Technopreneurial Readiness Skills of Welding and Fabrication Technology Students in Technical Colleges in Akwa Ibom State, Nigeria

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Abstract
This research paper investigates the technopreneurial readiness skills among students specializing in Welding and Fabrication Technology in Technical Colleges in Akwa Ibom State, Nigeria. The study, adopting a descriptive survey research design, examines the extent to which students possess critical technopreneurial skills, including arc welding, cutting, management, and critical thinking skills. To guide the study, four research questions and corresponding null hypotheses were formulated based on the specific objectives. A sample of 86 Senior Technical Two (ST2) students from 9 Technical Colleges in the state participated in the study, and purposive sampling was employed to select the sample. The instrument's reliability coefficient, determined through the Cronbach Alpha Formula, yielded a value of 0.86. Research questions were analyzed using mean and standard deviation, while one-sample t-test was utilized to test the null hypotheses at a significance level of .05. The findings indicated that students demonstrated significant proficiency in arc welding and cutting skills, contributing significantly to their readiness for Technopreneurial endeavors. However, the study revealed a deficiency in management and critical thinking skills, posing challenges to Technopreneurial readiness. Consequently, the study concludes that students lack technopreneurship skills necessary to enhance their readiness for entrepreneurship. The study emphasized the need for collaborative efforts between educational institutions, local industries, and craftsmen to enrich students' skill sets. The researcher recommended that practical exercises in cutting and measuring, student-centered learning approaches, project-based instruction should be adopted to foster managerial and leadership skills.

keywords: *Technopreneurial readiness, Fabrication, arc welding skills, cutting skills, management skills and critical thinking skills*

INTRODUCTION

In the contemporary landscape of education and employment, the intersection of technical skills and entrepreneurial acumen plays a pivotal role in shaping the success of students entering the workforce. As global markets evolve, the demand for individuals equipped with both technical proficiency and entrepreneurial mindset becomes increasingly evident, prompting the need for educational institutions to align their curricula with the dynamics of the modern

economy. Promoting technological literacy among citizens is considered crucial for achieving self-reliance and sustainability. According to Aribaba et al. (2019), entrepreneurship is an individual's willingness and capability to identify investment opportunities within a given environment and effectively establish and manage a business based on those opportunities. When entrepreneurship intersects with technology, capital, and a supportive environment, it evolves into a more advanced form known as technopreneurship (Oke & Ahmodu, 2022). Oh and Philips (2014) stated that technopreneurship is a skillful business in technology, requiring the capacity to innovate, embrace risk, explore uncharted territories, exhibit enthusiasm, curiosity, fearlessness of failure, and integrate technology as a fundamental component of goods and services. Nwaukwa (2018) stated the diverse set of skills associated with pursuing an entrepreneurial career, including managerial, leadership, teamwork, communication, listening, financial, analytical, problem-solving, critical thinking, technical, time management, and organizational skills, among others. Integral to the success of any entrepreneurial venture, including welding and fabrication businesses, are management skills. Ozigbo (2008) defines management as the process of efficiently allocating an entity's resources, both human and economic, to produce desired outputs, ensuring the achievement of the organization's objectives.

Similarly, a lack of managerial skills among self-employed welding and fabrication craftsmen can result in stagnation or even the closure of an enterprise, potentially compelling craftsmen to explore alternative means of livelihood, such as motorcycle taxi services. Successful entrepreneurs primarily rely on their business acumen to effectively manage and run their enterprises. These competencies include the ability to multitask, delegate tasks to subordinates, and make critical judgments concerning the well-being and financial success of the company (Nwaukwa, 2018). Baba (2013) and Ojeifo (2013) asserts that three distinct skill sets are necessary for successful management: intellectual, technical, and human or interpersonal management skills. These skills play a crucial role in effective decision-making, problem-solving, and relationship-building within an organization. Technical colleges, designed as workshop-based institutions, play a crucial role in fostering the development of practical skills, abilities, and understanding, along with imparting knowledge with real-world applicability. Technical and Vocational Education according to FGN (2013) is a form of education involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. This presupposes that technical and vocational education can respond to the different socio-economic and academic backgrounds and prepare the clientele for gainful employment and sustainable livelihoods.

Technical Colleges in Nigeria are established to produce craftsmen at the craft (secondary) level and master craftsmen at the advance craft (post-secondary) level (FRN, 2013). The curriculum programmes of technical colleges according to Federal Government of Nigeria (FRN, 2013) are grouped into related trades. These includes, the computer trades, electrical/electronics trades, building trades, wood trades, hospitality trade, textile trades, printing trades, beauty culture trades, business trades and mechanical trades. Mechanical trades is a general name used in describing trades that has direct bearing with metal welding/forming and or servicing/repairs of machines or machine related equipment and appliances. The trades in this group include agricultural implement and equipment mechanics work, auto body repair and spray painting, auto electrical work, auto body mechanics works, auto mechanics works, auto

body building, auto parts merchandising, air-conditioning and refrigeration mechanics works, mechanical engineering craft practice, foundry craft practice, instruments mechanics work, marine engineering craft and welding and fabrication engineering craft practice (Ogbuanya, & Fakorede 2009).

Welding and fabrication craft practice deals with the forming and bonding of metals to form a useable object or structure. Fabrication is the forming of metal, usually steel plate, into various forms either by welding or other forms of metal joining processes. Welding is used to cover a range of bonding techniques. Welding is a way of joining two or more pieces of metal together permanently. Repp and McCarthy (1984) described welding as an action that occurs when metal pieces being joined flows and blends or fuses together. This scenario highlights the existence of employment opportunities for students possessing professional and technopreneurial skills in Welding and Fabrication technology. Fabrication and Welding technology, as a subset of metalwork, represents a trade option in Technical Colleges aimed at producing skilled artisans well-versed in equipment, materials, and techniques application. The training provided at Technical Colleges significantly equips students with expertise in Fabrication and welding works. Welding and fabrication lies in acquiring the necessary skills for self-reliance and employment in the professional system.

Fabrication, according to Akpan (2010), is the art of construction, building, forming or assembling of an object or an article while welding is the process of joining pieces of metals together by the use of heat produced at the tip of electrode if electric welding is used or by heat produced by gas flame if gas welding or oxy-acetylene is used to melt the edges or parts of metals together (Akpan, 2010). When students specializing in Fabrication and Welding possess these practical skills, they are well-prepared to establish their own technopreneurial ventures, paving the way for sustainable livelihoods. Upon completion of their course of study, welding and fabrication students should demonstrate proficiency in selecting and utilizing various workshop tools such as work holding tools, measuring tools, marking out tools, cutting tools, and striking tools. Additionally, students should possess knowledge about different types of electrodes applicable to specific arc welding tasks. They should understand the fundamental principles of portable hand machines, such as drilling machines and filing machines, and be capable of using them for various operations like boring holes, reaming, counter sinking, counter boring, cutting, filing, chamfering, screw threading, riveting, and accurately grinding drill point angles. Moreover, students should be adept at selecting and using hand tools for benchwork and assembly tasks, producing threads using taps and dies, understanding tolerance and fits, and applying these concepts in engineering production.

Cutting involves shaping materials by removing certain parts using various tools. Air carbon arc cutting, formerly known as air arc cutting, is a form of arc cutting where metal is cut and melted using the heat of a carbon arc, and the molten metal is then expelled using a blast of air. Consumable carbon or graphite electrodes are used to melt the material, which is then removed through an air jet. This technique is commonly employed for cutting and gouging a variety of materials, including aluminum, copper, iron, magnesium, carbon, and stainless steels. Notably, oxidation is not necessary as the air jet facilitates the removal of the metal. In the same vein, critical thinking is the capacity to engage in an organized and logical thought process to comprehend connections between ideas and facts, aiding in the discernment of what to believe. The key skills associated with critical thinking include analysis, interpretation, inference,

explanation, self-regulation, open-mindedness, and problem-solving. These skills form the foundation for self-improvement and personal development. Critical thinking involves the objective analysis of information and the formation of sound judgments, requiring the evaluation of various sources, including data, observable phenomena, and research findings.

Effective critical thinkers possess the ability to draw reasonable conclusions from information sets, distinguishing between pertinent and less relevant details to resolve issues or make decisions. The importance of teaching critical thinking skills to children, as these skills contribute to making sound decisions, understanding the consequences of actions, and problem-solving. Critical thinking is integral to entrepreneurial endeavors, enabling entrepreneurs to delve into and unravel the layers of business issues to identify core challenges. By focusing on the heart of the problem and responding receptively to potential solutions, entrepreneurs foster effective problem-solving strategies. The importance of critical thinking and analytical skills in developing overall entrepreneurial capabilities. Cultivating this skill set is essential for nurturing entrepreneurial abilities and facilitating skills required in Welding and Fabrication Technology.

According to Hart (2014), the flow of electric current between two electrodes through an ionized gas column is termed an arc in the context of welding. Generating substantial heat for the welding arc is facilitated by a positively charged anode and a negatively charged cathode. In certain situations, the energy required to transfer molten metal from the electrode tip to the workpiece is supplied by the plasma column formed through the interaction of positive and negative ions. This plasma column melts both the electrode and the base metal, and the transfer of molten metal from the electrode to the molten pool is a component of various welding processes, such as surface tension transfer and spray arc. According to Althouse et al. (2015), starting the arc by briefly drawing a longer arc to pre-heat the base metal before filler material deposition ensures thorough fusion at the welding process's beginning. The ability to lay multiple high-quality arc beads is a prerequisite for progressing to make various types of welds, as emphasized by Althouse et al. (2015).

Akwa Ibom State, like many regions globally, faces the challenge of high unemployment rates among school leavers, necessitating a paradigm shift in educational approaches. Technical Colleges, traditionally focused on imparting vocational and technical skills, are now urged to incorporate entrepreneurial competencies to prepare students for the complexities of the evolving job market. Welding and Fabrication Technology, being integral to various industries, serves as a pertinent context to explore the readiness of students for technopreneurship. This paper aimed to evaluate the Technopreneurial Readiness Skills possessed by Welding and Fabrication Technology students, with a specific emphasis on arc welding, cutting, management, and critical thinking skills. By evaluating the current state of students' preparedness, the study seeks to identify gaps and propose targeted interventions that bridge the divide between technical education and the demands of the entrepreneurial landscape.

Statement of the Problem

The transition from academic institutions to the workforce is a critical juncture in the lives of students, particularly those specializing in Welding and Fabrication Technology in Technical Colleges. While Technical Colleges traditionally focus on imparting technical skills, the evolving economic landscape demands a more holistic approach that integrates entrepreneurial competencies. The issue of unemployment among school leavers and recent

graduates in Nigeria, particularly in Akwa Ibom State, has reached alarming levels. This persistent challenge has resulted in the emergence of various social problems among the youth population, including drug abuse, cultism, kidnapping, street children's issues, and militancy in the Niger Delta, among others. These issues, not confined to a specific region, are perceived as manifestations of disillusionment arising from the unprecedented surge in unemployment rates, prompting a significant migration of citizens in search of better opportunities in developed countries. The persistent challenge of high youth unemployment rates underscores the need for a thorough examination of the technopreneurial readiness skills possessed by students in this specialized field.

The primary problem addressed by this study is the potential misalignment between the skills acquired by Welding and Fabrication Technology students and the dynamic requirements of the modern job market. Despite possessing technical expertise in areas such as arc welding and cutting, students may lack the complementary skills in management and critical thinking crucial for success in entrepreneurial ventures. There is a need to explore the specific areas in technopreneurial readiness, such as management and critical thinking skills, where students may exhibit gaps. The absence or inadequacy of technopreneurial skills among graduates specializing in fabrication and welding from Technical Colleges is a clear indication of their reluctance to engage in technopreneurial activities post-graduation. Identifying these gaps is paramount for devising targeted interventions that enhance students' preparedness and contribute to the development of a skilled and entrepreneurial workforce. Furthermore, the development of technopreneurial skills in the area of fabrication and welding in Technical Colleges, if adequately nurtured, can serve as a crucial tool in combating the aforementioned societal problems. This study seeks to address these challenges by investigating the Technopreneurial Readiness Skills of Welding and Fabrication Technology students in Technical Colleges in Akwa Ibom State. By doing so, it aims to provide actionable insights for educational policymakers, curriculum developers, and institutions to better align technical education with the demands of a rapidly evolving job market.

Purpose of the Study

1. The extent to which arc welding skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness.
2. The extent to which cutting skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness.
3. The extent to which management skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness.
4. The extent to which critical thinking skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness.

Research Questions

The study is designed to provide answers to the following research questions:

1. To what extent do arc welding skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness?
2. To what extent do cutting skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness?
3. To what extent do management skills possessed by fabrication and welding students in

Technical Colleges equip them for technopreneurial readiness?

4. To what extent do critical thinking skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness?

Research Hypotheses

The following Null hypotheses were formulated and tested at P < .05 level significance.

$H0_1$. Arc Welding Skills possessed by fabrication and welding students in Technical Colleges do not significantly equip them for technopreneurial readiness.

$H0_2$. Cutting skills possessed by fabrication and welding students in Technical Colleges do not significantly equip them for technopreneurial readiness.

$H0_3$. Management skills possessed by fabrication and welding students in Technical Colleges do not significantly equip them for technopreneurial readiness.

$H0_4$ Critical thinking skills possessed by fabrication and welding students in Technical Colleges do not significantly equip them for technopreneurial readiness.

RESEARCH METHOD

Design of the Study

The research employed a descriptive survey research design. According to Udosen and Adie (2019), a survey design is utilized to collect data systematically and describe the characteristics, features, or facts about a given population. Johnny et al. (2020) further described it as a design focused on studying the characteristics of people, encompassing vital facts about individuals, including their beliefs, opinions, attitudes, motivations, and behaviors. This design was deemed appropriate as it aimed to evaluate the extent to which technopreneurial skills possessed by fabrication and welding students in technical colleges equipped them with competencies for technopreneurial readiness in Akwa Ibom State.

Area of the Study

Akwa Ibom State is home to nine operational Technical Colleges, namely: Government Technical College, Ewet, Uyo; Government Technical College, Abak; Community Technical College, Ikot Akata-Mkpat Enin; Union Technical College, Ikpa-Esit Eket; Mainland Technical College, Oron; Government Technical College, Ikot Uko-Ika; Government Technical College, Mbioto II, Etinan; and Community Technical College, Ikot Udoe, Ikot Ekpene. The rationale for selecting this study area is grounded in the abundance of technical colleges within Akwa Ibom State, each with students eager to pursue education in welding and fabrication work.

Population of the Study

The study population consisted of all the respondents in the study area. The population can be defined as the complete group of individuals in a specific geographical area whose characteristics are being estimated. In this study, the population consisted of all 86 Senior Technical Two (ST2) students enrolled in welding and fabrication across the nine (9) Technical Colleges in Akwa Ibom State. The data, sourced from the records available at the State Technical School Board in Uyo, provided information on the distribution of ST2 population across all Technical Colleges in Akwa Ibom State during the 2022 school year.

Sample and Sampling Technique

A sample refers to a section or subset of the study population that is chosen for research purposes through a sampling process. Sampling technique is a highly effective method for determining the necessary amount of data and understanding how data is collected within a population to fulfill the study objectives. In this study, a purposive sampling technique was employed to select all 86 welding and fabrication students from the nine (9) technical colleges in Akwa Ibom State. Given that the population was small and manageable, the entire population was utilized as the sample for the study. The rationale for opting for purposive sampling was grounded in selecting respondents based on their knowledge and experience to provide relevant information required for the study.

Instrumentation

The questionnaire stands out as the most prevalent instrument or technique employed for collecting descriptive data from a sample group in survey research, as respondents possess the advantage of directly providing data and information from the source. The questionnaire utilized in this study primarily comprised close-ended questions to ensure comprehensive capture of quantitative data. A survey questionnaire is a principal method for collecting primary data, featuring a series of questions with multiple response options to gather information from participants. The researcher developed an instrument titled "Technopreneurial Skills Readiness of Welding and Fabrication Technology Students in Technical College Questionnaire (TSRWFTSQ)" to gather data for the study. The instrument was structured into two sections, A and B. Section A encompassed demographic variables such as Age, Class, Gender, and Specialty, while Section B was subdivided into four sub-areas, aiming to extract information on the Technopreneurial skills readiness of students with a total of 26 items. These areas covered Arc welding skills, Cutting Skills, management skills, and critical thinking skills. The instrument implemented a five-point scale, including Very Great Extent (VGE), Great Extent (GE), Moderate Extent (ME), Little Extent (LE), and Very Little Extent (VLE), with corresponding scores of five points, four points, three points, two points, and one point, respectively.

Validation of the Instrument

The instrument TSRWFTSQ employed in the study was faced validated by three experts, ensuring that it effectively measured what it intended to measure. Face validity was carried out using pilot test, and construct validity was established using principal component (factor) analysis. The panel of experts included one member from the Faculty of Educational Foundations and two from the Department of Industrial Technology Education within the Faculty of Vocational Education, Library, and Information Science. The feedback, comments, and corrections provided by these experts were carefully integrated into the final version of the instrument before its administration.

Reliability of the Instrument

To assess the reliability of the instrument, the data collected from TSRWFTSQ was subjected to Cronbach Alpha reliability analysis. The resulting reliability coefficient was 0.82, indicating the instrument's suitability for the research. The reliability assessment was conducted using Cronbach's alpha (α) test in the IBM Statistical Package for Social Science (SPSS) Version 26. Cronbach's alpha is a widely used method for evaluating the consistency and

accuracy of scales. This involves examining the inter-correlation of each item in the questionnaire with every other item, and the average inter-correlation of all paired relationships is computed. The Cronbach's alpha coefficient, a value between 0 and 1, serves as an indicator of the internal consistency of the scale. Cronbach's alpha coefficient of 0.7 or above is desirable to demonstrate the reliability of the scale. However, values as low as 0.6 are considered acceptable for newly developed scales.

Method of Data Collection

By the approval of the principals, the researcher engaged welding and fabrication technology teacher to help in the administration of the instruments to the students. The teachers were briefed on the administration procedures and collection. 86 copies of questionnaires were distributed to the respondents and same numbers were retrieved from respondents after completion.

Method of Data Analysis

Simple percentage was used to answer Research question while a one-way t-test statistics was used to test hypotheses at 0.05 level of significance. Decision was made on the condition that: if the calculated t-value is greater than the critical t-value, the null hypothesis is rejected or otherwise upheld at 0.05 level of significance.

Results and Discussion

Research Hypothesis 1

Ho 1. Arc Welding Skills possessed by fabrication and welding students in Technical Colleges do not significantly equip them for technopreneurial readiness.

Table 1: *Summary of one sampled t-test on extent to which Arc Welding Skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness*

S/N	Arc Welding Skills	$\bar{X}$	SD	t-cal	p-value	Dec.
1.	Welding different type of welding joints in readiness for the world of work.	3.54	0.50	88.52	.001	Sig
2.	Welding symbol to fabricate any job designed for me to perform after graduation.	3.38	0.74	57.39	.001	*
3.	Selecting appropriate welding electrode for a particular job that I am exposed to do.	3.34	0.89	47.08	.001	*
4.	regulating a voltage to suit a particular job as trained personnel.	3.61	0.79	57.30	.001	*
5.	carrying out welding process independently to improve my skills.	3.43	0.86	50.14	.001	*
6.	welding without slag inclusion to show my skills.	3.48	0.59	73.27	.001	*
	Total Weighted Mean	3.46	0.73	62.28	.001	Sig

*Sig-Significant at P<.05.001

Table 4.13 gives the summary of the one sample t-test. The result shows all the items have probability values less than the alpha level of 05. Since the p-values is less than .05 (P<.05.001), the result is statistically significant. Hence, the extent of influence of Arc Welding Skills possessed by fabrication and welding students in Technical Colleges to equip them with competencies for technopreneurial readiness is significant.

Research Hypothesis 2

Ho2 Cutting skills possessed by fabrication and welding students in Technical Colleges do not significantly equip them for technopreneurial readiness.

Table 2: *Summary of one sampled t-test on extent to which cutting skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness*

S/N	Cutting Skills	$\bar{X}$	SD	t-cal	p-value	Dec.
1.	cutting galvanize plate perfectly with chisel to exhibit my skills.	3.94	0.24	201.32	.001	Sig
2.	knowing how to cut brittle metal without tearing to show proficiency	3.73	0.44	105.31	.001	*
3.	cutting outside the line giving room for finishing to exhibit technicality in my job.	3.76	0.43	110.78	.001	*
4.	Holding work firmly before any cutting is done with hacksaw to avoid accident.	3.64	0.48	95.00	.001	*
5.	knowing the skill of filing with differing types of files to demonstrate my technical prowess	3.57	0.76	58.66	.001	*
6.	holding work firmly with vice in order to work freely and demonstrate technicality	3.82	0.38	124.69	.001	*
	Cumulative Mean	**3.74**	**0.46**	**115.96**	**.001**	Sig

*Sig - Significant at P<.05.001

Table 4.16 gives the summary of the one sample t-test. The result shows all the items have probability values less than the alpha level of 05. Since the p-values is less than .05 (P<.05.001), the result is statistically significant. Hence, the extent of influence of cutting skills possessed by fabrication and welding students in Technical Colleges to equip them with competencies for technopreneurial readiness is significant.

Research Hypothesis 3

H0$_3$. Management skills possessed by fabrication and welding students in Technical Colleges do not significantly equip them for technopreneurial readiness.

Table 3: *Summary of one sampled t-test on extent to which management skills possessed by*

fabrication and welding students in Technical Colleges equip them for technopreneurial readiness

S/N	Management Skills	$\bar{X}$	SD	t-cal	p-value	Dec.
1.	resolving conflict in orders to maintain customer's relationship	2.04	1.40	18.30	0.113	NS
2.	accepting criticism in order to improve on the business	2.11	1.45	18.19	0.111	**
3.	managing time to attend to other oversight functions in the business	2.04	1.39	18.45	0.066	**
4.	developing high level of safety attitude to avoid unpleasant occurrence.	1.92	1.39	17.33	0.103	**
5.	creating a very good public relationship with others to gain more customers	2.11	1.45	18.19	0.103	**
6.	exhibiting independent initiative in the job to gain more experience.	1.86	1.36	17.12	0.103	**
7.	evaluating the opinion of others to make the right decision.	2.09	1.43	18.26	0.111	**
8.	managing resources prudently for the growth of the business.	1.90	1.34	17.76	0.103	**
9.	keeping proper record of business transaction for reference purposes of its progress.	2.04	1.40	18.30	0.103	**
	Cumulative Mean	2.01	1.40	17.99	.102	NS

*N.S - Not Significant at P<.05.$_{102}$

Table 4.21 gives the summary of the one sample t-test. The result shows all the items have probability values greater than the alpha level of 05. Since the p-values is greater than .05 (P<.05.$_{102}$), the result is statistically not significant. Hence, the extent of influence of managment skills possessed by fabrication and welding students in Technical Colleges to equip them with competencies for technopreneurial readiness is not significant.

Research Hypothesis 4

H0$_4$. Critical thinking skills possessed by fabrication and welding students in Technical Colleges do not significantly equip them for technopreneurial readiness.

Table 4: *Summary of one sampled t-test on Extent to which critical thinking Skills possessed by fabrication and welding students in Technical Colleges equip them for technopreneurial readiness*

S/N	Critical Thinking Skills	$\bar{X}$	SD	t-cal	p-value	Dec.
1.	satisfying my customers by giving them the best to have confidence in me.	2.73	1.48	23.17	0.111	NS

2.	identifying lucrative areas for investment in case of expansion opportunity in the business.	2.73	1.48	23.17	0.111	**
3.	brain storming with others to gain more knowledge in the business.	2.75	1.48	23.31	0.101	**
4.	exhibiting creativity in finding solution to people's problem in my area of business.	2.66	1.50	22.18	0.093	**
5.	confident in my ability to work for customer's satisfaction.	2.72	1.49	22.89	0.091	**
6.	establishing a think tank group for problem solving in case of any challenge in the business.	2.64	1.50	22.11	0.101	**
	Cumulative Mean	2.71	1.49	22.80	.101	N.S

**N.S- Not Significant at P<.05.102

Table 4.23 gives the summary of the one sample t-test. The result shows all the items have probability values greater than the alpha level of 05. Since the p-values is greater than .05 (P<.05.001), the result is statistically not significant. Hence, the extent of influence of critical thinking skills possessed by fabrication and welding students in Technical Colleges to equip them with competencies for technopreneurial readiness is not significant.

Discussion of Findings

The results in Table 1 indicate that all the items have mean responses above 3.0, which is the weighted mean. Additionally, the cumulative mean is 3.46. This suggests that students possess arc welding skills in fabrication and welding to a significant extent, sufficiently equipping them with competencies for technopreneurial readiness. The associated hypothesis reveals that the influence of Arc Welding Skills held by fabrication and welding students in Technical Colleges, in preparing them with competencies for technopreneurial readiness, is statistically significant. Arc welding skills are considered crucial in the field of welding and fabrication, being highly demanded for entrepreneurial ventures. This finding aligns with Akpan (2016) research, which assessed the fabrication and welding trade skills needed by technical college students in Akwa Ibom State. The study found that technical college students require arc welding and soldering skills to a significant extent. Furthermore, Idibia et al. (2022) investigated welding and fabrication craft practice, focusing on innovative skills for technical college graduates' self-employment in the 21st century. The findings highlighted the relevance of both gas and arc welding skills for the self-employability of mechanical engineering trades graduates in the post-COVID-19 economy in Rivers State.

The results in Table 2 indicate that all the items have mean responses above 3.0, which is the weighted mean. Additionally, the cumulative mean is 3.74, signifying a great extent. This suggests that students possess cutting skills in fabrication and welding to a significant degree, adequately equipping them with competencies for technopreneurial readiness. The results of hypothesis testing reveal that the influence of cutting skills held by fabrication and welding students in Technical Colleges, in preparing them with competencies for technopreneurial readiness, is statistically significant. This finding is in line with Akpan (2016) study, which assessed the need for measuring and cutting skills in the fabrication and welding trade among technical college students in Akwa Ibom State. The findings demonstrated that technical college

students require measuring and cutting skills to a significant extent. Moreover, the study found no significant difference in the mean responses between technical college students and instructors regarding the extent to which students need measuring and cutting skills in the fabrication and welding trade. These findings are supported by Obed and Tom (2020), who investigated employability skills among fabrication and welding students in Ogun State technical colleges. The study affirmed that students in Ogun State technical colleges possessed skills in sheet metalwork and gas welding.

The results in Table 3 indicate that all the items have mean responses below 3.0, which is the weighted mean. Additionally, the cumulative mean is 2.01, indicating a moderate extent. This suggests that students possess moderate management skills, which are not sufficient to equip them with competencies for technopreneurial readiness. The hypothesis test reveals that the influence of management skills held by fabrication and welding students in Technical Colleges, in preparing them with competencies for technopreneurial readiness, is not statistically significant. This finding aligns with (Obed & Tom, 2020) study, which investigated the entrepreneurial skills required by technical college students to establish small and medium-scale fabrication and welding enterprises in Rivers State. The study identified the managerial skills necessary for small and medium-sized business start-ups, and it also indicated that students lacked managerial skills.

The results in Table 4 showed that all the items have mean responses below 3.0, the weighted mean. Additionally, the cumulative mean is 2.71, indicating a lesser extent. This suggests that students possess fewer critical thinking skills, which are not adequate to equip them with competencies for technopreneurial readiness. The hypothesis test results indicate that the influence of critical thinking skills held by fabrication and welding students in technical colleges, in preparing them with competencies for technopreneurial readiness, is not statistically significant. This finding is corroborated by Ekpo and Caleb (2014), who explored students' attitudes towards generic skills. They discovered that generic skills, including problem-solving, teamwork, communication, and critical and analytical thinking skills, were crucial for employability and success in the professional world.

Conclusion

This study has delved into Technopreneurial Readiness Skills among students specializing in Welding and Fabrication Technology in Technical Colleges within Akwa Ibom State, Nigeria. The findings shed light on the current state of preparedness of these students as they transition from educational institutions to potential entrepreneurial ventures. The research revealed that while students demonstrate proficiency in certain technical skills, particularly in areas like arc welding and cutting, there exist notable gaps in essential Technopreneurial Readiness Skills. Specifically, the students exhibited moderate levels of competence in management and critical thinking skills, both integral for success in entrepreneurial pursuits. This disparity highlights the need for a more comprehensive educational approach that not only imparts technical expertise but also nurtures the broader skill set demanded by the evolving job market.

The challenges identified in this study underscore the importance of fostering collaboration between educational institutions, local industries, and master craftsmen to ensure that students are adequately equipped with the skills demanded by the job market. Integrating

more practical exercises and student-centered learning approaches, especially in areas such as cutting and measuring, can contribute to a more holistic development of these Technopreneurial Readiness Skills. The implications of this study extend beyond the classroom, reaching educational policymakers, curriculum developers, and institutions responsible for shaping the trajectory of technical education in Akwa Ibom State. By addressing the identified gaps and aligning education with the demands of the contemporary workforce, we can contribute to the development of a skilled, entrepreneurial, and self-reliant youth population, ultimately fostering economic growth and resilience in the state and the nation at large.

Recommendations

1. Technical colleges should establish strategic partnerships with local master craftsmen and industries specializing in welding and fabrication. These collaborations can provide students with real-world exposure and practical experiences, enhancing their proficiency in arc welding and other critical technical skills.
2. Institutions should prioritize hands-on practical exercises, particularly in areas such as cutting and measuring. These exercises can significantly contribute to skill mastery and competency development among students, aligning their abilities with the demands of the welding and fabrication industry.
3. Educators should adopt student-centered learning approaches that actively involve students in classroom activities. This participatory method encourages engagement and empowers students to develop key generic skills essential for employability and technopreneurial readiness.
4. Technical teachers should incorporate project-based instructional methods into the curriculum. This approach allows students to take initiative, work collaboratively, and develop managerial and leadership skills. By engaging in real-world projects, students can bridge the gap between theoretical knowledge and practical application.
5. Collaborative efforts between educational institutions and industry stakeholders are essential for updating and enhancing the curriculum. The inclusion of industry-driven content ensures that students are equipped with skills and knowledge aligned with current market demands.
6. Educators should undergo continuous professional development programs to stay abreast of emerging trends in welding and fabrication technology. This will enable them to effectively transfer relevant and up-to-date knowledge to students, ensuring that the curriculum remains dynamic and relevant.

Direction for Further Studies

1. Further studies might focus on the integration of soft skills development within the technical education curriculum. Investigating the correlation between soft skills such as communication, teamwork, and leadership, and the entrepreneurial success of welding and fabrication students could provide valuable insights.
2. Investigating the role of technological innovations, such as digital fabrication tools and automation, in shaping entrepreneurial opportunities within the welding and fabrication sector. Assessing how students can leverage these advancements for business growth and efficiency would be pertinent.
3. Comparative studies with international contexts could provide global perspectives on the

challenges and opportunities faced by welding and fabrication entrepreneurs. Understanding successful models from different countries could inform best practices for fostering entrepreneurship in this specific technical field.

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