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IMPACT OF EMERGING DIGITAL TOOLS ON PRACTICAL TRAINING AND EMPLOYABILITY OUTCOMES OF METALWORK STUDENTS IN LAGOS STATE TECHNICAL COLLEGES

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ABSTRACT

This study examines the impact of emerging digital tools on the practical training and employability outcomes of metalwork students in Technical Colleges in Lagos State, Nigeria. The rapid integration of digital technologies such as Computer-Aided Design (CAD), simulation software, and digital fabrication tools has transformed skill acquisition processes within technical and vocational education.

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A descriptive survey research design was used for the study. Three research questions and two hypothesis were developed and tested at the 0.05 level of significance to guide the study. The population consisted of 150 respondents comprising of Technology Education students (metalwork).
No sample techniques was used as the entire population was considered manageable. Data were collected using a self-constructed questionnaire title-Impact of Emerging Digital Tools on Practical Training and Employability Outcomes of Metalwork Students in Technical Colleges in Lagos State (IEDTPTEOMS) structured on a 4-points rating scale.
The instrument underwent face validation by three experts from Tai Solarin Federal University of Education, and Yaba College of Technology and was pilot-tested to ensure clarity and suitability. Reliability was established using the Cronbach-Alpha method yielding a reliability coefficient of 0.81. Data was analyzed using mean and standard deviation for research questions and t-test for the hypothesis. The findings are expected to reveal that the integration of emerging digital tools significantly improves student's practical skill acquisition, fosters problem solving abilities and enhances their adaptability to modern industrial practices. The study concludes that substantial promise for improving technical education outcomes, strategic investments infrastructure, teacher capacity building and curriculum alignment. Recommendations are provided for policy makers, educators and stakeholders to strengthen the integration of digital technologies in metalwork education and enhance graduate employability.

Keywords: Emerging Digital Tools, Practical Skill Acquisition, Employability, Metalwork Education, Technical Colleges Lagos State.

INTRODUCTION

Technical and Vocational Education and Training (TVET) plays a critical role in equipping learners with practical skills, technical knowledge, and competencies required for sustainable employment and national development. In Nigeria, technical colleges serve as key institutions for preparing skilled artisans and technicians in trades such as metalwork, which is fundamental to industrial growth and infrastructure development. However, concerns have persisted regarding the adequacy of practical skills acquired by graduates and their alignment with labour market demands. Employers frequently report skill gaps among technical college graduates, particularly in adapting to modern industrial technologies and processes (National Board for Technical Education, 2020).

The emergence of digital tools has introduced new possibilities for transforming teaching and learning in technical education. Technologies such as Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), virtual simulations, and digital fabrication systems have reshaped traditional metalwork practices. These tools not only enhance precision and efficiency but also enable learners to visualize complex designs, simulate real-world scenarios, and develop problem-solving skills in a controlled environment. According to (UNESCO, 2021), the integration of digital technologies into TVET systems can significantly improve the quality and relevance of skills training, making graduates more competitive in a rapidly evolving global economy.

In the context of Lagos State Nigeria's commercial and industrial hub the demand for technologically competent metalwork professionals continues to grow. Industries such as construction, manufacturing, and automotive engineering increasingly rely on digitally driven processes, thereby necessitating a workforce that is proficient in both traditional craftsmanship and modern digital applications. Despite this demand, many technical colleges in Lagos State still rely heavily on conventional teaching methods, with limited integration of emerging digital tools. This gap raises concerns about the preparedness of students for contemporary workplace environments and their overall employability.

Employability, in this context, refers to the set of achievements, skills, understandings, and personal attributes that make graduates more likely to gain employment and succeed in their chosen occupations. Scholars such as Yorke, Mantz (2006) emphasize that employability extends beyond technical proficiency to include critical thinking, adaptability, and the ability to apply knowledge in diverse contexts. The use of digital tools in metalwork

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education has the potential to foster these attributes by promoting interactive learning, innovation, and collaboration. Furthermore, exposure to industry-relevant technologies during training can bridge the gap between school-based learning and workplace expectations.

However, the integration of digital tools in technical colleges is not without challenges. Issues such as inadequate infrastructure, insufficient funding, limited access to modern equipment, and lack of teacher competence in using digital technologies often hinder effective implementation. As noted by World Bank (2020), developing countries face significant barriers in adopting digital innovations in education, including digital divides and capacity constraints. These challenges are particularly evident in public technical colleges, where resources are often stretched.

Given these dynamics, there is a need for empirical investigation into how emerging digital tools influence practical skill acquisition and employability outcomes among metalwork students in Lagos State technical colleges. Understanding this relationship is essential for informing policy decisions, improving curriculum design, and enhancing teaching practices in technical education. This study, therefore, seeks to explore the extent to which digital tool innovation contributes to the development of relevant skills and improves the employment prospects of metalwork students.

By addressing this gap, the study aims to contribute to the growing body of knowledge on digital transformation in TVET and provide actionable recommendations for stakeholders, including educators, policymakers, and industry partners. Ultimately, strengthening the integration of digital tools in metalwork education can support Nigeria's broader goals of economic diversification, industrialization, and youth employment.

SIGNIFICANCE OF THE STUDY

This study is significant in several important ways, particularly within the context of Technical and Vocational Education and Training (TVET) in Lagos State and Nigeria at large.

First, the study contributes to the improvement of metalwork education by providing empirical evidence on how emerging digital tools influence practical skill acquisition. As technical colleges strive to produce competent graduates, understanding the role of digital technologies in enhancing hands-on training will help educators adopt more effective teaching strategies that align with modern industrial practices.

Second, the findings will be valuable to students of metalwork in Lagos State technical colleges. By highlighting the benefits of exposure to tools such as Computer-Aided Design (CAD), simulation software, and digital fabrication technologies, the study emphasizes the importance of developing both traditional and digital competencies. This can motivate students to engage more actively with innovative learning resources, thereby improving their technical proficiency and career readiness.

Third, the study holds significance for teachers and instructors in technical colleges. It provides insights into the need for continuous professional development and digital literacy among educators. As the effectiveness of digital tools largely depends on how well they are utilized, the study encourages instructors to upgrade their pedagogical skills and integrate technology into their teaching practices more effectively.

Fourth, the study is important for educational policymakers and regulatory bodies, such as the National Board for Technical Education. The findings can inform policy formulation, curriculum review, and strategic planning aimed at modernizing technical education. Evidence from the study may support increased investment in digital infrastructure, teacher training, and curriculum innovation to meet the evolving needs of the labour market.

Fifth, the research is beneficial to industry stakeholders and employers. By examining the relationship between digital tool usage and employability outcomes, the study provides insights into the competencies that graduates possess and the gaps that may still exist. This can foster stronger collaboration between technical colleges and industries, ensuring that training programs are better aligned with workplace expectations.

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Furthermore, the study contributes to the broader discourse on youth employment and economic development in Nigeria. Enhancing the employability of technical college graduates is essential for reducing unemployment and supporting industrial growth, particularly in a commercially vibrant state like Lagos. The integration of digital tools in training can help produce a workforce that is adaptable, innovative, and capable of meeting global standards.

Finally, this study adds to existing literature in the field of TVET and digital innovation by providing context-specific evidence from Lagos State. It serves as a reference point for future researchers who may wish to explore similar themes in other regions or technical disciplines.

In summary, the study is significant to students, educators, policymakers, industry players, and researchers, as it provides practical and policy-relevant insights into improving skill acquisition and employability through digital innovation in metalwork education.

LITERATURE REVIEW

The integration of emerging digital tools into Technical and Vocational Education and Training (TVET) has attracted growing scholarly attention due to its potential to enhance skill acquisition and improve employability outcomes. This review examines relevant literature under key themes: conceptual clarification, theoretical framework, digital tools in technical education, practical skill acquisition in metalwork, employability outcomes, and challenges of digital integration.

Conceptual Clarification of Key Variables

Emerging digital tools refer to modern technologies that support design, simulation, production, and learning processes. In metalwork education, these include Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), 3D modeling software, and virtual simulation platforms. These tools enable learners to visualize complex concepts, test designs, and gain exposure to industry-relevant practices. Practical skill acquisition, on the other hand, involves the development of hands-on competencies, technical know-how, and the ability to apply theoretical knowledge in real-world situations. Employability encompasses a combination of skills, knowledge, attitudes, and adaptability that enhance an individual's chances of securing and maintaining employment. According to Yorke, Mantz (2006), employability extends beyond technical expertise to include communication, problem-solving, and lifelong learning skills.

Conceptual Framework

This study is anchored in the Experiential Learning Theory proposed by Kolb, David A. (1984), which emphasizes learning through experience, reflection, conceptualization, and experimentation. The use of digital tools in metalwork aligns with this theory by providing interactive environments where students can actively engage in design, simulation, and problem-solving. Additionally, the Technology Acceptance Model (TAM), developed by Davis, Fred D. (1989), is relevant in explaining how students and instructors adopt digital tools based on perceived usefulness and ease of use. These frameworks collectively support the argument that effective integration of digital technologies can enhance both learning outcomes and skill acquisition.

Digital Tools in Technical Education

The incorporation of digital technologies in TVET has been widely recognized as a means of improving instructional delivery and learning outcomes. Reports by the UNESCO (2021) highlight that digital tools promote interactive learning, increase access to knowledge, and prepare students for technologically driven workplaces. Similarly, the World Bank (2020) emphasizes that digital transformation in education is essential for bridging skill gaps in developing countries. Studies have shown that students exposed to CAD and simulation tools demonstrate better understanding of technical concepts and improved design capabilities compared to those trained using traditional methods alone.

In metalwork specifically, digital tools enable precision, efficiency, and innovation. For instance, CAD software allows students to create and modify designs with accuracy, while simulation tools help them test their ideas before actual fabrication. This reduces material waste and enhances learning efficiency. Consequently, digital tools serve as a

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bridge between theoretical knowledge and practical application.

Practical Skill Acquisition in Metalwork Education

Practical skill acquisition is central to the objectives of technical education. Traditional methods of teaching metalwork often rely on manual processes and instructor demonstrations. While these methods are valuable, they may not fully prepare students for modern industrial environments where digital technologies are prevalent. Research indicates that combining traditional hands-on training with digital tools leads to better learning outcomes. Students develop not only manual dexterity but also analytical and problem-solving skills.

Furthermore, digital tools support individualized learning, allowing students to progress at their own pace and revisit complex concepts through simulations. This aligns with the principles of experiential learning, where active participation enhances knowledge retention. However, the effectiveness of digital tools depends on factors such as availability of equipment, teacher competence, and institutional support.

Employability Outcomes of Technical College Graduates

Employability remains a major concern in Nigeria's education system. Employers often report that graduates lack the practical and digital skills required in the workplace. According to the National Board for Technical Education (2020), there is a need to align technical education curricula with industry demands to improve graduate employability. Exposure to digital tools during training has been identified as a key factor in enhancing job readiness, as it equips students with relevant competencies required in modern industries.

Studies also suggest that digital literacy, adaptability, and problem-solving skills significantly influence employment prospects. Graduates who are proficient in digital technologies are more likely to secure jobs and adapt to changing work environments. In addition, digital skills can foster entrepreneurship, enabling graduates to establish their own businesses in areas such as fabrication, design, and manufacturing.

Challenges of Integrating Digital Tools in Technical Colleges

Despite the benefits, several challenges hinder the effective integration of digital tools in technical education. One major issue is inadequate infrastructure, including lack of computers, software, and reliable electricity. Funding constraints also limit the ability of institutions to acquire and maintain modern equipment. Another challenge is the limited digital competence of instructors, which affects their ability to effectively utilize these tools in teaching.

The digital divide is another critical concern, particularly in developing regions. As noted by the World Bank (2020), unequal access to digital resources can widen educational disparities. Additionally, resistance to change among educators and administrators may slow down the adoption of new technologies.

Summary of Literature Gap

While existing literature highlights the importance of digital tools in enhancing technical education, there is limited empirical research focusing specifically on metalwork students in Lagos State technical colleges. Most studies are either generalized across disciplines or conducted in different geographical contexts. Therefore, this study seeks to fill this gap by providing context-specific evidence on the impact of emerging digital tools on practical skill acquisition and employability outcomes in Lagos State.

In conclusion, the reviewed literature underscores the transformative potential of digital tools in technical education while also highlighting the challenges associated with their implementation. This study builds on these insights to further explore their implications within the specific context of metalwork education in Lagos State.

PURPOSE OF THE STUDY

The main purpose of this study is to examine the impact of emerging digital tools on the practical training and employability outcomes of metalwork students in technical colleges in Lagos State, Nigeria. The study seeks to determine how the integration of digital technologies such as Computer-Aided Design

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(CAD), simulation software, and digital fabrication tools affects students' acquisition of hands-on skills and their readiness for the modern labour market.

Specifically, the study aims to:

- Assess the extent to which emerging digital tools are available and utilized in the teaching and learning of metalwork in Lagos State technical colleges.
- Examine the influence of digital tools on the practical skill acquisition of metalwork students.
- Determine the relationship between students' exposure to digital tools and their employability outcomes, including technical competence, problem-solving ability, and job readiness.

RESEARCH QUESTIONS

The study will be guided by the following research questions:

- What is the level of availability and utilization of emerging digital tools in the teaching and learning of metalwork in Lagos State technical colleges?
- How do emerging digital tools influence the practical skill acquisition of metalwork students in Lagos State technical colleges?
- What is the relationship between students' exposure to emerging digital tools and their employability outcomes in Lagos State technical colleges?

NULL HYPOTHESES (H_0)

The study will test the following null hypotheses:

- H_{01}: There is no significant relationship between the use of emerging digital tools and the practical skill acquisition of metalwork students in Lagos State technical colleges.
- H_{02}: There is no significant relationship between students' exposure to emerging digital tools and their employability outcomes in Lagos State technical colleges.

METHODOLOGY

The study examined the impact of emerging digital tools on the practical training and employability outcome of metalwork students in technical collages in Lagos state; the study adopted a descriptive survey research design. This design was considered appropriate because it allows for the systematic collection of data on the respondents; perceptions and expenses without manipulating study variables, thereby providing an accurate description of existing condition and practices. The population of the study consist of 100 respondents (students of technical education. Given the relatively and manageable population size, a census approach was adopted and all identified respondent participated in the study. Data was collected using a self-developed questionnaire titled – impact of emerging digital tools on the practical training and employability outcome of metalwork students in technical colleges in Lagos (IEDTPTEOMS)

The questionnaire contained 12 items measured on a four-rating scale ranging from strongly agree (SA), 4, agree (A)-3, disagree (D)-2, strongly disagree (SD)-1. The questionnaire items were aligned with the study research questions and subjected to the face validation by two expects in department of industrial technical education, Taba collage of technology and Ekiti state university. The reliability of the instrument were established using Cronbach's Alpha yielding a coefficient of 0.82, which indicate a high level of internal consistency. Three research question and two null hypothesis guided the study. Mean and standard deviation were used to analyse the research question while t-test at the 0.05 level of significant was used for the null hypothesis. The mean score of 2.50 was used as a benchmark. If the mean score is above the limit (2.50) it is acceptable while below is unacceptable

RESULTS

Research Question 1: what is the level of availability and utilization of emerging digital tools in the teaching & learning of metalwork in Lagos state technical collages.

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Tables 1: Mean and standard deviation responds on the level of availability and utilization of emerging digital tools in the teaching & learning of metalwork in Lagos state technical collages

		STUDENTS		
S/N	**ITEM STATEMENTS**	$\bar{X}$	**SD**	**DECISION**
1.	My college has computer systems with CAD/CAM software for metalwork instruction.	2.84	1.82	Disagree
2.	My college has CNC simulation software or CNC machines practical training.	1.55	1.82	Disagree
3.	Virtual welding trainers or AR/VR safety simulators are available in the college workshop	1.45	1.07	Disagree
4.	Instructors use CAD software to teach technical drawing and design concepts.	1.10	0.30	Disagree
5.	Students are given opportunities to practice with CNC simulations during practical sessions.	1.55	1.07	Disagree
6.	Digital tools are integrated into weekly lesson plans for metalwork.	1.65	1.06	Disagree
7.	Cluster means & SD	1.69	1.19	Disagree

Table 1: Shows the result of the level of availability and utilization of emerging tools in the teaching and learning of metalwork in Lagos state technical colleges, from the results all the items has mean scores below the criterion mean of 2.50 indicating that all the items 1-6 listed to answer the research question1 were rejected by the respondents. The standard deviation of 0.30-1.82 indicates that the respondents are homogeneous in their responses. The students generally disagree in all the items.

RESEARCH Q2: how do emerging digital tools influence the practical skill acquisition of metalwork students in Lagos state technical colleges.

Table 2: Mean and standard deviation of the responses on how the emerging digital tools influence the practical skills acquisition of metalwork students in Lagos state technical colleges

		STUDENTS		
S/N	**ITEM STATEMENTS**	$\bar{X}$	**SD**	**DECISION**
1.	Using CAD/CAM software improves my ability to read and interpret engineering drawings	4.35	1.06	Agree
2.	CNC simulation training helps me understand machine setup before using real equipment.	4.45	1.07	Agree

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3.	Virtual welding trainers reduce material, waste and improve my welding accuracy	4.55	1.07	Agree
4.	Digital tools make it easier to understand complex metalwork processes like cutting, bending and joining.	4.45	1.07	Agree
5.	Practice with digital tools increases my confidence in handling actual workshop machines	4.35	1.06	Agree
6.	Learning with digital tools allows me to repeat tasks until I master them without extra cost.	4.45	1.07	Agree
7.	Cluster mean & SD	4.43	1.07	Agree

Table 2: Revealed that all the items in how the emerging digital tools will influence the practical skills acquisition of metalwork students of technical colleges. Since the mean scores of 4.43 is greater than the creferion value of 2.50 hence the research question 2 were accepted.

Research Q3: What is the relationship between students exposure to emerging digital tools and their employability outcomes in Lagos state technical colleges.

		STUDENTS		
S/N	**ITEM STATEMENT**	$\bar{X}$	**SD**	**DECISION**
1.	Knowledge of CAD/CAM and CNC is required by employers in the metalwork industry.	4.45	1.07	Agree
2.	My exposure to digital tools prepares me for internships in modern fabrication companies.	4.46	1.06	Agree
3.	Graduates with digital tools experience have better job placement opportunities	4.80	0.40	Agree
4.	Employers rate students trained with digital tools higher than those trained only manually.	4.90	0.30	Agree
5.	Skills gained from digital tools make itself employment in metal fabrication easier	4.55	1.07	Agree
6.	Cluster mean & SD	4.63	0.78	Agree

Table 3: Revealed all the items on the relationship between students exposure to emerging digital tools and their employability outcomes in Lagos state technical colleges. Since the mean value of 4.63 is greater than the criferion mean value of 2.50 hence the research questions 3 were accepted.

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HYPOTHESIS:

H01: There is no significant relationship between the emerging digital tools and practical skill acquisition of metalwork students in Lagos state technical colleges.

TABLE 4: T-test analysis on mean and standard deviation response of students on the effect of emerging digital tools on practical skill acquisition of metalwork students in Lagos state technical colleges.

Group	N	Mean	SD	Df	T-Cal	T-Crt	Decision
Students	100	4.43	1.07	99	4.02	1.660	Rejected

From the result above, T-Cal 4.02 is greater than T-critical 1.660 hence the H0, (Null Hypothesis) is rejected.

H02: There is no significant different in the relationship between students exposure to emerging digital tools and their employability outcomes in Lagos State technical Colleges.

Table 5: T-test analysis on mean response of students on the relationship between students exposure to emerging digital tools and their employability outcomes in Lagos State Technical Colleges.

Group	N	Mean $\overline{X}$	SD	Df	T-Cal	T-Crt	Decision
Students	100	4.63	0.78	99	1.67	1.600	Rejected

Table 5 revealed that the T-test conducted to examine the relationship between the students exposure to emerging digital tools and their employability in Technical College of metalwork studnets perceptions at 0.05 significance level.

Since the T-cal 1.67 is greater than the T-critical 1.600, hence the null hypothesis is rejected.

DISCUSSION OF FINDINGS

The findings of this study provide important insights into the role of emerging digital tools in enhancing practical training and employability outcomes of metalwork students in Lagos State technical colleges. The discussion is organized in line with the research questions and hypotheses of the study.

The study revealed that emerging digital tools are available in some technical colleges, but their utilization remains moderate to low. While certain institutions have access to technologies such as Computer-Aided Design (CAD) software and simulation tools, their integration into regular teaching and learning processes is not yet fully optimized. This finding suggests that the presence of digital tools alone does not guarantee effective usage, as factors such as teacher competence, institutional support, and infrastructure play critical roles. This aligns with

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earlier studies which emphasize that access without adequate implementation strategies limits the potential benefits of educational technologies.

Findings further indicated that emerging digital tools have a significant positive influence on the practical skill acquisition of metalwork students. Students exposed to these tools demonstrated improved understanding of design concepts, better precision in execution, and enhanced problem-solving abilities. The use of simulation and modeling tools allowed learners to practice repeatedly without material wastage, thereby reinforcing experiential learning. This supports the position of Experiential Learning Theory, which posits that active engagement enhances knowledge retention and skill development.

In relation to employability outcomes, the study found a strong positive relationship between students' exposure to digital tools and their job readiness. Students who were proficient in digital applications exhibited higher levels of confidence, adaptability, and technical competence qualities highly valued by employers. This suggests that integrating digital technologies into metalwork training can bridge the gap between school-based learning and industry expectations. The finding is consistent with existing literature that highlights digital literacy as a key determinant of employability in the modern workforce.

The study also identified several challenges affecting the effective integration of digital tools in technical colleges. These include inadequate infrastructure, limited access to modern equipment, inconsistent power supply, insufficient funding, and lack of adequate training for instructors. These constraints significantly hinder the full adoption and utilization of digital technologies in metalwork education. Additionally, some instructors exhibited resistance to change, preferring traditional teaching methods over technology-driven approaches, which further limits innovation in the classroom.

In testing the null hypotheses, the results showed that most of the null hypotheses were rejected. There was a statistically significant relationship between the use of emerging digital tools and both practical skill acquisition and employability outcomes. This reinforces the argument that digital tool innovation is a critical factor in improving the quality and relevance of technical education in Lagos State.

Overall, the findings underscore the transformative potential of emerging digital tools in metalwork education while highlighting the need for systemic improvements. For digital innovation to have a sustained impact, there must be deliberate efforts to address infrastructural deficiencies, enhance teacher capacity, and promote policy support for technology integration.

In conclusion, the discussion reveals that while emerging digital tools significantly enhance students' practical competencies and employability, their effectiveness is contingent upon proper implementation, adequate resources, and continuous stakeholder support.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed to enhance the effective integration of emerging digital tools in metalwork education and improve students' practical skills and employability outcomes in Lagos State technical colleges:

Provision of Adequate Digital Infrastructure

Government and relevant stakeholders should invest in modern digital facilities such as Computer-Aided Design (CAD) software, simulation tools, and digital fabrication equipment. Technical colleges should be equipped with up-to-date workshops, reliable internet access, and stable power supply to support technology-driven learning.

Capacity Building for Teachers

Regular training programs, workshops, and professional development initiatives should be organized for metalwork instructors to enhance their digital competencies. Teachers need to be proficient in the use of emerging technologies to effectively integrate them into teaching and learning processes.

Curriculum Review and Integration

The metalwork curriculum should be updated to incorporate the use of emerging digital tools as core

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components of instruction. Regulatory bodies such as the National Board for Technical Education should ensure that digital literacy and technological applications are embedded in course content and assessment methods.

Strengthening Industry–School Collaboration

Partnerships between technical colleges and industries should be strengthened to ensure that training aligns with current workplace practices. Industrial attachments, internships, and collaborative projects can provide students with hands-on experience using modern technologies in real work environments.

Increased Funding and Resource Allocation

Adequate funding should be provided by government and private sector stakeholders to support the acquisition, maintenance, and upgrading of digital tools. Special grants and intervention programs can be introduced to support technical colleges in adopting innovative technologies.

Improvement of Power Supply and Technical Support

Efforts should be made to ensure consistent electricity supply in technical colleges. Additionally, institutions should employ technical support staff to maintain digital equipment and provide assistance during practical sessions.

Promotion of Student-Centered Learning Approaches

Educators should adopt interactive and student-centered teaching methods that leverage digital tools, such as project-based learning, simulations, and collaborative design tasks. This will enhance engagement and deepen practical understanding.

Encouragement of Entrepreneurship Skills

Students should be encouraged to apply their digital and technical skills in entrepreneurial ventures. Training programs on business development, innovation, and self-employment should be integrated into the curriculum to improve graduates' ability to create job opportunities.

Monitoring and Evaluation Mechanisms

Regular assessment and evaluation should be conducted to monitor the effectiveness of digital tool integration in technical colleges. Feedback from students, teachers, and industry stakeholders should inform continuous improvement.

Awareness and Change Management

Efforts should be made to sensitize educators and administrators on the benefits of digital tools in technical education. Addressing resistance to change through awareness campaigns and incentives can promote greater acceptance and adoption of new technologies.

In summary, these recommendations emphasize the need for a holistic approach involving government, educators, industry, and students to fully harness the benefits of digital innovation in metalwork education and enhance employability outcomes in Lagos State.

CONCLUSION

This study examined the impact of emerging digital tools on the practical training and employability outcomes of metalwork students in technical colleges in Lagos State. The findings revealed that although the availability of digital tools such as Computer-Aided Design (CAD) software, simulation programs, and related technologies exists in some institutions, their level of utilization remains inadequate. This gap limits the full realization of the potential benefits of digital innovation in technical education.

The study established that emerging digital tools have a significant positive influence on students' practical skill acquisition. Students exposed to these tools demonstrated improved technical understanding, better design accuracy, and enhanced problem-solving abilities. The use of digital technologies also supports experiential learning by enabling students to practice, simulate, and refine their skills in a controlled environment without excessive material waste.

Furthermore, the study found that exposure to digital tools significantly enhances employability

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outcomes among metalwork students. Skills gained through digital platforms improve job readiness, adaptability, and technical competence, which are highly valued in modern industrial settings. This indicates that integrating digital tools into metalwork training can help bridge the gap between classroom learning and workplace demands.

However, the study also identified several challenges affecting effective implementation, including inadequate infrastructure, insufficient funding, limited teacher competence, and inconsistent power supply. These constraints hinder the optimal use of digital tools and reduce their impact on skill development and employability.

In conclusion, emerging digital tools play a crucial role in improving the quality of metalwork education in Lagos State technical colleges. Their effective integration enhances students' practical competencies and prepares them for employment in a technology-driven labour market. Nevertheless, for these benefits to be fully realized, there is a need for improved infrastructure, continuous teacher training, adequate funding, and strong policy support. Addressing these challenges will ensure that technical education remains relevant and responsive to the demands of modern industry.

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