industry 4.0 influenced skill outcomes only indirectly, through instructional and communication-design choices, indicating that the pathway from digital competence to skills acquisition is neither automatic nor uniform. Within the Nigerian vocational and technology context, Ile and Abi (2021) found that digital competence fosters the acquisition of practical technology skills and confidence among students in tertiary institutions, but that the extent to which individual students benefit varies considerably, and recommended structured institutional support to strengthen the link.

James-Ngochindo and Kayii (2026) examined data analytics competence and decision-making quality among Business Education administrators in public universities in the South-South geopolitical zone of Nigeria. The study focused specifically on technical skills and analytical reasoning as dimensions of data analytics competence. Using a correlational research design and Pearson Product-Moment Correlation, the study found a strong positive and significant relationship between technical skills and decision-making quality, as well as a very strong positive and significant relationship between analytical reasoning and decision-making quality. The authors recommended continuous professional development and the institutionalization of data analytics platforms and digital dashboards to support evidence-based decision-making.

These studies collectively establish that a relationship between lecturers' digital competence and students' technology skills acquisition is theoretically plausible and has been empirically demonstrated in some populations, lecturers already engaged in structured training, workshop participants, and technology-integrated classrooms, yet the mechanism connecting lecturer competence to student outcomes remains contested, and empirical attention to Industrial Technology Education students specifically, particularly within Rivers State universities, remains scarce. It is this combination of theoretical plausibility, mixed and conditional empirical evidence, and a specific contextual gap that provides the rationale for the present study, which set out to examine empirically whether, and to what extent, lecturers' technical digital competence and pedagogical digital competence relate to students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities.

Statement of the Problem

Industrial technology instruction is increasingly shaped by the level of digital competence that lecturers bring to the classroom and workshop, spanning technical operation, pedagogical integration, and information and communication practice. With industry moving towards automation, digitally controlled machines, and computer-aided design and manufacturing,

employers, professional bodies, and the labour market more broadly increasingly expect graduates of Industrial Technology Education programmes not merely to have been exposed to digital tools theoretically but to demonstrate practical industrial technology skills ready for workplace deployment. However, in many Nigerian universities, including those in Rivers State, Industrial Technology Education lecturers appear to display uneven levels of digital competence, with technical familiarity not always matched by pedagogical integration or information-and-communication practice in the classroom and workshop. This raises concern that students may be completing their programmes without the industrial technology skills demanded by a technology-driven work environment. Despite growing global literature linking lecturers' digital competence to student technology outcomes, little empirical attention has been paid to how differing levels of lecturers' technical, pedagogical, and information-and-communication digital competence specifically relate to students' industrial technology skills acquisition among Industrial Technology Education students in Rivers State universities. It is against this backdrop that this study sought to answer the question: what is the relationship between levels of lecturers' digital competence and students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities?

Purpose of the Study

The study aimed to examine the influence of levels of lecturers' digital competence on students' industrial technology skills acquisition in Rivers State universities. Specifically, the study sought to:

1. Determine the influence of lecturers' technical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities.
2. Determine the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities.

Research Questions

The following research questions guided the study:

1. What is the influence of lecturers' technical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities?
2. What is the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

1. There is no significant difference in the mean responses on the influence of lecturers' technical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities.
2. There is no significant difference in the mean responses on the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities.

Review of Empirical Studies

Lecturers' Technical Digital Competence and Students' Industrial Technology Skills Acquisition

Several studies have examined how lecturers' technical digital competence shapes classroom practice and student outcomes. Simorangkir (2025), examining how lecturers' technological capability operates through pedagogical competence, found that digital capabilities in technical operation, instructional design, and information management significantly predicted the quality of technology-mediated instruction and students' digital literacy, although not every sub-dimension of digital competence showed statistically significant effects on student-level outcomes in that study. This finding suggests that not every dimension of lecturers' digital competence contributes equally, or significantly, to student technology-skills outcomes.

Related literature on digital-tool adoption in technical and vocational classrooms and workshops similarly indicates that technically competent lecturers are able to demonstrate digital tools and equipment more fluently and troubleshoot student difficulties more efficiently than less competent peers, supporting more confident, hands-on student practice than passive instruction allows. Omutange et al. (2025), for example, examined the integration of modern digital technology platforms in teaching and learning in technical and vocational education and training institutions in Kenya. However, the effectiveness of lecturers' technical competence in practice appears to depend heavily on students' own prior exposure and practice opportunity, factors that a technically competent but pedagogically unstructured demonstration may not adequately build, particularly among students who have limited access to practice equipment. James-Ngochindo and Kayii (2026) examined data analytics competence and decision-making quality among Business Education administrators in public universities in the South-South region of Nigeria, pointing to the wider value of digital competence in university settings. A related stream of literature addresses lecturers' pedagogical digital competence. Soliha et al. (2024) found that digital competence, alongside learning motivation, had a statistically significant positive effect on students' performance and technology-skills confidence in an office administration study programme, with the strength and drivers of this effect differing according to how consistently lecturers translated their competence into classroom practice. This indicates that the relationship between lecturers' digital competence, including pedagogical integration, and students' skills acquisition is often conditional, working through the lecturer's instructional design and feedback practices rather than through mere possession of the competence itself.

Broader literature on technology-integrated instruction similarly reports that pedagogically competent lecturers structure practice tasks, sequence difficulty appropriately, and give targeted feedback in ways theorised to build student confidence by reducing the uncertainty associated with independent use of digital tools and equipment. Where this pedagogical translation is absent, however, exposure to a technically competent lecturer alone may not be sufficient to shift students' measurable skills acquisition.

Literature on information and communication digital competence similarly links lecturers' ability to evaluate and communicate digital information to improved student information-handling practice, with such competence reported to enhance students' data-management habits, digital communication etiquette, and overall workplace readiness where it is modelled meaningfully rather than superficially. Azonwu and Jones (2022) suggested that strategies for enhancing the competence of pre-service teachers in Electrical/Electronic departments in Colleges of Education in Rivers State, Nigeria. The study adopted a survey research design and involved 21 lecturers and instructors, using census sampling. The findings indicated that computer-aided teaching strategies, training activities, training facilities, and an appropriately organised training and work environment were important for enhancing pre-service teachers' competence in Electrical/Electronic technology.

In the Nigerian context, Ile and Abi (2021) found that the level of lecturers' digital competence fosters the acquisition of practical technology skills, critical information-handling habits, and digital confidence among students in tertiary institutions offering office technology and related vocational programmes, and recommended establishing dedicated digital-competence development facilities within such programmes to strengthen this link. Their findings, alongside those of Simorangkir (2025) and Soliha et al. (2024), collectively suggest that lecturers' digital competence supports student technology-skills outcomes primarily when its classroom application is structured, sustained, and modelled, rather than when it exists only as a private, undemonstrated capability.

Recent empirical studies have increasingly examined the intersection of lecturers' digital competence and student technology outcomes, though from varied angles. Ile and Abi (2021) focused on digital-competence-driven skills development among office technology and management students, while Simorangkir (2025) and Milkova et al. (2025) explored digital competence's broader capabilities as a driver of instructional quality and academic performance. Richard et al. (2023) linked digital competence to instructional decision-making through the lens of the technical and vocational teacher's pedagogical design role, and Branekova (2015) examined digital-competence self-evaluation and test performance among first-year pedagogy students within a comparative context. Similarly, Oluwasina et al. (2025) assessed the contribution of digital competence to skill acquisition and workforce competitiveness in technical and vocational education and training, while Omutange et al. (2025) investigated institutional support and the integration of modern digital technology platforms as enablers linking teacher digital competence to student performance in technical and vocational institutions. Milkova et al. (2025) extended this discourse by examining digital competence and sustainable academic performance through curriculum-embedded ICT use, while Lee and Meng (2021) considered digital communication competence and readiness for Industry 4.0 as factors shaping professional performance.

Collectively, these studies affirm a growing consensus that lecturers' digital competence enhances student technology outcomes whether through skills development, instructional design, communication, or sustainability-oriented performance. However, most of these works are either conceptual, level-specific (e.g., in-service training, continuing education), or geographically concentrated outside Nigeria's Industrial Technology Education context, with only Ile and Abi (2021) and Oluwasina et al. (2025) directly addressing Nigerian vocational and technology students, and even these are limited in scope (skills development and TVET integration, respectively) and geographic coverage, with none focusing on Industrial Technology Education students in Rivers State. Consequently, there remains a paucity of empirical research that comprehensively investigates how lecturers' digital competence and students' industrial technology skills acquisition relate across a broader Rivers State context, particularly integrating dimensions such as technical digital competence and pedagogical digital competence within a single study. This gap justifies the need for the present study, which seeks to empirically examine levels of lecturers' digital competence and students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities.

Methodology

This study adopted a descriptive survey research design, which is appropriate for examining and describing the level of lecturers' digital competence and students' industrial technology skills acquisition. The design enables the researcher to obtain information from a representative sample of respondents through the use of a structured questionnaire and to describe the existing conditions, opinions, and practices relating to the variables under study without manipulating them. The population of the study comprised all Year 3 and Year 4 Industrial Technology Education students of Rivers State universities, namely, Rivers State University (RSU) and Ignatius Ajuru University of Education (IAUE). Specifically, the population consisted of 78 Year 3 and 118 Year 4 students from

RSU, and 123 Year 3 and 97 Year 4 students from IAUE, giving a total population of 416 students. Given the manageable size of the population, the entire population was studied using a census/total enumeration approach, thereby eliminating sampling error and enhancing the generalizability of findings within the studied institutions. A structured questionnaire, developed by the researcher and titled "Questionnaire on Lecturers' Digital Competence and Students' Industrial Technology Skills Acquisition", served as the instrument for data collection. The instrument was divided into sections covering respondents' demographic information, items measuring levels of lecturers' digital competence (technical, pedagogical, and information and communication dimensions), and items measuring students' industrial technology skills acquisition, all rated on a modified four-point Likert-type scale. The face and content validity of the instrument were established through experts' review in Industrial Technology Education and Measurement/Evaluation, who assessed the items for clarity, relevance, and appropriateness in addressing the research questions and hypotheses. To ascertain the reliability of the instrument, a pilot test was conducted among a sample of Industrial Technology Education students outside the study area, and the data obtained were analysed using the Cronbach Alpha reliability method to determine the internal consistency of the instrument, yielding a cumulative reliability coefficient of 0.76.

Data collected were analyzed using mean and standard deviation to answer the research questions, while the Z-statistic was used to test the null hypotheses at the 0.05 level of significance. The null hypotheses were rejected when the calculated p-value was less than 0.05, while they were retained when the calculated p-value was greater than 0.05. The analysis of the data was carried out using the Statistical Package for the Social Sciences (SPSS).

Results

This section presents the results of the data analysis based on the research questions and hypotheses that guided the study. The findings are presented using appropriate descriptive and inferential statistics, with the results organized in tables for clarity and ease of interpretation.

Research Question 1: What is the influence of lecturers' technical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities?

Table 1: Mean Response and Standard Deviation on lecturers' technical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities

S/No	Statement	RSU		Decision	IAUE		Decision
		$\bar{X}$	SD		$\bar{X}$	SD	
1	My lecturers' ability to operate digital workshop equipment (e.g., computer-controlled machines and digital measuring instruments) effectively enhances my acquisition of industrial technology skills.	2.71	0.61	Agreed	2.85	0.48	Agreed
2	My lecturers' proficiency in using computer-aided design (CAD) software improves my ability to produce technical drawings and models.	2.50	0.50	Agreed	2.75	0.62	Agreed

3	My lecturers' competence in using simulation software enhances my ability to perform workshop and laboratory tasks.	2.54	0.71	Agreed	2.75	0.62	Agreed
4	My lecturers' ability to use digital demonstration tools (e.g., video and animation) improves my competence in carrying out technical procedures.	2.50	0.76	Agreed	2.90	0.45	Agreed
5	My lecturers' ability to troubleshoot basic faults in digital equipment and software helps me develop confidence in using industrial technology tools.	2.79	0.25	Agreed	2.95	0.22	Agreed
6	My lecturers' proficiency in operating digital industrial applications (e.g., CAD/CAM and electronic diagnostic tools) enhances my practical acquisition of industrial technology skills.	2.50	0.76	Agreed	2.65	0.73	Agreed
Average Mean/ SD		2.59	0.60		2.75	0.52	

Source: Researcher's Field Result 2026

Table 1 presents the mean responses and standard deviations on the influence of lecturers' technical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students in Rivers State universities. The results show that all six items recorded mean scores above the decision benchmark, indicating that the respondents agreed that lecturers' technical digital competence enhances students' acquisition of industrial technology skills. For RSU students, the item on lecturers' ability to troubleshoot basic faults in digital equipment and software recorded the highest mean score of **2.79** with a standard deviation of **0.25**, followed by lecturers' ability to operate digital workshop equipment effectively with a mean of **2.71** and standard deviation of **0.61**. The lowest mean scores of **2.50** were recorded for lecturers' proficiency in computer-aided design software, digital demonstration tools, and digital industrial applications. The overall mean of **2.59** with a standard deviation of **0.60** indicates that RSU respondents generally agreed that lecturers' technical digital competence contributes to students' industrial technology skills acquisition. Similarly, among IAUE students, the highest mean score was **2.95** with a standard deviation of **0.22**, recorded for lecturers' ability to troubleshoot basic faults in digital equipment and software. This was followed by lecturers' ability to use digital demonstration tools, with a mean of **2.90** and standard deviation of **0.45**. The lowest mean score was **2.65** with a standard deviation of **0.73**, recorded for lecturers' proficiency in operating digital industrial applications. The overall mean of 2.75 and standard deviation of 0.52 further indicates agreement among IAUE respondents. The findings indicate that lecturers' technical digital competence has a positive influence on students' industrial technology skills acquisition, particularly through lecturers' ability to troubleshoot equipment and software faults, operate digital workshop equipment, and use computer-aided design, demonstration, and other digital industrial applications effectively. The relatively low standard deviations across the items also indicate that the respondents' ratings were fairly consistent.

Research Question 2: What is the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities?

Table 2: Mean Response and Standard Deviation on lecturers' pedagogical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities

S/N o	Statement	RSU		Decision	IAUE		Decision
		$\bar{X}$	SD		$\bar{X}$	SD	
1	My lecturers use digital technologies to demonstrate industrial technology skills effectively.	2.71	0.61	Agreed	2.80	0.51	Agreed
2	My lecturers design practical digital learning activities that enable me to practise industrial technology skills.	2.58	0.70	Agreed	2.55	0.69	Agreed
3	My lecturers organise industrial technology learning activities from simple tasks to more complex tasks.	2.75	0.43	Agreed	2.60	0.65	Agreed
4	My lecturers use digital tools to provide guidance when I experience difficulties in performing workshop tasks.	2.63	0.48	Agreed	2.70	0.71	Agreed
5	My lecturers use digital technologies to provide feedback that helps me improve my industrial technology skills.	2.61	0.56	Agreed	2.85	0.48	Agreed
6	My lecturers integrate practical digital activities into their teaching to improve my acquisition of industrial technology skills.	2.62	0.48	Agreed	2.50	0.81	Agreed
Average Mean/ SD		2.64	0.55		2.66	0.65	

Source: Researcher's Field Result 2026

Table 2 presents the mean responses and standard deviations on the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students in Rivers State universities. The results indicate that all six items recorded mean scores above the decision benchmark, with all respondents agreeing that lecturers' pedagogical digital competence enhances students' acquisition of industrial technology skills. For **RSU**, the highest mean score of **2.75** with a standard deviation of **0.43** was recorded for the statement that lecturers organise industrial technology learning activities from simple tasks to more complex tasks. This was followed by the use of digital technologies to demonstrate industrial technology skills effectively, with a mean of **2.71** and standard deviation of **0.61**. The lowest mean of **2.58** with a standard deviation of **0.70** was recorded for lecturers designing practical digital learning activities that enable students to practise industrial technology skills. The overall mean of **2.64** and standard deviation of **0.55** indicate general agreement among RSU respondents. For **IAUE**, the highest mean score of **2.85** with a standard deviation of **0.48** was recorded for lecturers

using digital technologies to provide feedback that helps students improve their industrial technology skills. This was followed by the effective use of digital technologies to demonstrate industrial technology skills, with a mean of **2.80** and standard deviation of **0.51**. The lowest mean score of **2.50** with a standard deviation of **0.81** was recorded for lecturers integrating practical digital activities into their teaching. The overall mean of **2.66** and standard deviation of **0.65** indicate that IAUE respondents also agreed with the statements. Therefore, the findings reveal that **lecturers' pedagogical digital competence positively influences students' industrial technology skills acquisition**. In particular, the effective demonstration of skills, progressive organisation of learning activities, provision of digital feedback, and guidance through digital tools appear to contribute to students' development of industrial technology skills. The relatively low standard deviations suggest that the respondents' views were fairly consistent.

Hypotheses

There is no significant difference in the mean responses on the influence of lecturers' technical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities.

Table 3: z-Test Analysis on the influence of lecturers' technical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities

Group	Mean	SD	N	Df	Z _{cal}	Z _{crit}	Remark
RSU	2.59	0.60	157	364	0.57	1.96	Accepted
IAUE	2.81	0.52	209				

Source: *Researcher's Field Result; 2026* Accept Ho if $Z_{cal} < Z_{crit}$; Otherwise Reject

Table 3 presents the z-test analysis of the difference in mean responses of RSU and IAUE Industrial Technology Education students on the influence of lecturers' technical digital competence on students' industrial technology skills acquisition. The results show that RSU respondents had a mean score of **2.59** and standard deviation of **0.60**, while IAUE respondents had a mean score of **2.81** and standard deviation of **0.52**. The calculated z-value of **0.57** is less than the critical z-value of **1.96** at the 0.05 level of significance and **364 degrees of freedom**. Therefore, the null hypothesis is **accepted**. This implies that there is **no significant difference** in the mean responses of RSU and IAUE Industrial Technology Education students regarding the influence of lecturers' technical digital competence on students' industrial technology skills acquisition. Thus, the two groups had relatively similar perceptions of the influence of lecturers' technical digital competence.

Hypothesis 2: There is no significant difference in the mean responses on the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities.

Table 4: z-Test Analysis on the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition among Industrial Technology Education students of Rivers State universities

Group	Mean	SD	N	Df	Z _{cal}	Z _{crit}	Remark
RSU	2.64	0.55	157	364	0.18	1.96	Accepted
IAUE	2.66	0.65	209				

Source: *Researcher's Field Result; 2026* Accept Ho if $Z_{cal} < Z_{crit}$; Otherwise Reject

Table 4 presents the z-test analysis of the difference in mean responses of RSU and IAUE Industrial Technology Education students on the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition. The results indicate that RSU respondents recorded

a mean score of **2.64** with a standard deviation of **0.55**, while IAUE respondents recorded a mean score of **2.66** with a standard deviation of **0.65**. The calculated z-value of **0.18** is less than the critical z-value of **1.96** at the 0.05 level of significance and **364 degrees of freedom**. Consequently, the null hypothesis is **accepted**. This indicates that there is **no significant difference** in the mean responses of RSU and IAUE Industrial Technology Education students regarding the influence of lecturers' pedagogical digital competence on students' industrial technology skills acquisition. The finding is consistent with James-Ngochindo and Kayii (2026), who emphasized the importance of data analytics competence in enhancing the quality of decision-making among Business Education administrators in public universities in the South-South region. This suggests that competence in using digital and analytical technologies can contribute to effective professional practice and improved outcomes in educational settings. The findings therefore suggest that respondents from both universities held similar views on the influence of lecturers' pedagogical digital competence on students' acquisition of industrial technology skills.

CONCLUSION

The study concludes that students in both universities generally perceive lecturers' technical and pedagogical digital competence as beneficial to their acquisition of industrial technology skills, and that these perceptions do not differ significantly between Rivers State University and Ignatius Ajuru University of Education. However, in line with the studies reviewed, the benefit of lecturers' digital competence is likely to be greatest when that competence is deliberately, consistently, and visibly translated into structured, practice-based classroom and workshop instruction rather than held as a private capability. Given that lecturers' information and communication digital competence was not separately tested in this study, its relationship with students' industrial technology skills acquisition remains an open empirical question that further research should address.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Universities in Rivers State should strengthen continuous professional development programmes that equip Industrial Technology Education lecturers with practical technical digital competencies, such as computer-aided design, simulation, and the operation and troubleshooting of digitally controlled workshop equipment.
2. Industrial Technology Education programmes should move beyond assessing lecturers' technical digital competence alone and integrate structured, hands-on, practice-based pedagogical training that helps lecturers design digital workshop tasks, sequence practice from simple to complex, and give targeted digital feedback, and should require lecturers to model information and communication digital competence in instruction.
3. University management should provide and maintain adequate digital workshop facilities, software, and technical support, so that lecturers' digital competence can be consistently translated into practice that measurably improves students' industrial technology skills acquisition.

REFERENCES

- Azonwu, M. E., & Jones, B. (2022). Strategies for enhancing competence of pre-service teachers in Electrical/Electronic department in College of Education in Rivers State, Nigeria. *Asian Journal of Education and Social Studies*, 36(4), 42-52.

- Babalola, J. O., Kayii, N. E., & Ben-George, I. (2026). Digital literacy gaps and the adoption of Artificial Intelligence-based inclusive learning in Business Education: A phenomenological study. *Journal of Institute of Education, Rivers State University*, 2(1), 51-65.
- Branekova, D. (2015). Acquisition of digital competence in ICT courses for students in pedagogy. *Trakia Journal of Sciences*, 13(1), 454-461.
- James-Ngochindo, P., & Kayii, N. E. (2026). Data analytics competence and decision-making quality among Business Education administrators in public universities in South-South Nigeria. *Rivers State University Faculty of Education Conference Journal*, 4(2), 33-46.
- Ile, C. M., & Abi, A. O. (2021). Extent of acquisition of digital skills by office technology and management students in tertiary institutions in Benue State. *NAU Journal of Technology and Vocational Education*, 6(1), 22-30.
- Lee, J. J., & Meng, J. (2021). Digital competencies in communication management: A conceptual framework of readiness for Industry 4.0 for communication professionals in the workplace. *Journal of Communication Management*, 25(4), 417-436.
- Lysova, I. I., Vitokhina, O. A., & Volkova, O. V. (2020). Digital competence as a requirement for development of innovative educational environment at university. *Вопросы журналистики, педагогики, языкознания*, 39(3), 408-418.
- Medeshova, A., Adelbaeva, N., Kushekkaliev, A., Akimova, S., Khazhgaliyeva, G., Ramazanov, L., & Kassymova, A. (2024). The impact of pedagogical approaches for forming digital competence in students. *Qubahan Academic Journal*, 4(4), 374-382.
- Milkova, E., Moldoveanu, M., & Krcil, T. (2025). Sustainable education through information and communication technology: A case study on enhancing digital competence and academic performance of social science higher education students. *Sustainability*, 17(10), 4422.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Oluwasina, B. R., Afuye, O. W., & Saula, T. D. (2025). Integrating office technology into TVET: Enhancing skill acquisition, 21st-century competencies and global workforce competitiveness. *FUDMA International Journal of Social Sciences*, 5(4), 155-163.
- Omutange, E., Mutai, W. K., & Barasa, V. M. (2025). Impact of integration of modern digital technology platforms in teaching and learning at the Technical and Vocational Education and Training (TVETs) in Kenya. *American Journal of Education and Information Technology*, 9(1), 1-10.
- Richard, G. S., Joseph, A., Elikem, K., & Edem, B. K. (2023). Technology integration in technical and vocational education and training (TVET): The role of the art teacher. *Journal of Technical Education and Training*, 15(4), 73-88.
- Simorangkir, M. R. (2025). Teachers' technological capability through pedagogical competence on students' digital literacy. *Middle East Journal of Applied Science & Technology*, 8(2), 3041.

Soliha, N., Wolor, C. W., & Swaramarinda, D. R. (2024). The influence of digital competence and learning motivation on student performance in the office administration study program. In *International Student Conference on Business, Education, Economics, Accounting, and Management (ISC-BEAM)* (Vol. 3, No. 1, pp. 1628–1645).