Emerging Techniques for Enhancing Skills Acquisition Among Electrical Installation and Maintenance Work Students of Technical Colleges throughSchool-Industry Partnership in Kaduna State, Nigeria

by

Hassan Yunusa Jamilu, Ph.D & Anas Isma'il Salihu

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION, FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION, BAYERO UNIVERSITY KANO

Correspondence: *anasismail38@gmail.com*

Abstract

This study investigated the Emerging Techniques for Enhancing Skills Acquisition Among Electrical Installation and Maintenance Work (EIMW) Students of Technical Colleges Through School–Industry Partnership in Kaduna State, Nigeria. Two research questions with two corresponding null hypotheses guided the study. The study adopted a mixed-method research design specifically sequential exploratory. The targeted population of this study was 1,686. 10 respondents were purposively selected and utilised for qualitative data collection, while the sample size of 313 determined using Krejcie and Morgan's (1970) table was used for quantitative data collection. Interview prompts was utilised for qualitative data collection, while structured questionnaire title: Emerging Techniques for School-Industry Partnership Questionnaire (ETSIPQ) was used for quantitative data collection. The instruments were validated by three experts. The reliability of the instrument was established using Cronbach's Alpha statistics and yielded overall reliability coefficient of 0.80, which was consider acceptable by the researcher for this study. The qualitative data was carried out through thematic analysis while quantitative data collected for research questions were analysed using mean and standard deviation. The null hypotheses were tested using Z-test and ANOVA at 0.05 level of significance. Findings revealed that: 9 items ($\bar{\chi}$= 4.10) were found to be the technical college-based techniques, 9 items ($\bar{\chi}$=4.20) were found to be the communication techniques that could enhance school-industry partnership towards skills acquisition among EIMW students in Kaduna state, Nigeria. The study further revealed that there was no significant difference (significant value ≥0.05) among the mean responses of the respondents. Based on the findings, the study recommended among others that: Government should enact a specific policy framework for Public-Private Partnerships (PPPs) in TVET to fund and manage modern EIMW training centres equipped with industry-standard tools. This could strengthen school-industry partnership towards enhancing skills acquisition among EIMW students for self-reliant, in Kaduna state and beyond.

Keywords: Emerging Techniques; Skills Acquisition; Electrical Installation and Maintenance Work; School–Industry Partnership; technical College

Introduction

Technical and vocational education and training (TVET) serves as the foundation for a nation's wealth and development. It is designed to produce skilled and technical personnel essential for revitalizing, sustaining, and driving the national economy while significantly reducing unemployment as stated by the Federal Government of Nigeria (FGN, 2013).This type of education combines general education with the study of technology, related sciences, and the development of practical skills, attitudes, and knowledge relevant to various occupational sectors in economic and social spheres. The institutions saddled with responsibility of imparting the necessary employability skills at post primary level in Nigeria are technical colleges.

Technical Colleges in Nigeria are post primary Schools where Vocational courses are offered with the aim of equipping or preparing students for immediate employment or self-employment upon graduation. Technical Colleges in Nigeria are essential for equipping students with the practical skills and expertise required for careers in various technical and vocational fields. These institutions aim to bridge the gap between theoretical learning and hands-on application, ensuring students are well-prepared to meet the challenges of the ever-

changing industrial environment alongside academic instruction, Nigerian Technical Colleges emphasize practical training in areas such as automotive technology, building technology, electrical installation and maintenance work, and other technical disciplines like metal work, woodwork (Hassan *et al.* 2024). The primary goal of establishing Technical Colleges is to train craftsmen who can address the nation's need for lower-level manpower by filling craft-level positions in Nigeria's industries and business sectors (Federal Republic of Nigeria (FRN, 2013)).

The realization of the goal of creating technical colleges in all the states in Nigeria including Kaduna State is far below expectation, as the electrical installation and maintenance work graduates struggle for employment as a result of inadequate requisite skills, Inadequate proficiency in carrying out practical tasks and a noticeable gap between theoretical knowledge and its application in real-world scenarios, incompetency in electrical installation safety, troubleshooting, wiring regulation and equipment handling (Abdullahi & Bello 2020). This implies that further training or adjustments to the curriculum may be necessary to improve learning outcomes.

In a similar situation outside Nigeria, Countries like Germany have effectively tackled the skills gap among electrical industries and technical graduates through a dual vocational training model a structured blend of in-school and in-company learning. The system is backed by national laws and governed collaboratively by government agencies, employers, trade unions, and vocational schools (Federal Ministry of Education and Research Germany, 2025). Therefore, for technical college graduates specialized in electrical installation and maintenance work (EIMW) to acquire relevant employable skills in Nigeria, there is a critical need to strengthen school-industry partnerships, integrate modern technology into training programs, and align curriculum with current industry standards and practices through collaborative efforts between technical colleges, industries, and government bodies (Aloysius,Ismail, Suandi & Arshad 2018).

EIMW involves the installation, Operation, maintenance and repair of electrical systems in commercial and industrial settings and encompasses a wide range of tasks, including setting up electrical wiring, installing electrical equipment, troubleshooting faulty systems, and ensuring that all installation comply with safety requirements and standards. EIMW is vital for ensuring the safe and efficient functioning of electrical systems supporting both everyday needs in homes and larger operations in industrial sectors. According to Moses, Wawo, Ibanga and Musa (2021), EIMW trade is designed to train craftsmen to become self-reliant and enterprising. The persistent skills gap between electrical industry and technical college has led to a reliance on importing skilled workers, many countries have addressed this challenge by integrating a strong industry-aligned technological component into the curriculum of their technical colleges, ensuring that graduate acquire the practical skills required by the industry (Hassan & Reymond 2019).

Adeyinka (2018) revealed that, most EIMW students in technical colleges in Nigeria, often lack access to modern tools, up-to-date electrical equipment, correct installation procedures, testing methods, among others that comply with national and international installation standards, such as International Electrotechnical Commission, Institute of Electrical and Electronics Engineers, National Electrical Code (IEC, IEEE, NEC Codes). This may be as a result of inadequate level of collaboration with industries and the use of outdated curricula that doesn't address the dynamic changes and technological advancements within the industry. The electrical industries possess cutting-edge technology, experienced professionals, and practical knowledge but struggle to find graduates who meet their operational standards and can seamlessly transition into the workforce (Hassan & Reymond, 2019).

Through a partnership, schools can contribute to structured foundational education, a pool of eager learners, and the framework for lifelong learning, strengthening capacity for entrepreneurship and development of business skills, while industries can provide hands-on training, exposure to real-world challenges, mentorship, and insights into emerging trends (Armstrong, 2020). This collaboration may not only bridge the skill gap but also ensures that EIMW students gain relevant competencies, enhance their employability and productivity while enabling industries to cultivate a skilled workforce tailored to their needs. Technical colleges also focus on training EIMW students with the aim of equipping them for employment after graduation. However, ineffective collaboration between schools and industries undermines this objective, leaving many EIMW graduates inadequately prepared for the workforce without practical exposure and industry-relevant skills, graduate risk becoming unemployed, as their training fall short of aligning with the demands of the labour market (Hassan *et al*. 2024). Unemployment is a critical issue that affects economic and societies worldwide, including Nigeria. Fikpo (2022) discovered that, the unemployment rate among graduates of technical colleges in Nigeria stood at 33.3% by the end of 2022.

This alarming figure highlights the lack of collaboration between schools and industries, which prevents students from acquiring the practical, industry-relevant skills needed for employment. Without strong school-industry partnership, technical education remains disconnected from real-world demands, leaving many graduates unprepared and unemployed. This has created a gap between the skills needed for employment and the skills possessed by the job seekers. Therefore, there is need to bridge this gap through an effective skills acquisition among technical college graduates.

Skills refer to a practical dexterity to perform an activity while acquisition is the process of obtaining something such as knowledge or abilities. Amadi,Igweagbara and Chukwuladi (2022) define Skills acquisition as the process of training individuals in a specific task and workshop or function until they achieve expertise. Skills acquisition is one of the reliable paths for EIMW graduates to enter the labour market, whether in the public or private sectors. Therefore, skill acquisition if effectively carried out is capable of addressing a lot of challenges affecting electrical graduate in technical colleges such as unemployment and poverty (Idris, Audu, Mohammed & Francis, 2020). Mbah, Obi,Theophilus and Promise (2018) revealed that, one of the major obstacles in closing skill gap is that both the skill needs of the society and the skills possessed by workers are continually in flux due to dynamic nature of technology which is changing everyday creating skills gap and the need to collaborate with industries to keep up with these changes. Therefore, the rapid advancement of technology demands that students need to understand what happens in the industries in order to gain the skills and experiences that match the contemporary skill needs in electrical industry and related occupation after graduation.

The need for a school-industry partnership is essential to bridge the gap between academic instruction and electrical / electronics industry. Lee and Kang (2019) revealed that, in South Africa public-private partnership with Sosal learnership a major energy and chemical company, runs structured learnership program in collaboration with South Africa technical colleges. These programs train students in electrical and mechanical maintenance through real-world projects by integrating industry standard into technical education, students develop market-ready skills while gaining professional exposure.

School-industry partnership is a mutually agreed-upon training collaboration where the educational experience (both theoretical knowledge & practical skills) is enhanced through on-the-job training in an

industrial setting. School industry partnership have been acknowledged as an innovative approach to delivering vocational education, particularly in sectors experiencing skills shortage (Loeis, Hubeis, Suroso & Dirdjosuparto, 2023).

These collaborations may involve various activities, such as industry professionals visiting the schools, sharing educational resources, and offering students opportunities for hands-on work experience and certifications with industry partners (Attard, Berger & Mackenzie, 2021). By forming this partnership technical college may participate in curriculum design that aligns with industry demands, thereby strengthening the connection between technical college and job market (Zhao, 2024). Such partnership between technical colleges and industry can also result in meaningful student learning experiences and research outcomes that balance academic rigor with practical relevance (Speier-Pero & Schoenherr, 2020).

Although Ogbuanya and Musa (2020) highlighted that, there have been past attempts to collaborate with industry through the Students Supervised Industrial Training/Work Experience Scheme (SIWES), The scheme was criticised as it was only done during long vacation of one month after their promotion examinations without supervision. This SIWES program is not even compulsory with credits units or mark attached to it for students to value it. To address this, there is need to come up with more emerging ways and techniques that effectively allow EIMW students to apply their classroom learning to real-world situations.

Technical College based collaboration techniques are those initiatives offered by the school to ensure the efficient development of skilled personal. The institutions are expected to make adequate preparation for psychomotor, affective and cognitive skills that will match the school industry. Nungse, Ugwoke, Ogbuanya and Shettima (2020) posited that, promoting joint development project between school and industry and encouraging entrepreneurship development among electrical students are important activities to be done by technical colleges towards enhancing mutual partnership with industries. Therefore, Technical colleges-based initiative alone may not provide all the experience that student may require as such initiatives should be complemented with the communication-based techniques.

Communication is a critical factor in school-industry collaboration, as it facilitates the transmission of information and the alignment of objectives between both parties. However, issues such as misaligned expectations, lack of clear communication channels, cultural differences, inadequate feedback mechanisms often hinder effective collaboration. Long, Carlo, Fraser, and Gosavi (2019) emphasize that strong communication skills are essential for fostering positive interpersonal relationships in technical colleges, underscoring the importance of clear and mutual understanding in these partnerships. Therefore, to improve collaboration schools and industries must establish structured communication channels, align their objectives, provide training in interpersonal skills, encourage feedback, and use shared language in addressing these communication barriers ensures stronger partnerships and enhances students' skills acquisition through school-industry collaboration.

Despite the benefits of technical colleges industry partnership for students to acquire skills, the potentials are not fully utilized, as many EIMW still graduate without the competencies needed for gainful employment after graduation. This situation calls for researching emerging techniques that can strengthened partnership between schools and industries to enhance skills among EIMW students. Therefore, this study seeks to investigate the emerging techniques for enhancing skills acquisition among electrical installation and maintenance work students through school-industry partnership in Kaduna state, Nigeria.

Statement of the problem

The goal of EIMW trade in technical colleges is to provide students with opportunity for acquisition of skills in domestic installation, industrial installation, cable jointing, battery charging and winding of electrical machines to enable them secure employment, achieve self-reliance, and even create job opportunities for others after graduation. However, many of these students currently do not have adequate skills for gainful employment.

Many technical college graduates including those specializing in the EIMW trade, remain unemployable due to a mismatch between the skills they acquired in the classroom and the demands of the labour market. This is because if this situation is neglected, these graduates may end up joining criminal activities such as phone snatching, kidnapping and armed robbery in order to satisfy their economic needs thereby jeopardizing the peace and security of the state and Nigeria at large. Strengthen school-industry partnership may bring a lasting solution this menace if its effectively identified. Therefore, this study is designed to investigate emerging techniques that could foster effective school industry partnership.

Research Questions

The following research questions were formulated to guide the research work:

1. What are the technical college-based partnership techniques that could improve skill acquisition in EIMW in Kaduna state?
2. What are the Communication techniques between technical colleges and industries to enhance skill acquisition in EIMW in Kaduna State?

Hypotheses

The following null hypotheses were postulated and tested at 0.05 level of significance.

1. There is no significant difference between the mean responses of technical college teachers and administrators in the technical college-based partnership techniques that could improve skills acquisition in EIMW in Kaduna state.
2. There is no significant difference among the mean responses of industrial supervisors, school administrators and technical college teachers in communication techniques between technical colleges and industries to enhance skill acquisition in EIMW in Kaduna state.

Methodology

The study adopted a mixed-method research design specifically sequential exploratory. The targeted population of thewas 1,686, comprising of 17 EIMW teachers, 18 school administrators, 08 policy makers and 1643 industry professionals. 10 respondents were purposively selected and utilised for qualitative data collection, while the sample size of 313 determined using Krejcie and Morgan's (1970) table was used for quantitative data collection. Two research questions and two null hypotheses guided the study. Interviews prompts was utilised for qualitative data collection, while structured questionnaire title: Emerging Techniques for School-Industry Partnership Questionnaire (ETSIPQ) was used for quantitative data collection. The instruments were validated by three experts. The reliability of the instrument was established using Cronbach's Alpha statistics and yielded overall reliability coefficient of 0.80, which was considered accepted for the study. The qualitative data was carried out through thematic analysis while quantitative data collected for research questions were analysed using mean and standard deviation. The null hypotheses were tested using Z-test and ANOVA at 0.05 level of significance.

Research Question one

What are the technical college-based partnership techniques that could improve skill acquisition in EIMW in Kaduna state?

Table1

Mean and Standard Deviation on the Quantitative Responses of the Respondents on Technical College-Based Partnership Techniques that could improve Skill Acquisition in EIMW

S/N	Items Statement N = 33	$\bar{X}_A$	SD_A	Remark
1	School management should develop clear policies for industry participation in EIMW training.	4.50	.56	Agreed
2	Principals should ensure administrative support for industry collaboration.	4.53	.62	Agreed
3	School leadership should provide directives that prioritize industry linked training.	4.37	.49	Agree
4	Institutions should formally document policies on industry partnerships.	4.37	.60	Agree
5	Schools should allocate budgets for industry–aligned training.	4.25	.56	Agree
6	Special funds should be set aside for equipment procurement.	4.37	.75	Agree
7	Institutions should budget for equipment maintenance to sustain training.	4.25	.56	Agree
8	Schools should establish co–funding schemes with industries.	1.81	.93	Disagree
9	Curriculum should be regularly reviewed to match industry needs.	4.18	.64	Agree
10	Practical sessions should be made mandatory in EIMW training.	4.28	.63	Agree
	Grand Mean/SD	**4.10**	**.62**	**Agree**

Keys: N= Total Number the respondents, $\bar{X}_A$=Weighted Mean Responses of the Respondents, SD_A= Standard Deviation.

Table 1 revealed the mean responses of the respondents on the 10 items posed to determine the technical college-based partnership techniques that could improve skill acquisition in EIMW in Kaduna State, Nigeria with Grand mean of 4.10. The findings revealed that, the respondents jointly agreed with all the 9 items as the technical college-based partnership techniques that could improve skill acquisition in EIMW Kaduna state, Nigeria. However, the respondents disagree with item 8 to be technical college-based partnership techniques that could improve skill acquisition in EIMW. The standard deviation of the items ranges from 0.49 to 0.93. This indicated that the opinions of the respondents were not divergent.

Hypothesis One

There is no significant difference between the mean responses of EIMW teachers and technical colleges administrators on technical college-based partnership techniques that could improve skill acquisition in EIMW Kaduna state,Nigeria. The result of hypothesis one is presented in

Table 2

Z-test Analysis for the test of Significance Difference between the Mean Responses of EIMW Teachers and Technical College Administrators on the Technical College-Based Techniques.

S/N	Respondents	N	$\bar{X}$	SD	df	t-cal	2(tail) sig	Decision
1	Teachers	16	4.29	0.18	31	-1.77	.088	Accept
2	Administrators	17	4.39	0.15				

As shown in table 4, overall mean responses of teachers and administrators were 4.29 and 4.39 respectively. From the table, value shows there is no significant difference between the mean responses of teachers and administrators. This is because the 2-tail significance level (0.088) calculated is greater than the significance

level (0.05) set for the hypothesis. Therefore, the null hypothesis is hereby accepted. That is to say there is no significant difference in the mean response of EIMW teachers and technical colleges administrators on technical college-based partnership techniques that could improve skill acquisition in EIMW Kaduna state, Nigeria.

Research Question Two

What are the Communication techniques between technical colleges and industries to enhance skill acquisition in EIMW in Kaduna State?

TABLE 3

Mean and Standard Deviation of the Respondents on Communication Techniques between Technical Colleges and Industry to enhance Skills in EIMW in Kaduna state.

S/N	Items Statement N = 300	$\bar{x}$	SD	Remark
1	Technical colleges and industries should establish communication channels for collaboration.	4.55	.55	Agree
2	Joint planning meetings should be held regularly between technical colleges and industries.	4.48	.66	Agree
3	A partnership office should exist to coordinate activities between schools and industries.	4.54	.65	Agree
4	Industries and technical colleges should share feedback to improve training programs.	2.01	.84	Disagree
5	Technical colleges and industries should exchange reports on students' performance.	4.47	.58	Agree
6	Industries should be informed about technical college training schedules.	4.75	.47	Agree
7	Communication between technical colleges and industries should be enhanced through ICT.	4.20	.62	Agree
8	Social media should be use as a tool for communication between technical colleges and industries.	4.27	.69	Agree
9	Communication strategies should be updated to reflect emerging technologies and trends.	4.27	.58	Agree
10	Technical colleges should invite industries to participate in open days and exhibitions.	4.40	.59	Agree
	Grand Mean/SD	**4.20**	**.62**	**Agree**

Keys: N= Total Number the respondents, $\bar{x}$ =Weighted Mean Responses of the Respondents, SD= Standard Deviation.

Table 3 shows the mean responses of the respondents on the 10 items posed to determine on the communication techniques between technical colleges and industry to enhance skills in EIMW in Kaduna state with Grand mean of 4.20. The result implies that, the respondents jointly agreed with the items to be the communication techniques between technical colleges and industry to enhance skills in EIMW in Kaduna state. Consequently, the respondents disagreed with item 4 to be the communication techniques between technical colleges and industry to enhance skills.The standard deviation of the items ranges from 0.47 to 0.84 This indicated that the opinions of the respondents were not too far from one another in their responses. The closeness added values to the reliability of the items.

Hypothesis Two: There is no Significance Difference among the mean responses of EIMW Teachers, Technical college administrators and industry professionals in communication techniques to enhance skill acquisition in EIMW in Kaduna state. The result of hypothesis two is presented in Table 4.

Table 4
ANOVA test of Significance Difference among the mean responses of EIMW Teachers, Technical College Administrators and Industry Professionals in Communication Techniques to enhance Skill Acquisition in EIMW in Kaduna State

	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	4.215	2	2.108	1.245	0.289
Within Groups	422.780	297	1.678		
Total	426.995	299			

Table 4 shows the ANOVA result for the mean responses among teachers, administrators and industry professionals in communication techniques to enhance skill acquisition in EIMW in Kaduna state. The analysis yielded an F- ratio 1.245 with a significance value of 0.289, which is greater than 0.05 alpha level. This indicates that the differences in the mean scores among the groups were not statistically significant. Consequently, the null of no significant difference was retained. This suggests that three groups had relatively similar opinions in communication techniques to enhance skill acquisition in EIMW in Kaduna state.

Summary of the Findings

The following are the summary of the findings.

1. technical college-based partnership techniques that could improve skill acquisition in EIMW includes Co-develop EIMW curriculum with local industry representatives, Place teachers on short-term secondments in industry to update skills, hold regular industry-run workshops on new tools/techniques at college, establish industry-sponsored apprenticeship bays in colleges, among others.
2. There is no significant difference between the mean responses of technical college teachers and administrators in technical college-based partnership techniques that could improve skill acquisition in EIMW in Kaduna state.
3. Communication techniques between technical colleges and industry to enhance skills in EIMW includestechnical colleges and industries should establish communication channels for collaboration, Industries and technical colleges share feedback to improve training programmes, Communication between technical colleges and industries is enhanced through ICT, Collaboration agreements are signed to formalize school-industry partnerships, among others.
4. There is no significant difference among the mean responses of technical college teachers, administrators and industry professionals on the Communication techniques between technical colleges and industry to enhance skills in EIMW in Kaduna state.

Discussion of the Results

The aim of this study was to identify the emerging techniques for enhancing skills acquisition among EIMW students through school-industry partnership in Kaduna state. The study identified the technical colleges-based partnership techniques and communication techniques that could enhance partnership between technical colleges and industries in Kaduna state.

The findings of technicalcolleges-based techniques include; school management should develop clear policies, principals should ensure administrative support, and leadership should prioritize industry-linked training in EIMW. This underscores the crucial role of institutional leadership in driving school–industry partnerships. Policies and directives provide a framework for accountability, sustainability, and alignment with industry needs. These results align with Okolie et al. (2021), who argued that strong institutional leadership is a determining factor in sustaining TVET-industry collaboration. Similarly, Ogbuanya and Okeke (2020) emphasized that principal support and

administrative directives promote innovation in technical education. Akinyemi and Olatunji (2020) further observed that clear institutional guidelines ensure consistency and reduce fragmentation in partnerships.

Respondents agreed that schools should allocate dedicated budgets for industry-aligned training, equipment procurement, and maintenance, while also exploring co-funding arrangements with industries. Adequate financial commitment ensures that students are trained with up-to-date tools and infrastructures. These findings correspond with Ndomi and Idris (2021), who found that sustainable funding is vital for TVET program effectiveness. Similarly, Adeyemi and Lawal (2022) reported that lack of funding remains a major challenge to quality training in technical colleges, stressing the need for co-financing schemes with industries. Chukwuedo (2020) also revealed that industry co-funding enhances resource availability and reduces dependency on government subventions.

Similarly, the findings revealed strong agreement that curriculum should be regularly reviewed, mandatory practical sessions enforced, and industry standards integrated into school syllabi. This indicates that aligning school training content with industry practices is essential for equipping students with relevant skills. These findings support Umar and Ibrahim (2021), who argued that curriculum review with industry stakeholders ensures relevance to labor market needs. Okoye and Okwelle (2020) similarly stressed that practical sessions in technical training increase competency and skill mastery. In addition, Oseni (2020) found that integration of industry standards into curricula bridges the gap between theoretical knowledge and workplace application.

In the same vein, findings showed strong agreement that schools should conduct regular reviews, assess training outcomes, organize awareness campaigns, and publicize results of partnerships. Monitoring and evaluation guarantee accountability and provide evidence of effectiveness, while publicity builds stakeholder support and motivates continuous improvement. These findings are supported by Idris and Sule (2022), who stated that evaluation practices enhance partnership effectiveness. Yusuf and Bako (2021) also observed that documenting and publicizing successes attracts further industry support. Likewise, Olawale and Jimoh (2022) found that awareness campaigns increase visibility and promote wider stakeholder involvement in TVET partnerships.

The findings on communication techniques between technical colleges and industry to enhance skills in EIMWshowed strong agreement that technical colleges and industries should establish clear communication channels, conduct joint planning meetings regularly, and maintain a partnership office to coordinate activities. This highlights the need for structured mechanisms that sustain collaboration between both institutions. Without formal channels and designated coordinating offices, partnerships often lack continuity and accountability. The results align with Okolie et al. (2021), who observed that regular planning and structured communication improve industry–school partnerships in TVET. Similarly, Akinyemi and Olatunji (2020) emphasized that formal partnership offices facilitate sustainable collaboration by providing a focal point for interaction. Musa and Idris (2022) also confirmed that structured communication reduces duplication of efforts and strengthens institutional linkages.

Respondents agreed that industries and technical colleges should share feedback, exchange reports on student performance, and update each other about training schedules. Effective information sharing ensures that training programs remain aligned with industry standards while enabling industries to track students' progress. This finding is consistent with Yusuf and Bako (2021), who found that performance feedback from industries helps schools adjust teaching strategies for better

skill acquisition. Likewise, Nwosu and Okoro (2022) emphasized that regular reporting enhances transparency and accountability in TVET-industry partnerships. Adeyemi and Lawal (2022) further observed that timely sharing of training schedules helps industries to plan resources and provide meaningful support to students.

The study revealed strong agreement that ICT, social media platforms, and emerging communication technologies improve collaboration between technical colleges and industries. Technology-mediated communication ensures real-time interaction, reduces delays, and provides flexible avenues for information exchange. These results align with Ezeani (2020), who stated that ICT enhances the efficiency of school–industry partnerships by enabling digital collaboration. Okoye and Okwelle (2020) similarly found that social media platforms provide quick and cost-effective means of maintaining contact between schools and industries. Additionally, Bello and Yakubu (2022) noted that integrating emerging technologies in communication fosters innovation and responsiveness to industry changes.

The findings showed agreement that technical colleges should have access to industry publications, maintain liaison officers, and benefit from industry contributions to newsletters. Access to updated knowledge ensures that schools remain aligned with industrial trends, while liaison officers provide professional communication channels. These results agree with Ndomi and Idris (2021), who observed that access to industry publications bridges the knowledge gap between schools and workplaces. Okolie *et al.* (2020) also reported that liaison officers facilitate effective communication and information flow in partnerships. Adeyemi and Lawal (2022) confirmed that newsletters co-developed by industries and schools promote transparency and mutual learning.

Conclusion

This study investigated emerging techniques for enhancing skills acquisition among Electrical Installation and Maintenance Work (EIMW) students through school–industry partnership in Kaduna State, Nigeria. Based on this study, the Kaduna State government has a pivotal role to play through policy formulation, funding, and incentives to create an enabling environment for effective school-industry partnerships for EIMW skill acquisition.Technical colleges must initiate proactive strategies, such as curriculum co-development with industry and teacher industry placements, to bridge the gap between theoretical training and practical industry needs.Industries are indispensable partners who must move beyond passive roles to active engagement through the provision of hands-on training, modern resources, and direct input into the educational process.Robust and structured communication mechanisms are the backbone of any successful school-industry partnership, ensuring alignment of goals, continuous feedback, and mutual accountability.A multi-stakeholder approach, involving synchronized efforts from the government, technical colleges, and industries, is fundamental to significantly enhancing the acquisition of practical, employable skills among EIMW students in Kaduna State.

Recommendations

Based on the conclusions, the following recommendations are made:

1. Government should enact a specific policy framework for Public-Private Partnerships (PPPs) in TVET to fund and manage modern EIMW training centres equipped with industry-standard tools.
2. Government shouldprovide tax incentives, soft loans, and other financial benefits to industries that actively participate in apprenticeship programs, offer internship placements, and donate equipment to technical colleges.
3. Government shouldestablish a dedicated and funded liaison office within the

Kaduna State Ministry of Education to coordinate, monitor, and evaluate all school-industry partnership activities for EIMW and other trades.

4. Government shouldreform the Students Industrial Work Experience Scheme (SIWES) to make it compulsory, longerin duration, properly supervised, and integrated into the curriculum with credit units.

REFERENCES

Abdullahi, N. J., & Bello, S. A. (2020). The relevance of technical colleges in addressing youth unemployment through craftsmen training in Northern Nigeria. *African Journal of Vocational Education,* 15(1), 78–92.

Adebayo, O., & Musa, H. (2021). Global partnerships and their role in enhancing TVET delivery in Nigeria. *Journal of Technical Education Research,* 14(2), 55–66.

Adeyinka, A. (2018). Challenges of technical and vocational education in Nigeria. *Journal of Technical Education and Training,* 10(1), 1326–1337.

Aliyu, M., & Bello, I. (2022). Mentorship as a driver of competence acquisition in technical education. *Journal of Educational Innovation and Research,* 10(4), 121–130.

Amadi, I. A., Igweagbara, S. N., &Chukwuladi, H. N. (2022). Skill acquisition on automatic water level control switch in electrical installation work students in technical education Universities in Rivers State. In *Book of Proceedings for 6th Annual Conference of the Faculty of Vocational & Technical Education*, Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt, Rivers State 4(1), 1–10.

Aloysius, O. I., Ismail, I. A., Suandi, T., & Arshad, M. M. (2018). Enhancing university and industry's employability-collaboration among Nigeria graduates in the labour market. *International Journal of Academic Research in Business and Social Sciences,* 8(7), 32–48.

Armstrong, D. (2020). Power and partnership in education: Children and educational needs. *Routledge*, University of Sheffield.

Chukwuedo, S. (2020). Industrial scholarship support and student retention in technical colleges. *Nigerian Journal of Technical Education,* 9(1), 22–30.

Ezeani, C. (2020). Strengthening college–industry partnerships for sustainable community development. *Journal of Vocational and Technical Studies,* 12(2), 101–112.

Federal Republic of Nigeria. (2013). *National Policy on Education.* Abuja: Nigerian Educational Research and Development Council (NERDC Publisher).

Hassan, Y. J., & Raymond, E. (2019). Effect of Intelligent Tutor in enhancing Think-Pair Share in learning of LED TV troubleshooting. *Assumption University e-Journal of Interdisciplinary Research,* 4(2), 68–81.

Hassan, Y. J., Shuaibu, G., Idris, A., Ahmad, S. S., Harbau, M. H., Usman, N. S., Ahmed, I. S., & Mohammed, A. M. (2024). Development of virtual workshop package for electronic practical in technical colleges, Nigeria. *AJSTME,* 10(1), 10–20.

Idris, A. M., Audu, R., Mohammed, A., & Francis, A. (2020). Hindrances to skills acquisition in technical college motor vehicle mechanic work programme in Niger State, Nigeria. *International Journal of Vocational Education and Training,* 25(2), 86–95.

Lee, J. S., & Kang, Y. J. (2019). Development of an educational program to improve practical skills in electrical circuit design for engineering students. *IEEE*

Transactions on Education, 62(4), 264–271.

Loeis, M., Hubeis, M., Suroso, A. I., &Dirdjosuparto, S. (2023). A strategy for reducing skills gap for the game development sector of the Indonesian creative industries. *Journal of Decision Science Letters,* 12(1), 97–106.

Mbah, C. O., Obi, C. U., Theophilus, E. E., & Promise, O. N. (2018). Improving school-industry partnership in skill development of TVET for matching skill demand in Anambra State. *Centre for Teaching and Vocational Education, Training and Research (CETVETAR), University of Nigeria Nsukka* 4(7), 14–27.

Moses, D., Wawo, M. I., Ibanga, I. J., & Musa, I. M. (2021). Impact of information and communications technology integration on electrical installation and maintenance work trade teachers in technical colleges of Kano State, Nigeria. *Middle Eastern Journal of Research in Education and Social Sciences,* 2(3), 111–121.

Musa, A., & Idris, Y. (2022). Effective communication strategies for sustainable school–industry collaboration. *Journal of Technical and Vocational Research,* 8(1), 23–34.

Ndomi, B., & Idris, M. (2021). The role of industrial resource provision in enhancing TVET in Nigeria. *Journal of Educational Technology and Skills,* 6(2), 64–72.

Okolie, U. C., Elom, E. N., &Inyiagu, E. E. (2020). Apprenticeships and skill acquisition in technical education. *Vocational Training Quarterly, 22*(1), 30–45.

Okolie, U. C., Igwe, P. A., & Nwosu, H. E. (2021). Enhancing graduate employability in Nigeria through TVET: Challenges and strategies. *Journal of Vocational Education and Training,* 73(3), 369–390.

Ogbuanya, T., & Okeke, V. (2020). Leadership commitment and sustainable innovation in TVET institutions. *Journal of Technical Education and Training,* 12(1), 77–88.

Okoye, K., & Okwelle, P. (2020). Industry-based learning resources for improved technical education. *International Journal of TVET Studies,* 5(2), 69–80.

Oseni, O. (2020). Collaborative exhibitions and open days as drivers of industry–school engagement in technical education. *Nigerian Journal of Vocational and Technical Education,* 10(2), 44–53.

Yusuf, H., & Bako, I. (2021). Monitoring and documentation practices for improving technical education partnerships. *Journal of Educational Development and Practice,* 9(2), 88–97.