International Journal of Social Science and Education Research Studies

ISSN(print): 2770-2782, ISSN(online): 2770-2790

Volume 03 Issue 11 November 2023

DOI: https://doi.org/10.55677/ijssers/V03I11Y2023-06, Impact Factor: 5.574

Page No : 2213-2220

Entrepreneurial Skills Required by Metalwork Technology Students for Workforce Sustainability in Technical Colleges in Lagos State

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ABSTRACT

The purpose of this study was to determine the entrepreneurial skills required by metalwork technology students for workforce sustainability in technical colleges in Lagos State. Four research questions and three hypotheses guided the study. A descriptive survey research design was adopted to carry out the study. The population for the study was one hundred and four (104) respondents, comprising 19 metalwork technology students from Lagos State Technical College, Agidingbi. 28 metalwork technology students from Lagos State Technical College, Ikeja; 26 metalwork technology students from Lagos State Technical College, Ikorodu; and 31 metalwork technology students from the Federal College of Education (Technical), Akoka, Lagos. four questionnaires titled, The technical skills required by metal work technology students for workforce sustainability in Technical colleges in Lagos state. "; The marketing skills required by metal work technology students for workforce sustainability in technical colleges, The managerial skills required by metalwork technology students for workforce sustainability in technical colleges The problem-solving skills required by metalwork technology students for workforce sustainability in Nigeria's technical colleges were developed by the researchers and used for data collection. Three experts validated the instruments: two experts from the Department of Industrial Technical Education, University of Nigeria, Nsukka, and one expert from the Department of Vocational Education, School of Technical Education, Yaba College of Technology. The reliability coefficient of the instrument was found to be 0.86, 0.81, 0.89, and 0.73. Data collected were analyzed using the mean and standard deviation to answer the research questions, while t-test statistics were used to test the hypotheses at 0.05 level of significance. The study found no significant difference significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the entrepreneurial skills required by metalwork technology students for workforce sustainability in technical colleges.

Published Online: November 15, 2023

KEYWORDS:

Technical Colleges, Entrepreneurial skills, Metalwork Technology, Workforce Sustainability.

INTRODUCTION

In the present century, technical education has been identified as an important pursuit for growth and development. Technical education program was established with the aim of training students to acquire appropriate vocational skills, knowledge, attitudes, habits of thought, and qualities of character that enable them to develop their intellectual, social, physical, emotional, and economic capabilities, become self-reliant, and contribute to the economic growth and development of their nations (Okolie et al., 2019). According to (Okolie, Igwe & Elom, 2019), some of the courses offered in these institutions include fashion, interior decoration, carpentry and joinery, electrical and electronics technology, mechanical/automobile technology, building technology, woodwork technology, computer technology, business administration, culinary arts, cosmetology, and metalwork technology.

Metalwork has played a crucial role in human history, and it has been an essential driving force in the development of human society.It is a craft that is crucial in helping different societies to develop wealth, essential

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****Cite this Article: Ariyo Samson Oluwatimilehin, Umar Yunus, Okunnuga Damilare (2023). Entrepreneurial Skills Required by Metalwork Technology Students for Workforce Sustainability in Technical Colleges in Lagos State. International Journal of Social Science and Education Research Studies, 3(11), 2213-2220***

technologies and useful tools throughout history. According to (Aluwong, 2018)the contribution of metalwork technology to the development of a nation cannot be disputed as this profession is embraced and recognized worldwide. According to (Ahmad & Ahmad, 2017) metalwork technology involves activities that entail designing; products include metal furniture, automobile parts, and home-use metal products. As cited in (Nelson & Okwelle, 2020) In Nigeria, metalwork trade as a vocational training programme offered in Technical Colleges, companies and designated skills acquisition centers. Before students can become business owners in any of the metalworking trades components, they must first acquire the necessary practical and entrepreneurial skills needed.

Entrepreneurial skills involve recognizing economic opportunities and acting effectively on them(Thomas, 2012). Entrepreneurial skills are identifying customer needs, technical or market opportunities, and pursuing opportunities (Hayton, 2015). As a metalwork entrepreneur there is need of having the right skill in other to be employed, self-employed or self-reliant and carry out complex activities. There is need for metalwork entrepreneurs to be able to promote innovation, competitiveness and identify opportunities within the economic system and also have the right skills in order to be employable, self-reliance and productive. Metalwork entrepreneurs often fail due to the fact that they lack the skills needed to succeed and propel their business goals forward. One of the major challenge facing students of metal works trades upon graduation is the lack of competent knowledge and practical skills that will enhance self-reliance (Yakubu, 2014).Therefore, for metalwork technology students in technical colleges to become successful in their trade, entrepreneurial skills are required.Thus, this research sought to study the entrepreneur skills needed by metalwork students which includes marketing skill, management skill, technical skill and problem-solving skills.

Problem-solving skills Problem-solving skills are crucial in various aspects of life, including personal, academic, and professional contexts. As defined by (Kumar and Kaur 2020), problem-solving skills involve identifying, analyzing, and resolving problems in a creative and effective manner. In the workplace, problem-solving skills are highly valued because they enable individuals to overcome challenges, improve processes, and achieve organizational goals. Effective problem solving requires a combination of logical thinking, creativity, and critical thinking skills. According to (Özdemir and Dönmez 2021), individuals with strong problem-solving skills possess the ability to think critically and systematically, evaluate information, and generate and implement solutions to complex problems. Problem-solving skills are particularly important for entrepreneurs, who must navigate a variety of challenges and obstacles as they start and grow their businesses. As noted by (Ojala and Tyrväinen, 2019), entrepreneurs must possess the ability to identify problems, generate creative solutions, and implement those solutions in order to succeed. According to (Kottke and Lechner, 2020), successful entrepreneurs use a variety of problem-solving techniques to address challenges in their businesses. These techniques may include brainstorming, root cause analysis, SWOT analysis, and customer feedback analysis, among others. By utilizing these techniques, entrepreneurs can identify the root cause of a problem and develop effective solutions that address the underlying issues. Therefore, problem-solving skills can help metalwork entrepreneurs differentiate their businesses and gain a competitive advantage by solving complex problems in innovative ways and developing unique products or services that stand out in the market with the right technical skills.

Technical skills are the specialized knowledge and expertise required to carry out complicated actions, tasks, and processes related to computational and physical technology as well as a wide range of other businesses. Technical skills are skills that involve the ability to perform work in a technically competent manner and also monitor it in an independent and critical manner (Mohd Fauzi, 2000). Technical skills are qualities acquired by using and gaining expertise in performing physical or digital tasks. These skills not only involve operating machines and software, production tools, and pieces of equipment, but also the skills needed to boost sales, design different types of products and market the services and products. Metalworkers typically use tools and techniques to produce their products or serve their customers; these skills are more important. In order for metalwork entrepreneurs to properly utilize their resources and accomplish their goals, technical skill must be taken into proper consideration along with the information and marketing skill required.

Marketing is the management process for identifying, anticipating, and satisfying customer requirements. According to (Iwu, 2015) marketing is defined as "management tasks and decisions aimed at successfully meeting opportunities by effectively developing and transferring a need-satisfying market offering to consumers in such a way that the business, consumer, and society objectives are met." Marketing is, however, far more than just advertising or selling. Marketing is about understanding what customers want and supplying it. In other words, marketing, at its simplest, is a business activity that involves being able to sell products or services to customers at a profit. According to (Odinaka, 2017) marketing skills include the ability to capture and retain the attention of customers, the ability to promote and sell the organization's products, the ability to analyze demand and supply situations, the ability to acquire effective sales habits, the ability to be self-reliant and tact, the ability to acquire good sales techniques, the ability to carry out effective marketing and information research, and the

ability to be polite, cheerful, and glooming. For a metalworking business owner to be good at marketing their product or service, they need to understand their customer's wants before they can sell or produce anything. Therefore, a good marketing skill requires the ability to communicate the value of a product or service to customers in order to sell the product or service at a profit. For an entrepreneur to sell and have a profitable marketing business, there is a need for analytical skills and good communication skills. Communication skills are an important aspect of entrepreneurial business skills, and it is the only process that links the entrepreneur and their customers to function effectively and efficiently. For metalworking businesses, entrepreneurs need good communication skills in order to transact, convince, and be able to sell their ideas and services. Therefore, for a successful business, good communication skills between the business owners and customers are highly essential, along with good management skills

Management is the process of working with people and resources to accomplish organizational goals. According to (Lieberman, 2018) management skills can be defined as certain attributes or abilities that an executive should possess in order to fulfill specific tasks in an organization. They include the capacity to perform executive duties in an organization while avoiding crisis situations and promptly solving problems when they occur. Through learning and practical experience as a manager, management skills can be developed. These skills help the manager relate well with their fellow co-workers and know how to deal well with their subordinates, which allows for the easy flow of activities in the organization. Good management skills are vital for any entrepreneur to succeed and achieve their goals and objectives.Entrepreneurs who are able to combine all the specializations in management skills such as marketing, organizational behaviour, human resource management (HRM), accounting, finance, and operations will be able to succeed and propel their business goals forward. Metalwork students lack or have little knowledge of the skills discussed in this study, which has led to their challenges in the labour market over the years and, as supported by (Yakubu, 2014) that one of the challenges that metalwork students face after graduation is a lack of competent knowledge, which affects their self-reliance and productivity. However, because of this challenge, there is a need for metalwork technology to know the entrepreneurial skills required that will enhance their workforce sustainability.

Workforce sustainability is a term used to describe the ability of an organization to maintain and develop its workforce over the long-term. It encompasses a range of practices and policies aimed at promoting employee retention, engagement, and development, as well as ensuring that the workforce is diverse, equitable, and inclusive.Workforce sustainability is crucial for the long-term success of any business, and entrepreneurs have a critical role to play in achieving it. According to (Frese and Gielnik, 2014), entrepreneurs must prioritize the development of their employees and invest in training and education to create a skilled workforce that can adapt to changing market conditions and evolving business needs. (Linan and Fayolle 2015) suggest that entrepreneurship is not just about creating new businesses, but also about creating sustainable jobs and promoting economic growth. However, its required that metalwork entrepreneurs areto provide their employees with the necessary resources and opportunities to keep up with changes in technology and industry trends, and to foster a culture of innovation and continuous improvement. By prioritizing workforce sustainability, metalwork technology students can create a positive impact on their communities and contribute to the overall development of their local economies.

Thus, metalwork technology students have the potential to play a much more significant role in local communities and in low-income countries generally by having the right entrepreneurial skills needed to enhance their workforce sustainability. The metalwork trade comprises a blend of theory and practice that leads to the production of goods through the use of tools and metals for a productive trade as an entrepreneur who can recognize economic opportunities and act effectively on them with the right basic skills as stated in this study, which include; Technical skills, marketing skills, management skills and problem-solving skills. All these skills are important for metalwork technology students to know in other to improve or enhance their workforce sustainability in the industry. It is in the light of this that the study tends to determine the entrepreneurial skills required by metalwork technology students for workforce sustainability.

STATEMENT OF THE PROBLEM

One of the technical education objectives in Nigeria was established to expose individuals to skills in various trades or occupations such as woodwork, electronics, electricity, automobile technology, metalwork etc. To achieve this objective, metalwork students need to acquire relevant entrepreneur skills that will guarantee self-employment upon graduation. However, there have been complaints about the competency and quality of metalwork technology graduates producedin technical college todayand which has affected their workforce sustainability, Graduates of college of education (technology) who are supposed to be employers of labour are now job seekers (Ehimen & Ezeora, 2018). Most graduates of technical colleges acquire little to no skills or lack the necessary entrepreneurial skills for self-employment or self-reliance after graduation to enhance their workforce sustainability. This may be as a result of a lack of quality instruction or awareness received while in school. According to (Oloyede, 2010) the outcry of individuals and groups over the poor quality of technical college graduates

being produced, including those that studied the metalwork trade. This study aims to promote the requisite entrepreneurial skills required by metalwork technology students for workforce sustainability in technical colleges.

PURPOSE OF THE STUDY

The purpose of the study determines the entrepreneurial skills required by metalwork technology students for workforce sustainability in technical colleges in Lagos state. Specifically, the study intends to determine;

1. The technical skills required by metal work technology students for workforce sustainability in technical colleges in Lagos state.
2. The marketing skills required by metal work technology students for workforce sustainability in technical colleges in Lagos state.
3. The management skills required by metal work technology students for workforce sustainability in technical colleges in Lagos state.
4. The problem-solving skills required by metal work technology students for workforce sustainabilityin technical colleges in Lagos state.

RESEARCH QUESTIONS

The following research questions guided the study:

1. What are the technical skills required by metal work technology students for workforce sustainability in technical colleges in Lagos state?
2. What are the marketing skills required by metal work technology student'sworkforce sustainability in technical colleges in Lagos state?
3. What are the managerial skills required by metalwork technology students for workforce sustainability in technical colleges in Lagos state?
4. What are the problem-solving skills required by metalwork technology students for workforce sustainability in technical colleges in Lagos state?

HYPOTHESES

The following null hypotheses will be tested at a 0.05 level of significance.

1. There is no significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the technical skills required by metalwork technology students for workforce sustainability in technical colleges.
2. There is no significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the marketing skills required for workforce sustainability in technical colleges in Lagoa state.
3. There is no significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the managerial skills required by metalwork technology students for workforce sustainability in technical colleges in Lagos state.
4. There is no significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the problem-solving skills required by metalwork technology students for workforce sustainability in technical colleges in Lagos state.

SCOPE OF THE STUDY

The study will cover the entrepreneurial skills required by metalwork technology students for workforce sustainability in Lagos state. The study is delimited to technical collegemetalwork technology students. The entrepreneurship skills covered in this study include: technical skills, financial skills, marketing skills, communication skills,managerial skills and problem-solving skills required by metalwork technology students.

METHODOLOGY

The study adopted a survey research design. The area of the study was Lagos State and it was conducted in four public technical colleges. The population for the study is 104. This consist of metalwork technology students from four technical colleges which include; 19 metalwork technology students from Lagos State Technical College, Agidingbi. 28 metalwork technology students from Lagos State Technical College, Ikeja. 26 metalwork technology students from Lagos State Technical College, Ikorodu. And 31 metalwork technology students fromFederal College of Education (Technical), Akoka, Lagos. Since the numbers of students and lecturers were not too large, the entire population was used because it was manageable for the study. Four structured questionnaires were developed by the researchers and used for data collection in this study: The technical skills required by metal work technology students for competence improvement and sustainability in Nigeria's tertiary. The marketing skills required by metal work technology students for competence improvement and sustainability in Nigeria's tertiary. The managerial skills required by metalwork technology students for competence improvement and sustainability in Technical colleges in Lagos state. **.**The problem-solvig skills required by metalwork technology students for competence improvement and sustainability in Technical colleges in Lagos state. .This instrument had a reliability co-efficient level of 0.86. 0.81, 0.89 and 0.73. The entrepreneurial skills required by students and lecturers in the questionnaire was also divided into two sections, Section A and Section B. Section A contains items that seek demographic information from the students and lecturers. Section B consists of 3 clusters; cluster A has 25 items, cluster B has 16 items, cluster C has 20 items, and cluster D has 10 items. The items were based on a four-point rating scale of

Highly Required (HR), Required (R), Moderately Required (MR), and Not Required (NR) with values of 4, 3, 2, and 1 respectively. This instrument had a reliability value of 0.86 and 0.73. The instruments were validated by three experts. Two experts from the Department of Industrial Technical Education, University of Nigeria, Nsukka, and one expert from the Department of Vocational Education, School of Technical Education, Yaba College of Technology, the expert made some inputs that were integrated to improve the final copy of the instrument.

The reliability of the study was determined using the Cronbach Alpha method. The instruments were trial tested on technical college lecturers and students in Ebonyi State. The data was collected by administering the questionnaire directly to the respondents by the researcher and two research assistants. Data collected was analysed carried out using SPSS statistical package. Mean and Standard deviation was used to answer the research questions, while a t-test was used to test the hypothesis at a 0.05 level of significance.

Any item with a mean value of 2.50 – 5.00 was considered required, while any item with a mean value of 0.00- 2.49 was considered not required. For the test of significance, the probability (p) value was used in comparison with the alpha value of.05 and at other relevant levels. If any item has a probability value greater than.05 (P > 0.05), it will be concluded that there is no significant difference in the mean responses of the respondents.

RESULTS

Table 1. Mean responses of technical skills required by metal work technology students

Items	Item statement	Mean	Remark	Sig.	Remark
1.	Handle tools materials correctly	3.01	Required	0.23	No sig
2.	Read and interpret drawings / blue print accurately	2.88	Required	0.74	No sig
3.	Use of hydraulic press.	3.05	Required	0.47	No sig
4.	Quality checks & quality control procedures	3.02	Required	0.73	No sig
5.	Classify metals correctly	3.07	Required	0.90	No sig
6.	Identify different uses of metals	3.61	Required	0.70	No sig
7.	Identify metalwork safety practices	2.99	Required	0.82	No sig
8.	Inspect and diagnose leakages in gas welding equipment using computers	3.67	Required	0.73	No sig
9.	Store hazardous substances and awareness of safety	2.29	Required	0.53	No sig
10.	Operate computer numerical control (CNC)	3.11	Required	0.60	No sig
11.	Maintain correct welding position	3.56	Required	0.27	No sig
12.	Able to set up machine tools and dismantle them after the job is complete	2.93	Required	0.07	No sig
13.	Have basic knowledge of machining process such as turning , boring etc	3.27	Required	0.08	No sig
14.	Identify and utilize sheet metals tools	3.74	Required	0.58	No sig
15.	Know how to cast into any shape	3.01	Required	0.34	No sig

Table1 shows that the mean scores range from 2.88 to 3.74. All items are above the mean rating of 2.50. This means that all the items are technical skills required by metal work technology studentsfor workforce sustainability. The result also shows that there is no significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the technical skills required for workforce sustainability. This is because they all have significant value above 0.05 level of significant (P>0.05). Therefore the null hypotheses of no significant different is accepted for. management skills is very important for workforce sustainability. Also the findings based on research question four revealed that allthe 10 items are problem-solving skills required by metal work technology students for workforce sustainability, this is in accordance with Ojala and

Table 2. Mean responses ofmarketing skills required by metal work technology students

Items	Item statement	Mean	Remark	Sig.	Remark
1.	Identify channels of goods distribution	2.66	Required	0.11	No sig
2.	Have knowledge of buying situations	3.63	Required	0.13	No sig
3.	Organize sales promotion to motivate customers	3.07	Required	0.63	No sig
4.	Device strategies for profit making	3.21	Required	0.97	No sig
5.	Capture and retain the attention of customers	3.04	Required	0.49	No sig

6.	Keep proper records of all transactions	3.13	Required	0.78	No sig
7.	Use social media platforms for marketing	2.82	Required	0.35	No sig
8.	Define the right product and services for meeting customer's needs	2.56	Required	0.06	No sig
9.	Determine availability of goods/raw materials for production	2.66	Required	0.48	No sig
10.	Source for market information about current prices	3.63	Required	0.23	No sig
11.	Identify the target market for sales of product	3.78	Required	0.29	No sig
12.	Advertise products/services to customers	2.78	Required	0.07	No sig
13.	Determine and interpret factors/strength of competition	3.72	Required	0.06	No sig
14.	Advertise products for sale through appropriate media	3.52	Required	0.06	No sig
15.	Understand what customer wants	3.57	Required	0.56	No sig

Table2 shows that the mean scores range from 2.56 to 3.78. All items are above the mean rating of 2.50. This means that all the items are marketing skills required by metal work technology studentsfor workforce sustainability. The result also shows that there is no significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the marketingskills required for workforce sustainability. This is because they all have significant value above 0.05 level of significant (P>0.05). Therefore the null hypotheses of no significant different is accepted for.

Table 3. Mean responses of management skills required by metal work technology students

Items	Item statement	Mean	Remark	Sig.	Remark
1.	Meet job schedules	2.79	Required	0.71	No sig
2.	Have good human relationship	2.56	Required	0.68	No sig
3.	Conduct effective meetings	3.92	Required	0.10	No sig
4.	Demonstrate a strong work ethic	2.86	Required	0.99	No sig
5.	Display a sense of honesty and integrity	3.00	Required	0.56	No sig
6.	Develop organization policies	3.38	Required	0.06	No sig
7.	Manage time	3.33	Required	0.32	No sig
8.	Set attainable goals for the organization	3.08	Required	0.07	No sig
9.	Direct the affairs of the establishment	3.18	Required	0.08	No sig
10.	Know how to be in command	3.66	Required	0.10	No sig
11.	Appraise employees performance	2.99	Required	0.11	No sig
12.	Supervise effectively	2.66	Required	0.12	No sig
13.	Carry out Inventory control	3.63	Required	0.07	No sig
14.	Evaluate all activities/operations in the process of goal attainment	3.07	Required	0.21	No sig
15.	Produce demanded items before collection	3.21	Required	0.62	No sig

Table 3 shows that the mean scores range from 2.56 to 3.92. All items are above the mean rating of 2.50. This means that all the items are management skills required by metal work technology students for workforce sustainability. The result also shows that there is no significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the management skills required for workforce sustainability. This is because they all have significant value above 0.05 level of significant (P>0.05). Therefore the null hypotheses of no significant different is accepted for.

Table 4. Mean responses of problem-solving skills required by metal work technology students

Items	Item statement	Mean	Remark	Sig.	Remark
1.	Understand the technical aspect of metalwork and manufacturing processs.	3.08	Required	0.58	No sig
2.	To analyze complex information and data to identify problem, patterns, and trends.	2.73	Required	0.31	No sig

3.	To create innovative designs for metalwork product and solution that meet the needs of customers.	2.58	Required	0.82	No sig
4.	To ensure that all metalwork product meet the required quality standard.	3.54	Required	0.51	No sig
5.	To manage the supply chain effectively, including sourcing raw material, managing inventory	3.13	Required	0.48	No sig
6.	To adjust to changing situation and environments and find solutions to new problem.	2.85	Required	0.82	No sig
7.	To calculate risk in pursuit of business goal	3.10	Required	0.50	No sig
8.	To understand the needs and preference of customers and to design metalwork product.	3.04	Required	0.80	No sig
9.	To understand and use technology to solve problems and improve business operation	3.09	Required	0.86	No sig
10.	The ability to generate new ideas and concept for metalwork product and solution that meet the evolving needs of customers	3.67	Required	0.52	No sig

Table 4 shows that the mean scores range from 2.58 to 3.67. All items are above the mean rating of 2.50. This means that all the items are problem-solving skills required by metal work technology studentsfor workforce sustainability. The result also shows that there is no significant difference in the mean response of metalwork technology students and metalwork technology lecturer on the problem-solvingskills required for workforce sustainability. This is because they all have significant value above 0.05 level of significant (P>0.05). Therefore the null hypotheses of no significant different is accepted for.

DISCUSSION

The findings of this study based on research question one revealed that all the 15itemsare technical skills required by metal work technology studentsfor workforce sustainability. This finding is in line with Mohd Fauzi, (2000) who revealed that students require necessary and important technical skills for them to be able to perform in their place of work.

The findings of this study based on research question two revealed that all the 15 items are marketing skills required by metal work technology students for workforce sustainability. These findings confirm the necessity of improving the marketing skills of metalwork students who require it for workforce sustainability, according to Odinaka, (2017). They traced the inability of metalworkstudents to perform as an entrepreneur to lack of adequate marketing skills needed to become a successful entrepreneur. This assertion is collaborated by Iwu, 2(015) who observed that marketing skills are entrepreneurial skills needed for sustainability.

The findings of this study based on research question three revealed that all the 15 items are management skills required by metal work technology students for workforce sustainability. The findings were in agreement with Yakubu, (2014). It was observed that application of Tyrväinen, (2019), who observed that entrepreneurs must possess the ability to identify problems, generate creative solutions, and implement those solutions in order to succeed.

CONCLUSION

It was discovered that most metalwork technology students have little to no skills or lack the necessary entrepreneurial skills that would enhance their workforce sustainability. Hence, the entrepreneurial skills needed for metalwork technology students' workforce sustainability are impeded.

Also, based on the analyzed data and findings, The Entrepreneurial skills in this study showed no significant difference between metalwork technology students and metalwork technology lecturer. The entrepreneurial skills are necessary, including technical skills, marketing skills, managerial skills, and problem-solving skills, all of which are essential for the workforce sustainability of metalwork technology students.

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