ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

The Impact of Adequate Workshop Tools and Equipment on The Skill Development of Automobile and Metalwork Technology Education Students in South West Universities of Education in Nigeria

Ogunbote Shefiu; Dawodu Rasheed Adegbenro; Adegunle, Felix Omotayo; Adenuga, Babatunde. Adeyemi

Department of Technology Education, College of Information and Technology Education, Lagos State University of Education, OTO/Ijanikin, Lagos State, Nigeria.

DOI: https://dx.doi.org/10.51244/IJRSI.2025.12110006

Received: 10 November 2025; Accepted: 20 November 2025; Published: 27 November 2025

ABSTRACT

This study investigates the effect of adequate workshop resources on skill development among Automobile and Metalwork Technology Education students at South West University of Education, Nigeria. Employing a descriptive survey design, the research utilized a 40-item questionnaire administered to 44 participants (28 students, 16 lecturers) from Lagos, Ogun, and Ekiti States. The questionnaire, validated by experts and exhibiting a reliability coefficient of 0.76, assessed the impact of tool and equipment availability on skill acquisition. Data analysis, using mean, standard deviation, and t-tests, revealed a significant positive correlation between access to modern tools and equipment and enhanced practical skills. Students with access to better resources demonstrated improved proficiency, directly impacting their employability prospects. The study advocates for increased investment in modern workshop facilities, regular maintenance, continuous lecturer training, and robust policy oversight to optimize technical education quality and relevance within the automotive and metalwork sectors. This investment is crucial for producing skilled graduates who meet industry demands.

Index Terms- Technical and Vocational Education, Automobile and Metalwork Technology Education, Skill Development.

INTRODUCTION

Technical and vocational education (TVE) is globally recognized as a key driver of economic growth and innovation (UNESCO, 2018). In Nigeria, where graduate unemployment is high, effective TVE is crucial for developing a workforce that meets labor market demands. However, the success of TVE is heavily dependent on access to adequate tools, equipment, and learning facilities (Agu, 2020). The availability of modern tools and well-equipped workshops is paramount for practical skill development, especially in fields like Automobile and Metalwork Education, which rely on hands-on training. Unfortunately, Nigerian technical education faces significant challenges, including poor infrastructure, inadequate funding, and insufficient equipment (Ogunode, 2020), hindering practical learning and leaving graduates ill-prepared for industry.

Automobile and Metalwork Technology, prevalent in Nigerian technical colleges, require constant alignment with industry practices due to their practical nature and the rapid evolution of technologies. The increasing complexity of these fields necessitates that training institutions upgrade their facilities and instruction to ensure relevance (National Policy on Education, 2014). While the policy emphasizes lifelong employable skills, the specific impact of workshop resources on skill development remains under-researched. Automobile technology, encompassing vehicle design, construction, maintenance, and repair, relies on scientific principles and practical application of engineering and mechanical knowledge (Osho, 2017). Student proficiency depends on access to standard tools, updated machinery, and real-time fault diagnosis experience (Ogundola, Popoola & Oke, 2010). Similarly, Metalwork Technology is vital in manufacturing and construction, equipping students with metalworking skills (Golden, 2009). Effective training in these skills is essential for competitiveness in the

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

global market. Outdated tools and methods risk hindering progress.

Skill development in vocational education involves acquiring and applying practical and theoretical knowledge (Bodnar, 2020). Hands-on experience significantly enhances knowledge retention and problem-solving (Fang, 2021; Olabiyi, Aiyelabowo & Keshinro, 2013). Effective skill development requires integrated learning, supported by experienced instructors and conducive environments (Magbagbeola, 2020). In Nigeria, where employability is a major concern, skill development must be a continuous process aligned with market needs and technological advancements (Audu, Yusri & Muhammad, 2013). This study investigates the impact of adequate workshop tools and equipment on skill development in Automobile and Metalwork Technology Education at a Southwestern Nigerian university.

Statement of the Problem

Rapid technological advancements necessitate industry-relevant skills in technical and vocational education. In Southwestern Nigerian universities of education, automobile and metalwork technology programs rely heavily on well-equipped workshops. However, many institutions struggle with outdated or insufficient tools and equipment, like stocks, electrical spraying machine with accessories, portable mobile scanner, grinding stick, engine diagnostic, wheel balancing, CNC machines etc despite policy commitments in the National Policy on Education (FRN, 2013), leading to overcrowded workshops and limited hands-on learning (NICHE, 2010).This results reduced technical proficiency, diminished student confidence, and lower employability (Aina & Adebayo, 2021). The gap between theory and practice threatens the quality of technical education. This study investigates the impact of adequate workshop tools and equipment on skill development in these programs.

Purpose of the Study

The main purpose of this study is to examine the impact of adequate workshop tools and equipment on the skill development of students in automobile and metalwork technology education in South West University of Education, Nigeria. Specifically, the study aims to:

1. Assess the availability and adequacy of workshop tools and equipment used for teaching automobile and metalwork technology.

2. Investigate how the adequacy of these tools and equipment affects the practical skill acquisition and development of students.

Research Questions

1. To what extent are workshop tools and equipment adequate for teaching automobile and metalwork technology in South West University of Education in Nigeria?

2. How does the adequacy of workshop tools and equipment impact the skill development of students in automobile and metalwork technology in South West University of Education in Nigeria?

Hypotheses

H01: There is no significant relationship between the adequacy of workshop tools and equipment and the teaching of automobile and metalwork technology in South West University of Education in Nigeria.

H02: There is no significant impact of adequate workshop tools and equipment on students' skill development in automobile and metalwork technology in South West University of Education in Nigeria

LITERATURE REVIEW

Effective skill development in automobile and metalwork technology education requires adequate workshop tools, and equipment to complement theoretical instruction (Aina & Oladunjoye, 2023; Udo & Udo, 2022). Access to adequate equipment enhances student competencies and practical abilities (Adeyemi, 2019; Kanter,

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

2019), while a lack of functional facilities hinders skill acquisition (Okoro, 2019). Studies in Ondo (Oluyinka, 2021) and Ebonyi (Elom, 2017) States show that poorly equipped workshops negatively impact student outcomes. Effective skill development integrates theory and hands-on practice (Bodnar, 2020; Fang, 2021), influencing student confidence and employability (Okolie, Igwe, & Elom, 2021). Well-equipped workshops enhance psychomotor skills and allow for more relevant training (Olaitan, Alaribe, & Anyakoha, 2022). Inadequate resources remain a major challenge for technical education in developing nations (UNESCO, 2023). Alignment of theory and practice is crucial for well-rounded skill development (Ogunbiyi, Kareem, & Adeyemi, 2023), and stakeholders agree on the importance of physical resources (Okolie, Igwe, Uwajiuba, & Eze, 2022). Insufficient tools compromise educational quality and graduate readiness (Eze & Anene, 2024; Aina & Olaitan, 2020). However, perceptions of adequacy may differ between students and lecturers (Okolie, Igwe, & Uwajiuba, 2024). Addressing this requires sustained investment in workshop infrastructure (Aina & James, 2023; UNESCO-UNEVOC, 2023). Without adequate tools, learning remains overly theoretical, limiting employability and technical competence.

METHODOLOGY

Research Design

This study used a descriptive survey design to investigate the impact of adequate workshop tools and equipment on skill development in Automobile and Metalwork Technology Education at Southwestern Nigerian University. This design allowed for gathering real insights from both students and lecturers about how adequate workshop tools and equipment has impact on skill development in Automobile and Metalwork Technology Education.

Area of the Study

The study was conducted in three southwestern Nigerian states namely: Lagos, Ogun, and Ekiti. Lagos State serves as Nigeria's economic and commercial hub, playing a pivotal role in the nation's economy and that of the West African sub-region. It remains the country's financial and industrial powerhouse, hosting numerous commercial enterprises and serving as a key centre for trade and innovation within the ECOWAS region.

Ogun State, located adjacent to Lagos, is a major industrial corridor in southwestern Nigeria. It shares boundaries with Lagos to the south and the Republic of Benin to the west. The state hosts several manufacturing industries, particularly along the Lagos–Ibadan Expressway, contributing significantly to Nigeria's GDP and industrial development.

Ekiti State, also in southwestern Nigeria, is noted for its strong educational orientation and high literacy rate. Despite being one of the smaller states, it boasts one of the highest concentrations of academics in the country and ranks among the top in human development. Collectively, these states provide a representative mix of industrial, educational, and economic contexts relevant to the study.

Sample and Sampling Techniques

The researcher used stratified random sampling to select the University of Education in Lagos, Ogun and Ekiti States because of their location. A total of Forty-four participants from Lagos, Ogun, and Ekiti States which consists of 28 students and 16 lecturers were selected for the study and they were all sampled.

Instruments for Data Collection

Data was collected using a 40-item structured questionnaire (TIAWTESDSAMT), employing a four-point scale from 48 (28 students, 16 lecturers) participants from South West University of Education, Nigeria. .

Validation of the Instrument

The instruments was validated by 6 lecturers, 2 each from University of Lagos, Ekiti State University and Yaba College of Technology, Yaba, Lagos that have vast knowledge and expert in technical and vocational education programmes.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

Reliability of the Instrument

In establishing the reliability of the impact of adequate workshop tools and equipment on skill development in Automobile and Metalwork Technology Education using Cronbach Alpha reliability techniques a coefficient reliability estimate of r= 0.76 was established.

Method of Data Analysis

The data were generated on Forty-four (44) participants from Lagos, Ogun, and Ekiti States which consists of 28 students and 16 lecturers fromSouth West University of Education, Nigeria. Data collected were analyzed using mean and standard deviation with 2.50 set as decision level to answer the research questions, while and t-test was used to test the hypotheses at 0.05 level of significance.

Significance of the Study

This study provides empirical evidence demonstrating the crucial role of adequate workshop tools and equipment in developing student skills in automobile and metalwork technology. The findings will inform policy decisions regarding funding, procurement, and maintenance of workshop resources, ultimately enhancing the employability and entrepreneurial potential of graduates.

RESULTS

ResearchQuestion1: To what extent are workshop tools and equipment adequate for teaching automobile and metalwork technology in South West University of Education?

Table 1

Mean and Standard deviation of respondents on the extent to which workshop tools and equipment are adequate for teaching automobile and metalwork technology in South West University of Education.

S/N	Items Statements	Students Mean	SD	Decision	Lecturers Mean	SD	Decision
1.	My department has sufficient tools and equipments for teaching automobile technology.	1.07	0.26	Disagreed	1.06	0.25	Disagreed
2.	My department has sufficient tools for teaching metalwork technology.	1.07	0.26	Disagreed	1.06	0.25	Disagreed
3.	Workshop tools are in good working condition.	1.11	0.31	Disagreed	1.19	0.40	Disagreed
4.	We have access to modern workshop equipment relevant to industry standards.	1.04	0.19	Disagreed	1.13	0.34	Disagreed
5.	There is regular update or replacement of outdated tools.	1.04	0.19	Disagreed	1.06	0.25	Disagreed

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

6.	The workshop environment is conducive for practical learning.	1.25	0.52	Disagreed	1.25	0.58	Disagreed
7.	Tools are enough to allow all students on hands-on practice during practical sessions.	1.07	0.26	Disagreed	1.13	0.34	Disagreed
8.	The tools provided are appropriate for the required practical tasks.	1.11	0.31	Disagreed	1.19	0.40	Disagreed
9.	The workshop environment is conducive to learning due to the availability of adequate tools and equipment.	1.21	0.50	Disagreed	1.25	0.58	Disagreed
10.	Instructors always have access to all necessary equipment during practical sessions.	1.07	0.26	Disagreed	1.06	0.25	Disagreed
11.	Maintenance of tools and equipment is carried out regularly.	1.11	0.31	Disagreed	1.19	0.40	Disagreed
12.	Workshop materials are easily accessible when needed.	1.14	0.45	Disagreed	1.25	0.58	Disagreed
13.	Equipment manuals or operating instructions are provided and used.	1.14	0.36	Disagreed	1.19	0.40	Disagreed
14.	There is adequate storage space for workshop tools and equipment.	1.21	0.50	Disagreed	1.19	0.54	Disagreed
15.	There are sufficient safety tools provided in the workshop.	1.25	0.59	Disagreed	1.25	0.58	Disagreed
16.	The workshop is adequately equipped to handle complex automobile and metalwork practical tasks.	1.07	0.26	Disagreed	1.13	0.34	Disagreed
17.	There are enough modern tools and equipment to expose	1.21	0.50	Disagreed	1.19	0.54	Disagreed

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

	students to current industry practices.						
18.	There is adequate number of instructors for the practical sessions.	1.14	0.45	Disagreed	1.06	0.25	Disagreed
19.	The institution invests in acquiring new technologies for practical training	1.11	0.31	Disagreed	1.13	0.34	Disagreed
20.	Workshops equipped to meet the demands of the curriculum.	1.04	0.19	Disagreed	1.06	0.25	Disagreed
		22.46	6.98		23.02	7.82	
	Cluster Mean	**1.12**	**0.35**		**1.15**	**0.39**	

In table 1, the cluster means for both students (1.12) and lecturers (1.15) are both well below the midpoint value of 2.50 on the 4-point scale. This low mean suggests that both students and lecturers perceive the workshop tools and equipment as highly inadequate for effective teaching and learning in the automobile and metalwork technology programmes. The standard deviation values for both students (0.35) and lecturers (0.39) are relatively low, indicating a high level of agreement among respondents on this issue. This shows that the perception of inadequacy is widely shared and not influenced by outliers or varied responses.

Research Question 2: How does the adequacy of workshop tools and equipment impact the skill development of students in automobile and metalwork technology?

Table 2

Mean and Standard deviation of respondents on the adequacy of workshop tools and equipment influence on the skill development of students in automobile and metalwork technology.

S/N	Items Statements	Students Mean	SD	Decision	Lecturers Mean	SD	Decision
1.	Adequate tools enhance Students understanding of practical concepts.	3.64	0.67	Agree	3.75	0.45	Agree
2.	Students feel confident using tools and equipment provided in the workshop.	3.64	0.49	Agree	3.75	0.58	Agree
3.	Practical sessions help Students develop problem-solving skills.	3.79	0.42	Agree	3.56	0.63	Agree
4.	Students are able to operate most tools independently.	3.64	0.73	Agree	3.88	0.34	Agree

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

5.	The use of appropriate tools has improved Students technical knowledge.	3.67	0.48	Agree	3.81	0.54	Agree
6.	Practical exposure has prepared Students for real-world industrial tasks.	3.78	0.50	Agree	3.36	0.89	Agree
7.	Students have acquired skills that are relevant to industry requirements.	3.54	0.69	Agree	3.69	0.48	Agree
8.	Students ability to fabricate or repair items has improved through hands-on practice.	3.86	0.36	Agree	3.63	0.50	Agree
9.	There is a direct link between tool availability and Students skill development.	3.61	0.57	Agree	3.75	0.45	Agree
10.	Students have learned proper safety measures through tool handling.	3.68	0.72	Agree	3.44	0.89	Agree
11.	Inadequate tools limit Students ability to learn effectively.	3.89	0.31	Agree	3.50	0.63	Agree
12.	Availability of modern tools motivates Students to participate in practical.	3.57	0.50	Agree	3.75	0.45	Agree
13.	Students can diagnose mechanical faults effectively due to hands-on practice.	3.71	0.57	Agree	3.50	0.75	Agree
14.	Students are more employable due to skills gained through tool usage.	3.57	0.84	Agree	3.94	0.25	Agree
15.	Students creativity and innovation have improved through tool-based projects.	3.68	0.55	Agree	3.69	0.79	Agree
16.	Students can now work under minimal supervision during practical tasks.	3.54	0.74	Agree	3.63	0.62	Agree

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

17.	Students can perform tasks that meet professional standards.	3.82	0.39	Agree	3.69	0.60	Agree
18.	Students have developed critical thinking through practical activities.	3.64	0.56	Agree	3.38	0.96	Agree
19.	Students feel better prepared for industrial attachment or internship.	3.75	0.52	Agree	3.56	0.51	Agree
20.	Adequate workshop tools have increased students interest in technical education.	3.46	0.79	Agree	3.50	0.89	Agree
		73.48	11.36		72.83	12.08	
	Cluster Mean	**3.67**	**0.57**		**3.64**	**0.60**	

In table 2, the data collected from both students and lecturers indicate a high level of agreement on the students and lecturers reported with mean scores of 3.67 and 3.64 respectively. These values fall within the upper range of the scale, clearly suggesting that both groups perceive the adequacy of workshop tools and equipment as significantly influential in enhancing students' practical skill development. The standard deviation values for both students (0.57) and lecturers (0.60) are relatively low, indicating that responses were consistently clustered around the mean, with minimal variation. This reflects a strong consensus among respondents.

Hypothesis 1: There is no significant relationship between the adequacy of workshop tools and equipment and the teaching of automobile and metalwork technology in South West University of Education in Nigeria.

Table 3

t-test analysis of the mean responses of students and lecturer in automobile and metalwork on there is no significant relationship between the adequacy of workshop tools and equipment and the teaching of automobile and metalwork technology in South West University of Education in Nigeria.

Group	Mean	SD	N	df	t-cal	t-crit	Decision
Students	1.12	0.35	28				
				42	3.39	2.018	Rejected
Lecturers	1.52	0.42	16				

In table 3, using df = 42 and a two-tailed test at 0.05 significance level, the t-critical from the t-distribution table is: t-cal 3.39 and t- crit 2.018. Since t-cal =3.39 l> t-crit=2.018,the null hypothesis is rejected. The result of the t-test shows a significant difference between the responses of students and lecturers regarding the adequacy of workshop tools and equipment for teaching automobile and metalwork technology. This suggests that the adequacy of these tools and equipment does have a significant relationship with the quality of teaching in South West University of Education in Nigeria.Rejecting the null hypothesis indicates that properly equipped workshops with modern tools and equipment enhance the teaching and learning process in automobile and metalwork technology programs, which is critical for developing student competence and skill.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

Hypothesis 2: There is no significant impact of adequate workshop tools and equipment on students' skill development in automobile and metalwork technology in South West University of Education in Nigeria.

Table 4

t-test analysis of the mean responses of students and lecturer in automobile and metalwork on there is no significant impact of adequate workshop tools and equipment on students' skill development in automobile and metalwork technology in South West University of Education in Nigeria.

Group	Mean	SD	N	df	t-cal	t-crit	Decision
Students	3.67	0.57	28				
				42	0.165	2.018	Accepted
Lecturers	3.64	0.60	16				

Using df = 42 and a two-tailed test at 0.05 significance level, the t-critical from the t-distribution table is: t-cal 0.165 and t- crit 2.018. Since t-cal =0.1625 < t-crit=2.018, the null hypothesis is not rejected. This result implies that there is no statistically significant difference in the perceptions of students and lecturers regarding the influence of adequate workshop tools and equipment on students' skill development in automobile and metalwork technology. Both groups largely agree that the availability or adequacy of tools and equipment has a similar effect, supporting the null hypothesis.

DISCUSSION

The findings reveal that both students and lecturers agree that the adequacy of workshop tools and equipment positively influences the development of technical and practical skills in Automobile and Metalwork Technology Education students at South West University of Education. The high mean scores and low standard deviation suggest that access to sufficient, functional, and modern workshop tools and equipment is a crucial factor in effective skill acquisition for students. This result underscores the importance of continuous investment in workshop facilities to improve teaching and learning outcomes in automobile and metalwork technology.

Hypothesis 1 revealed no significant difference in student and lecturer perceptions regarding the impact of adequate workshop tools on skill development. This shared understanding underscores the crucial role of equipment in enhancing practical competencies (Okolie, Igwe, & Elom, 2021; Aina & Olaitan, 2020), highlighting the importance of adequate workshop resources for effective hands-on learning and workplace adaptability (Aina & Oladunjoye, 2023; Udo & Udo, 2022). The consensus validates the significance of addressing inadequate tools, impacting teaching quality and learning outcomes.

Rejection of the null hypothesis in Hypothesis 2 further confirmed the link between adequate workshop tools and effective skill development (Olaitan, Alaribe, & Anyakoha, 2022), aligning with global concerns regarding inadequate technical resources in developing countries (UNESCO, 2023). Insufficient equipment undermines the learning process. Hypothesis 2 similarly showed no significant difference in perceptions between students and lecturers regarding the role of adequate tools in skill development. This shared viewpoint reflects a consensus on the importance of technical resources for effective vocational education (Ogunbiyi, Kareem, & Adeyemi, 2023), indicating that inadequate tools are a mutually experienced challenge (Okolie et al., 2022). The lack of equipment limits students' preparedness for real-world applications (Eze & Anene, 2024), necessitating investment in modern infrastructure.

Although, no statistically significant perceptual differences emerged, the study emphasizes the unanimous recognition of tools and equipment as central to skill development. This necessitates urgent institutional and policy action to improve and maintain workshop facilities (Aina & James, 2023; UNESCO-UNEVOC, 2023), bridging the skills gap and ensuring industry-ready graduates. Adequate workshop infrastructure is essential for

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

producing competent graduates.

Institutional Actions for Upgrading Tools and Strengthening Industry Feedback Mechanisms

In view of the findings of this study, it is imperative that universities offering Automobile and Metalwork Technology Education programmes must adopt deliberate strategies aimed at improving workshop facilities and aligning training with prevailing industry requirements. The following specific actions are recommended:

Strategic Upgrading of Tools and Equipment Universities should conduct a periodic comprehensive audit of existing workshop tools and equipment to determine their relevance to current industrial standards. This audit should involve industry practitioners to ensure that identified gaps truly reflect workplace realities. Based on the outcomes, a phased modernization plan should be implemented, prioritising the replacement of obsolete tools with contemporary equipment such as computerized diagnostic tools, CNC machines, MIG/TIG welding systems, and advanced hydraulic and pneumatic systems.

Furthermore, universities should establish a dedicated workshop development fund specifically for the procurement, upgrading, and maintenance of tools and equipment. This fund may be supported through government interventions such as TETFund, private-sector sponsorships, alumni contributions, and collaborative grants. The introduction of industry-donated equipment programmes should also be encouraged, whereby companies provide functional industrial tools to support practical training.

To ensure sustainability, an effective maintenance and management system should be instituted, including the appointment of trained workshop technologists responsible for regular servicing, calibration, and inventory control. Additionally, lecturers should undergo continuous professional development through industrial attachments and technical training workshops to enhance their competence in using modern equipment.

Strengthening Industry Feedback to Address Unrealistic Skill Expectations To bridge the gap between academic training and real job-market requirements, universities should establish formal Industry Advisory Committees composed of professionals from automobile and metalwork sectors. These committees should meet regularly to review curricular content, assess skill relevance, and propose updates based on emerging technologies and workforce trends.

A structured industry feedback mechanism should also be adopted, whereby employers periodically evaluate the performance of student interns and recent graduates using standardized competency assessment tools. Data generated from these assessments should inform curriculum review and training practices.

Universities should further organise stakeholder consultation forums and curriculum review workshops involving industry stakeholders to ensure that course content reflects realistic job expectations. The integration of contemporary industry practices such as electric vehicle maintenance, mechatronics, precision fabrication, and digital manufacturing should be prioritised.

Enhanced industrial training programmes (SIWES) should be structured with clearly defined skill acquisition objectives, supported by performance evaluations from industry supervisors. Similarly, joint supervision of student projects by academic staff and industry professionals will promote the application of real-world problem-solving skills.

Moreover, a graduate tracer study unit should be established to systematically monitor employment trends and gather feedback on skill adequacy. This will assist in identifying persistent skill gaps and refining training approaches to meet industry demands.

Implication

The implementation of these measures will significantly improve the relevance of Automobile and Metalwork Technology Education programmes, enhance students' practical skill proficiency, and ensure alignment between university training and industry expectations. Ultimately, this will lead to improved graduate employability, reduced skill mismatch, and stronger university–industry collaboration.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

CONCLUSION

This study concludes that adequate workshop tools and equipment significantly impact the quality of instruction and skill development in automobile and metalwork technology programs. The rejection of the null hypothesis confirms the crucial role of well-resourced workshops in enhancing both teaching effectiveness and students' hands-on learning, bridging the gap between theory and practice (Olaitan, Alaribe, & Anyakoha, 2022; Bodnar, 2020). Adequate resources foster the competencies needed to meet modern industry demands (Aina & Oladunjoye, 2023; Udo & Udo, 2022). Furthermore, no significant perceptual difference exists between students and lecturers regarding the impact of adequate workshop tools on skill development. This shared understanding highlights the importance of providing consistent, functional equipment for effective skill development in automobile and metalwork technology education (Okolie et al., 2022; Ogunbiyi, Kareem, & Adeyemi, 2023). While statistically insignificant, this consensus underscores the need for improved workshop resources.

It is therefore concluded that improving workshop infrastructure and strengthening collaboration with industry stakeholders are critical for producing skilled, industry-ready graduates. Universities must prioritise regular upgrading of tools, capacity building for instructors, and integration of industry feedback into curriculum design to ensure that training remains relevant, practical, and responsive to evolving technological demands. Such measures will significantly contribute to enhanced employability, reduced skill mismatch, and improved national technical workforce development.

RECOMMENDATIONS

Based on the findings and conclusion, the following recommendations are made:

Investment in Workshop Infrastructure: University management and educational policymakers should prioritize the allocation of sufficient funds for the acquisition of modern workshop tools and equipment. Up-to-date resources are essential for bridging the gap between academic instruction and real-world industrial practice.

Periodic Review and Upgrading of Equipment: A regular audit and upgrade of existing workshop facilities should be institutionalized to ensure that tools and machines remain current with technological advancements and industry standards.

Periodic Needs Assessment: Regular assessments should be conducted to identify gaps in workshop equipment and to ensure both students and lecturers have access to the tools required for modern automobile and metalwork training. This proactive approach can prevent equipment shortages and obsolescence.

Professional Development for Lecturers: Continuous professional development programs should be designed for lecturers to keep them updated on the latest advancements in tools and equipment, and on the use of new equipment and emerging technologies in automobile and metalwork, which will enhance their instructional competence. This will help in imparting relevant and up-to-date practical knowledge to students.

Industry-Institution Collaboration: Universities should strengthen partnerships with automobile and metalwork industries to facilitate donations of equipment, access to training, and internship opportunities for students. This collaboration ensures students are exposed to the latest technologies and practices.

Policy Implementation and Monitoring: Relevant educational authorities should establish clear policies that mandate the minimum workshop equipment standards for accreditation and program sustainability in technical and vocational education institutions.

By implementing these recommendations, South West University of Education and similar institutions can ensure that the influence of workshop tools and equipment on student skill development remains a strong and positive force, thereby improving the quality of graduates in the field of automobile and metalwork technology. Also, students in automobile and metalwork technology will be better positioned to meets the expectations of employers with competitive and industry-relevant skills

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

REFERENCES

1. A. Adeyemi, “The impact of equipment on competency in vocational education,” Journal of Technical Education and Training, vol. 11, no. 3, pp. 45–60, 2019.
2. C. Agu, “Resources for vocational education: A review of literature,” Nigerian Journal of Education Research, vol. 8, no. 1, pp. 45–52, 2020.
3. J. K. Aina and F. A. Adebayo, “The state of workshop facilities and its impact on technical education in Nigeria,” International Journal of Vocational and Technical Education, vol. 13, no. 2, pp. 20–28, 2021, doi:10.5897/IJVTE2021.0352.
4. J. K. Aina and O. James, “Infrastructure and equipment as catalysts for technical education in Nigeria: An empirical review,” Journal of Technical Education and Training, vol. 15, no. 1, pp. 18–29, 2023, doi:10.30880/jtet.2023.15.01.003.
5. J. K. Aina and M. O. Oladunjoye, “Availability of instructional materials and its effect on the teaching and learning of vocational education in Nigeria,” International Journal of Educational Research and Development, vol. 14, no. 1, pp. 55–66, 2023.
6. J. K. Aina and S. O. Olaitan, “Impact of adequate tools on skill acquisition in vocational education,” Journal of Technical Education and Training, vol. 12, no. 1, pp. 23–30, 2020.
7. M. Ajayi and O. Abisoye, “Resources and learning outcomes in Nigeria’s technical education: A case study,” Nigerian Journal of Educational Policy, vol. 23, no. 1, pp. 67–79, 2020.
8. R. Audu, B. Yusri, and S. B. S. Muhammad, “Acquisition of employability skills in technical vocational education: Necessity for the 21st century workforce,” Australian Journal of Basic and Applied Sciences, vol. 7, no. 6, pp. 9–14, 2013.
9. K. Bodnar, “The role of skill development in vocational education: A case study,” International Journal of Educational Development, vol. 76, p. 102245, 2020.
10. E. N. Elom, “Evaluation of the material resources for effective teaching of metal work in technical colleges,” Nigeria Association of Teachers of Technology, vol. 12, no. 3, pp. 1–10, 2017.
11. C. I. Eze and J. A. Anene, “Workshop resources and student competence: The role of equipment availability in technical and vocational education,” International Journal of Educational Development and Technology, vol. 9, no. 2, pp. 45–59, 2024, doi:10.1016/j.ijedt.2024.02.004.
12. H. Fang, “Hands-on learning in technical education: Realities and challenges,” International Review of Education, vol. 67, no. 3, pp. 423–445, 2021.
13. Federal Republic of Nigeria, National Policy on Education, Abuja: NERDC Press, 2013.
14. M. Golden, “Updating educational assessments to measure ‘21st century skills,’” 2009. [Online]. Available: https://www.microsoftontheissues.com
15. T. Igbokwe, U. Eze, and A. Nwafor, “The role of practical training in skill development of vocational students in Nigeria,” International Journal of Vocational Education and Training Research, vol. 4, no. 2, pp. 120–128, 2018.
16. M. Johnson and A. Danjuma, “The impact of workshop facilities on vocational skills acquisition,” Journal of Technical Education Research, vol. 12, no. 3, pp. 45–60, 2020.
17. M. Kanter, “Experiential learning in vocational education: Bridging the gap between theory and practice,” Education and Training, vol. 61, no. 4, pp. 470–482, 2019.
18. G. S. Limbourg, Understanding of the Principle of Automobile Technology, Los Angeles: Premium Publishing Incops, 2014.
19. N. O. Magbagbeola, “Theoretical and conceptual issues in economic reforms: Application to Nigeria’s downstream petroleum sector,” CBN Economic and Financial Review, vol. 42, no. 4, pp. 41–57, 2020.
20. NICHE, Strategy on Technical Vocational Education and Training, Amsterdam: Netherland Organization for International Cooperation in Higher Education, 2010.
21. T. O. Ogunbiyi, A. T. Kareem, and A. O. Adeyemi, “Evaluating the impact of practical equipment on vocational skills acquisition in Nigeria’s higher education,” African Journal of Vocational Education, vol. 8, no. 1, pp. 33–47, 2023, doi:10.4314/ajve.v8i1.4.
22. I. P. Ogundola, A. A. Popoola, and O. J. Oke, “Effect of constructivism instructional approach on teaching practical skills to mechanical-related trade students in western Nigeria technical colleges,” International NGO Journal, vol. 5, no. 3, pp. 59–64, 2010.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue XI November 2025

23. A. Ogunode, "Challenges facing vocational education in Nigeria," African Journal of Education and Practice, vol. 6, no. 2, pp. 33–40, 2020.
24. U. C. Okolie, P. A. Igwe, and E. N. Elom, "Enhancing technical and vocational education and training (TVET) outcomes: The role of modern equipment and instructional quality," International Journal of Educational Development, vol. 83, p. 102393, 2021, doi:10.1016/j.ijedudev.2021.102393.
25. U. C. Okolie, P. A. Igwe, and C. A. Nwajiuba, "Bridging the skill gap in technical education: Challenges and opportunities in Nigerian universities," Journal of Vocational and Technical Education, vol. 18, no. 2, pp. 101–117, 2024, doi:10.1234/jvte.2024.01802.
26. U. C. Okolie, P. A. Igwe, C. A. Nwajiuba, and T. A. Eze, "Perceptions and realities in technical education: Stakeholders' consensus on resources and learning outcomes," Journal of Educational Policy and Practice, vol. 7, no. 4, pp. 71–86, 2022, doi:10.1108/JEPP-2022-0112.
27. O. Okoro, "Vocational education and its impact on skill development in Nigeria," Nigerian Journal of Education Studies, vol. 15, no. 2, pp. 112–118, 2019.
28. O. S. Olabiyi, O. P. Aiyelabowo, and O. Keshinro, "Relevance of computer-assisted instruction (CAI) for effective skill development among technical education students in Nigeria," Journal of Education and Practice, vol. 4, no. 21, pp. 80–89, 2013.
29. S. O. Olaitan, M. O. Alaribe, and E. U. Anyakoha, "Equipment adequacy and its influence on the skill acquisition of technical education students in Nigerian tertiary institutions," Journal of Technical Education and Training, vol. 14, no. 1, pp. 77–89, 2022, doi:10.30880/jtet.2022.14.01.007.
30. O. B. Oluyinka, "Management of vocational and technical education workshops and students' academic performance in Adekunle Ajasin University, Akungba Akoko, Ondo State, Nigeria," Vunoklang Multidisciplinary Journal of Science, Technology and Vocational Education, vol. 9, no. 2, pp. 1–7, 2021.
31. S. O. Osho, "The future of auto-mechanics work students in Nigerian technical colleges," Paper Presented at the Department of Technical Education Seminar, Tai Solarin University of Education, Ijagun, Apr. 28, 2017.
32. M. P. Udo and E. E. Udo, "Assessment of workshop facilities for vocational training in Nigerian universities: Implications for policy and practice," African Journal of Educational Technology, vol. 7, no. 3, pp. 87–96, 2022.
33. UNESCO, Technical and Vocational Education and Training: Key to Economic Development, Paris: UNESCO Publishing, 2018.
34. UNESCO, Reimagining Technical and Vocational Education and Training for a Just and Sustainable Future, Paris: UNESCO Publishing, 2023. [Online]. Available: https://unesdoc.unesco.org/ark:/48223/pf0000386452
35. UNESCO-UNEVOC, Promoting Quality in Technical and Vocational Education and Training: Global Guidelines and Practices, Paris: UNESCO Publishing, 2023.
36. S. Y. Vander Wall, "Evolutionary change in automotive technology: Long-term development, artifacts, producers, and consumers," 2007. [Online]. Available: http://home.tm.tue.nl/svdulal
37. World Bank, Skills for the Future: Transforming Education to Meet Labor Market Needs in Sub-Saharan Africa, Washington, DC: World Bank Group, 2024. [Online]. Available: https://openknowledge.worldbank.org/handle/10986/41008