

CAPACITY BUILDING SKILLS NEED OF MECHANICAL ENGINEERING CRAFT PRACTICE STUDENTS FOR SUSTAINABLE LIVELIHOOD IN POST COVID-19 PANDEMIC ERA IN RIVERS STATE

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Abstract

The study determined the capacity building skills need of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State. One research question was posed and one null hypothesis was formulated and tested at 0.05 level of significance to guide the study. The population of the study comprised of twenty-three (23) teachers and instructors of technical colleges in Rivers State. The entire population was used as it was manageable in size. The instrument for data collection was researchers' designed questionnaire with 13-items. Pearson Product Moment Correlation (PPMC) was used to test the internal consistency of the instrument which yielded 0.68 level of significance through a pilot-test method. Mean and standard deviation was used to answer the research questions while z-test was used to test the hypothesis. The study found that milling, grinding, grooving, turning, knurling, slotting, drilling, reaming, boring, shaping threading skills amongst others identified above are capacity building skills needed of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State. The study therefore recommended that government should adequately provide tools and equipment in mechanical engineering craft workshops to ensure smooth take up of practical work on the skills outlined by this study.

Keywords: *Capacity Building, Covid-19 Pandemic, Mechanical Engineering Craft Practise, Sustainable Livelihood*

Introduction

Coronavirus disease is a transferable disease brought about by a recently identified virus. This virus mostly attacks the respiratory system. Corona virus is a contagious disease, which spreads very fast amongst human beings. COVID-19 is contacted through the different respiratory tracts, for example, the mouth and the nostrils, and attacks the human respiratory organs (Danso, 2020). The pandemic had enormous economic consequences in Nigeria, and it also had devastating impact on global education. Universities across the world responded to Covid-19 in different ways. Some of the universities in Nigeria and abroad temporarily stopped their regular learning to design online learning. The Covid-19 pandemic had severe impacts on human and social life, including employment, education, agriculture and the other spheres of the world economy. Higher Education Institutions (HEIs), including Universities, Colleges of education, Polytechnics as well as secondary and primary schools and other institutions like skill acquisition centers are no exception. In addition to closing schools, countries, including Nigeria are explored the option of remote learning and the use of other educational resources to mitigate the loss of learning. This method however, was not suitable for technical and vocational education and training (TVET) as it deals with practical skills This implies that TVET is a type of education given to individuals to develop their creative and manipulative potentials for the benefit of humanity.

Cite this article as

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Therefore, technical and vocational education and training (TVET) is a form of education whose purpose is to prepare individuals for employment in an occupation or group of occupations. Technical and vocational education and training (TVET) is significant because it plays the role of transforming the socio-economic status of any nation by inculcating in the people sound knowledge, practical skills, attitudes, understanding with which they can translate acquired knowledge into real socio-economic transformation (Ochu 2006). TVET as a programme of study, whether formal or informal, transfers quality skills into people for a country's technological, economical, social and cultural developments (Afeez, 2013). National greatness will remain a pipe dream for any nation including Nigeria if there is no implementable strategy and concerted effort to develop enough human capacity or manpower in Nigeria. Technical and Vocational Education and Training is a fundamental element in the development equation because it allows individual and societies to unlock their potentials, expand their horizons and adapt to the changes in the dynamic world (Nsiah-Gyabaah, 2009) The mission of vocational and technical education as outlined by UNESCO (2006) as cited in Sofoluwe (2013) include: infusion into all adequate vocational efficiency for effective living; enhancement and sustenance of national economic and technological development; and engendering of national economic prosperity, elimination of unemployment through equipping the generality of out of school youths and adults with saleable skills. Mechanical engineering craft practice which is an aspect of vocational and technical education offered in technical colleges in Nigeria is *sine-qua-non* to human capital development through the acquisition of its skills. Mechanical engineering craft practice is a trade that provides a post primary technical skills and practical proficiency in machining processes; which includes turning, knurling, drilling, grooving, shaping, grinding, milling etc to the level of good craftsman. The subject matter of mechanical engineering craft practice is specifically designed to provide the skills and knowledge to fulfill the needs of the modern industry (WAEC, 2004) as cited in Kpolovie et al., (2011). The survival of any industry is largely dependent on the caliber of its available craftsmen. Beako (2018) stated that mechanical craft practice trade is one of the severally recognized engineering fields that start from the practice of machine and mechanized processes, particularly concerned with power generation, transmission, utilization of tools and equipment. The acquisition of mechanical engineering craft skills no doubt form part of the foundation for human capital development which in turn gives rise to sustainable livelihood of the citizenry. Human capital development is a term associated with the investment in man and his development as a creative and productive resource (Jhingan, 2007). He further stated that it is a process of acquiring and increasing the number of persons who have the skills, education and experience which are critical for economic and political development of a country. Egbo (2011) buttressed that human capital development is the process by which adequate skill, knowledge and expertise is achieved over time by an individual which enables him to become proficient in his job role.

According to the United Nations Development Project (UNDP) bulletin (2015), human capacity building is a long-term continuing process of development involving all stakeholders including ministries, local authorities, non-governmental organizations, professionals, academics and many more stakeholders which entails the utilization of a country's human, scientific, technological, organizational, institutional resources and capabilities to achieve increased productivity. In the same vein, the World Health Organization (WHO) (2014) posited that human capital development is the building and strengthening of human and institutional resources for effectiveness and increased productivity. Skill according to Okorie as cited in Dung (2015) is a manual dexterity through repetitive performance of an operation. Skill is a well-established habit of doing something and it involves the acquisition of performance capabilities (Osinem, 2008). Human capital are the skilled labor, technocrats, professionals and experts who serve as the labor strength for the country; consequently the quality of this labor strength, the human resource output of higher education, depends wholly on the quality and efficiency of the human resource input in higher education (Ekundayo & Ajayi, 2009). That is, the acquisition of skills makes an individual capially developed in a society; hence, lead to the development of a nation.

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Statement of the Problem

School closures in response to the COVID-19 pandemic have shed light on several issues affecting access to education. COVID-19 is soaring due to which the huge number of children, adults, and youths cannot attend schools and colleges (UNESCO, 2020). Schools and colleges are moving towards educational technologies for student learning to avoid a strain during the pandemic season (Bridge, 2020). This had only develop and test a conceptual model (cognitive domain) of student's pertaining to online teaching during COVID-19, where both students and teachers have no other option than to use the online platform uninterrupted learning and teaching. Furthermore, the outbreak of COVID-19 pandemic has been of great disadvantage to students of mechanical engineering craft practice students of technical colleges in Rivers State and the nation at large as the main purpose for it establishment (acquisition of practical skills) was defeated. Above all, COVID-19 pandemic had caused increased unemployment rate, redundancy or retrench of workers and high level of joblessness in Rivers State. Based on the foregoing, it is therefore pertinent to equip MECP students with capacity building skills for sustainable livelihood in a post pandemic era in Rivers State which is the objective of this study.

Purpose of the Study

The purpose of the study was to determine capacity building skill-need of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State.

Research Question

The following research questions were posed to guide the study.

What are the capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State?

Methodology

The study is a descriptive survey. The population of the study was twenty-three (23) respondents (16 MECP teachers and 7MECPinstructors) of five technical colleges in Rivers State. The entire population was used as sample since the population is small and manageable. This is supported by Nwana as cited in Nwosu and Mbaezue (2016) the entire population could be studied when the size of the population is considered manageable.

Instrument

The instrument for data collection was a questionnaire designed researcher, which comprised 13-items. The instrument titled "Capacity Building Skills Need of Mechanical Engineering Craft Practice Students for Sustainable Livelihood (CBSMECPSSL)" was designed on a 5- point Likert scale of Very Highly Needed (VHN = 5), Highly Needed, (HN = 4), Moderately Needed (MN = 3), Not Needed (NN = 2) and Highly Not Needed (HNN = 1) respectively. The research instrument (Questionnaire) was subjected to face and content validity by three experts in the field of Vocational and Technical Education. The instrument was tested on ten (10) mechanical engineering craft practice students of Government Technical College Tugbo Bayelsa State. Hence, Cronbach Alpha was used to determine the reliability of the instrument at a coefficient 0.68. Mean and standard deviation were used to answer the research questions It was however decided that mean scores greater than 3.5 was referred to as "Needed" whereas mean scores less than 3.5 was referred to "Not Needed" respectively.

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Results

Research Question

What are the capacity building skills needs of mechanical engineering craft practice students

Table 1

Mean and standard deviation of teachers and instructors on capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State

S/N	Items	Teachers' Response N ₁ =16			Instructors' Response N ₂ =7		
		\bar{X}_1	SD ₁	Rmk	\bar{X}_2	SD ₂	Rmk
1.	Boring Skill	3.78	1.07	N	3.69	1.24	N
2.	Drilling Skill	4.11	0.93	N	4.00	0.84	N
3.	Gear cutting Skill	3.88	0.89	N	3.61	1.18	N
4.	Grinding Skill	4.02	0.71	N	4.07	0.93	N
5.	Grooving Skill	3.88	0.56	N	3.83	1.16	N
6.	Knurling Skill	3.74	1.11	N	3.67	1.77	N
7.	Measuring Skill	4.14	0.43	N	3.81	0.71	N
8.	Milling Skill	4.09	0.87	N	4.25	0.62	N
9.	Reaming Skill	3.90	0.72	N	3.86	0.55	N
10.	Shaping Skill	3.67	1.04	N	3.65	1.32	N
11.	Slotting Skill	3.50	0.63	N	3.38	0.63	NN
12.	Threading Skill	4.08	0.75	N	4.00	1.07	N
13.	Turning Skill	4.14	0.86	N	4.01	1.07	N
Grand Mean		3.91	0.81	N	3.83	1.00	N

Source: Researchers' Field Survey(2021)

Key: N=Needed; NN=Not Needed

The table above shows the mean scores of respondents on the research question “What are the capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State”? The table summarizes the response of teachers and instructors with average mean scores of 3.91 and 3.83 and average standard deviation scores of 0.81 and 1.00 respectively. The responses of the respondents on capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State do not differ significantly.

Hypothesis

There is no significant difference between the mean responses of MECP teachers and MECP instructors on capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State

Table 2

z-test analysis MECP teachers and instructors on capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State

Respondents	N	\bar{X}	SD	Df	P-value	t-cal	t-crit	Decision
Teachers	16	3.91	0.81	210.05	0.69	2.05		Accept
Instructors	7	3.83	1.00					

Source: Researchers(2021)

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Analysis on table 2 reveals the calculated value of z to be 0.69 which is less than the table of 2.05. Thus, the null hypothesis “there is no significant difference between the mean responses of MECP teachers and MECP instructors on capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State was accepted. This therefore, depicts that the identified skills above are capacity building skills need of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State.

Discussion of Findings

The table above shows the mean scores of respondents on the research question “What are the capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State”? The table summarizes the response of teachers and instructors with average mean scores of 3.91 and 3.83 and average standard deviation scores of 0.81 and 1.00 respectively. The responses of the respondents on capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State do not differ significantly. In the same vein, analysis on table 2 revealed the calculated value of z to be 0.69 which is less than the table of 2.05. Thus, the null hypothesis “there is no significant difference between the mean responses of MECP teachers and MECP instructors on capacity building skills needs of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State was accepted.

Based on the foregoing, the study therefore found that milling, grinding, grooving, turning, knurling, slotting, drilling, reaming, boring, shaping threading skills amongst others identified above are capacity building skills needed of mechanical engineering craft practice students for sustainable livelihood in post pandemic era in Rivers State. This finding agreed with NBTE (2003) as cited in Saue (2020) which stated that mechanical engineering craft practice among others is aimed at training and imparting necessary skills leading to the production of craftsmen who will be self-reliant and enterprising in various job areas. Akwegwu et al., in Uchendu (2015) that capacity building strengthens the skills, instincts, abilities, processes needed to thrive and succeed at work.

Conclusion

Through TVET, skilled manpower capable of stabilizing and sustaining the development of a nation’s economy can be achieved. This is because it provides students with life skills that stimulates their creative and innovative ideas needed to survive in the competitive business world of the 21st century. It is a well known fact that effective training in practical skills in mechanical engineering craft have immensely contributed to the technological excellence and economic self reliance of individuals and industrialized nations. It is imperative to note that adequate and effective manpower development through the acquisition of mechanical engineering craft practice skills is a master key for national development in the post covid-19 pandemic era.

Recommendations

In line with the findings of the study, the following recommendations were made:

1. Government should adequately provide tools and equipment in mechanical engineering craft workshops to ensure smooth take up of practical work on the skills outlined by this study.
2. To ensure sustainable livelihood of mechanical engineering craft graduates, government should provide a starter package for these students to start enterprising.

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