

## Utilization of Available Learning Resources in Teaching and Learning of Mechanical Craft Practices in Government Technical Colleges in Rivers State

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### Abstract

The study investigated utilization of available learning resources in teaching and learning mechanical craft practices in government technical colleges in Rivers State. The population of the study comprised 32 mechanical craft practice teachers and 61 students in the five government technical colleges in Rivers State. The entire populations were used as it was manageable, as such there was no samples carried out. Three research questions were answered and three hypotheses were tested at 0.05 level of significance. The instrument for the study was a survey questionnaire titled utilization of available learning resources in teaching and learning of mechanical craft practices questionnaire (UALRTLTCGTCQ) which was structured in a pattern of 4 point rating scale of Strongly Agree (SA-4), Agree (A-3), Disagree (D-2) and Strongly Disagree (SD-1). The instrument was faced and contents validated by two experts in the department of industrial technical Education, Ignatius Ajuru University of Education Port Harcourt. Frequency, Mean and Standard Deviation were used to answer the research questions, and Z-test statistic was used to test the hypotheses. The study found among others that mechanical craft learning resources available among others includes, machine tools, flip chart picture etc, also it was deduce that some of the problems encountered by teachers in the effective utilization of the available learning resources include, overcrowded classroom/workshop, limited time allocation, low teacher competence, lack of periodic update of knowledge and skills, etc finally, it was recommended that governments should provide adequate, funding, training facilities and qualified teachers for all mechanical craft programmes, make provision for periodic skill training for teachers to boost their effectiveness and efficiency towards the technological advancement of the State.

**Keywords:** Availability, Utilization, Learning Resources, Mechanical Craft Practices, Technical Colleges.

### Introduction

It is generally believed that one of the major parameters for measuring a country's economic growth, development and self-reliance is the extent of the country's development in technical skills. Thus, the neglect of technical colleges is socially injurious as it rubs the nation of the contribution the graduates would make on national development. More importantly, the society needs competent auto mechanics, carpenters, plumbers, electrician, secretaries, fashion designer, and storekeeper, to mention but a few.

Technical colleges is fundamental to the development and industrialization of nations. Thus, the skills, abilities and competencies that are needed by the nation are embedded in vocational and technical training, which are central to a nation's social and economic emancipation. Consequently, any nation that believes in education as an instrument par excellence for national development has to recognize the significance of technical colleges and their programmes and accord it the desired attention and support it deserves (Kehinde & Adewuyi, 2015).

Technical colleges are therefore the institutions where students are trained to acquire relevant knowledge and skills in different occupations for employment in the world of work. According to the Federal Republic of Nigeria, (FRN, 2013), technical college is a segment of Technical and Vocational Education (TVE) designed to produce craftsmen at the secondary school level and master craftsmen at the advanced craft. They are therefore regarded as the principal vocational education institutions in Nigeria (Umunadi, 2017). Hence, the fundamental concentration of teaching and learning at this level of education involves practical training using innovative methodologies of applying science, materials, tools, devices, equipment, machinery, and other resources to enable competent workers solve practical-based problems (Eze, in Eze, Nwaosa, Oluyinka, & Onwusa 2020). This may involve manipulation of materials in form of performing task as simple as using a spanner to tighten or loose a bolt or as complex as using a set of tools in a process of dismantling and assembling of engine parts as applicable in auto-mechanics trades.

Mechanical craft practice is one of the vocational programmes offered in technical colleges. It is structured to produce craftsmen who will be able to perform basic functions both in the private and public sectors, the training is of great importance to human development. For instance, one of the trades offered in technical college that has contributed so much in establishing self- reliant and employable personnel is mechanical craft practices. Peter, Abiodun & Jonathan in Ajie, Olumba and Bassey (2023) described mechanical craft as a trade that have complete bearing with metal welding/forming and or servicing/repairs of machines or machine related equipment and appliances. The occupations in this category comprises equipment mechanic work, motor vehicle mechanics work, auto body repair and spray painting, auto electrical work, auto body building, auto parts merchandising, air-conditioning and refrigeration mechanics work, mechanical engineering craft practice, welding and fabrication engineering craft practice, foundry craft practice, instruments mechanics work and marine engineering craft. Elom,(2014) described mechanical craft as an aspect of training which is designed to enable the learners know how to complete job assignments according to mechanical drawings and work instructions, apply the knowledge and skills they have acquired in workplace situations, and be able to work independently and as a member of an industry.

In line with this description, Ugbalu in Nnodim and Quintus (2023) said mechanical craft involves making of individual parts from plate or bar materials by cutting of metal, marking-out, drilling, turning, milling, tapping, grinding, and assembly operations. Mechanical craft practice involves the acquisition of skills in machine/workshop practice, welding and

fabrication, foundry/ forging etc, (Amadi, Ordu, & Ochogb, 2022). FGN in Ogundu (2016) stated the goals of mechanical craft practice in technical colleges to include amongst others: understanding the processes, materials, tools and equipment used in mechanical craft practice, preparing for further studies in mechanical technology or allied professions, earning a living through participation in mechanical craft practice. The study of mechanical craft practice involves the engagement of both teachers and students in theory and practical. (Kademi and Gyallesu, 2019). Mechanical craft skills in technical Colleges cannot be acquired devoid of adequate instructional material. Anaele, Amadi and Obed (2016) further demonstrated that, the major aim of mechanical craft practice is to train students for successful employments in the labour market and to furnish the students with the necessary skills that can enable them earn a living. This goal can be achieved through a curriculum that is significant and all-inclusive and a well-equipped workshop with relevant instructional facilities.

The position of learning resources in teaching mechanical craft practices cannot be overemphasized. Aka (2015) opined that these resources hence connote those materials and facilities that can be used to ease, encourage, improved and promote teaching and learning activities. Because traditionally, classroom teachers have relied heavily on the talk-chalk method during their teaching, the application of teaching materials can support students' learning and increase their success. Learning resources therefore constitute the media of exchange through which message transaction is facilitated between a source and a receiver. Furthermore, these resources help students to acquire facts, skills, competencies, and opinions and also to develop cognitive processes. The teachers may use different learning resources to motivate learning by using textbooks, charts, models, graphics, real objects (machines, equipment or tools) as well as improvised materials (Awotua-Efebo, in Eze, Nwaosa, Oluyinka, & Onwusa, 2020). The success of achieving the desire objectives in an instructional situation depends on the suitability, adequacy and effective utilization of the learning resources (Olaitan & Agusiobo in Okoye 2018). Indeed, learning resources provide the much needed sensory experiences required by the learners for an effective and meaningful behavioural change. Ideally, learning resources could help to provide variations in the ways in which messages are sent across to the learners. Some of the learning resources often used in teaching and learning includes the followings: graphic materials, instructional charts, still pictures, three– dimensional materials, still projected materials, motion pictures, audio materials, electronic, audio-visual and visual or physical materials

According to Ogundu (2017), learning resources in technical colleges are all practical and skills developed that facilitate the process of teaching, learning and evaluation of technical skills. School workshops and learning facilities offer opportunities for practical training of students in skills acquisition in technical skill areas for future development of the key sectors of the economy and support entrepreneurial development (Uwaifo, 2019). Student's practical projects are an important part of the curriculum, but in a supportive school environment is a fundamental requirement for the successful implementation of curriculum

(Anaele, Amadi and Obed 2016). For the attainment of necessary skills and competences in training of mechanical craft programme in technical colleges, learning resources that will aid the exposure of trainees to practical knowledge must not only be provided but adequately available and accessible. Availability of suitable workshop resources enhances students learning by allowing them to be involved in demonstrations, and practice which will aid them to continue to build their skills (Akerele 2019).

Availability is the quality of being able to be used or obtained. It is the duty of the Federal and State Government to ensure the availability of resource materials in technical colleges. However, it seems there are shortages in supply of mechanical craft learning resources in technical colleges and where they are available; there is likelihood that they are not adequately utilized for one reason or the other. Hence, Anele (2015) opined that it has also been observed that even the few learning resources and facilities available are not properly utilized for the better performance of students. Aka (2018) further noted that, Storekeepers, laboratory attendants, librarians and library attendants are conspicuously absent in most technical schools. This may have led to low quality instructional delivery, thereby defeating the goal of mechanical craft programmes, which is to understand the processes, materials, tools and equipment used in machining and metal fabrication. The availability of learning resources is faced with diverse challenges which tend to disrupt proper practical teaching and learning process. According to Okorie (2014), inadequate infrastructural (learning resources) are evidently linked to inadequate funding by government. The challenges range from poor funding by government, poor policy formulation and implementation, lack of maintenance, high cost of material, lack of practical skills of teachers to use these resources adequately, students attitude towards the use of learning resources, increase in enrolment and concession by supervisory body (Nnaji, 2016). It has also been observed that in most cases where there are available learning resources, they are scarce or never utilized for instruction (Anele, 2015).

A teacher in mechanical craft is the one who gives instructions and communicates knowledge, skills and attitudes to students. He is the conduit through which knowledge and practical skills of this programme could be transmitted as such he should use appropriate teaching and supervisory strategies together with learning resources, and he must use relevant pedagogy that will enhance student's effective participation and acquisition of practical skills through activity-based instruction where students are given opportunities to be more active in the class. The teacher is expected to plan his lesson properly by carefully choosing the objectives of the lesson, devising on making the learners participate in the learning process in a more responsible way, selecting the appropriate strategies of teaching, appropriate strategies for supervision as well as determining the appropriate strategies for assessment. Inadequate supervision of practical activities also impedes acquisition of practical skills especially where practical projects are inspected at the end of the process whereas adequate supervision on the whole practical process has a major influence on the overall performance and efficiency of skills acquisition. Ukeje and Akabogu in Tumba and Shuaibu (2019) stated that supervision as an element of administrative

process is concerned with effort of the administration by stimulating, directing and coordinating the students and their efforts, cultivating good personal relationship that moves collectively towards a more efficient performance of all the functions that lead to goal achievement. In line with this, Okwelle and Allagoa (2014) opine that the ability of the teacher to effectively utilize the available instructional materials optimizes the attainments of instructional situation; this varies with the level of utilization. Boynton and Boynton in Tumba and Shuaibu (2019) also stated that teachers must be able to establish good rapport with the students and their parents and involve students in the processes of establishing ground rules for behaviour so that students will be accountable for their actions, manage transitions during practices, and motivate students to maximize time-on-task, supervise students in their learning activities. This is expected so as to help the students to master key skill areas. It will also equip the students with the ability to be open-minded and creative about the application of techniques to their challenges.

Utilization of learning resources is the act of making practical and effective use of instructional facilities in teaching. The effectiveness of utilizing appropriate resources in teaching and learning processes in auto-mechanics may not be devoid of quality instructor (Ntasiobi, Francisca & Iheanyi, 2014). Therefore, effective pedagogical delivery depends majorly on cordial relationship and free flow of communication between the teachers and the students. Accordingly, Olumorin, Yusuf, Ajidagba & Jekayinfa, (2016) asserted that the criteria for assessing learning resources are very important to make teaching effective and meaningful. Puyate (2016) stated that, the availability and effective utilization of learning resources for training or instruction in any technical college improves the vital process of skill acquisition, which will in turn empower its recipient to be industrious and contribute to national development.

Hassan (2017) opined that, for achievement to be made by students, the quality of education that the students will receive is directly related to the availability and utilization of materials and overall ambiance in which the learning will take place. Nweze, Okoli and Ituma (2018) also stated that the acquisition of relevant skills on fabrication, machining, designing, auto-body repair and maintenance can only be acquired in a well functional workshop stocked with relevant equipment and facilities and adequately utilized for instruction. The utilization of learning resources could be greeted with some sort of challenging factors which may tend to hamper instruction. These include among others: low teacher competence in the area of effective learning resource utilization, environmental factors such as little or non-availability of equipped library, laboratories, workshops, water supply, electricity and personnel also affects effective utilization of these resources, poor maintenance culture of existing learning resources especially projected and manipulative types, lack of opportunities for in-service training/refresher course for serving mechanical craft teachers to update their knowledge periodically in the light of new research findings and resource development, outdated instructional materials, the lack of concern, lack of participation of students in the use of instructional materials etc. The utilization phase of instructional facilities lies on the teacher (Okoro in Nweze *et al* 2018).

Mechanical craft students must present themselves for training with instructional materials. They must understand and appreciate the importance of these materials in their training as they improve the acquisition of practical skills which will make them employable in the industry and for self-reliance. Adakole, Nnaji and Eiriemiokhole (2016) affirmed that, practical tools as learning resources can stimulate and help further study; help learners to take active interest in the topic presented; and affect their approach towards what is portrayed. Learning resources in mechanical craft are kept in stores or installed in the workshops which are manned by workshop attendants. Workshop attendants ensure the safe keep of these facilities, keep records of them, help in their maintenance and carry out practical demonstration or guide the students during practical in the mechanical craft. Teachers and workshop attendants are indispensable in the training of craftsmen in technical colleges.

The need for self-reliant graduates and skilled craftsmen in mechanical industry necessitated the establishment of technical colleges in various part of Nigeria (FRN 2013). These technical colleges are tactically established to produce skilled craftsmen in mechanical technology amongst other trades. However, this will be a fantasy without sufficiently equipping the colleges with instructional materials for teaching mechanical craft practice and ensuring that they are well utilized for instruction. Hence, this study is intended to assess the utilization of available learning resources for teaching mechanical engineering craft practice in technical colleges in Rivers state.

### **Problem of the Study**

The importance of learning resources cannot be overemphasized as it aids the process of teaching and learning. Generally, these resources facilitates teaching by making it easy for teacher to transfer knowledge, skills, attitude, competencies etc to the students; hence, it can help the student to acquire knowledge and understand concepts without stress. Ogwa (2015) agreed that, learning resources enable the teachers communicate ideas or concepts with ease as they appeal to many senses at a time. The importance of learning resources in teaching mechanical craft practices is to aid acquisition of mechanical craft skills. The usefulness of any available learning resources depends on the competencies of the teacher, as they cannot achieve any of the attributed values on their own. In a study carried out by Uzoagu in Ogundu (2018), it was discovered that poor students' performance in technical colleges in Nigeria was a result of inadequate and non-functional training facilities. Ogundu further stressed that, technical education has theoretical limit, if this limit is exceeded acquisition of skill is frustrated and technical education becomes "theory education". This situation made Ibehim in Ogundu (2018) to lament that, the products of technical colleges were being rejected by the industries because they had the wrong training in school. He went further to say that, the wrong training implies that, technical college graduates were deficient in practical hence they are unable to suit the industrial demands. Anaele, Amadi and Obed (2016) further stated that, the lack of competence training programmes of mechanical craft teachers to suit the demand of the industry causes a great deal of setback

on the performance of students on graduation. It is on this premises that the researcher wishes to carry out a study on the utilization of available learning resources in teaching and learning of mechanical craft practices in government technical colleges in Rivers state.

### **Purpose of the Study**

The study focused on the utilization of available learning resources in teaching and learning of mechanical craft practices in government technical colleges in Rivers state.

Specifically, the study aimed at:

1. Ascertaining learning resources available for teaching and learning of mechanical craft practices in government technical colleges in Rivers state.
2. Investigating the utilization of available learning resources by teachers in teaching and learning of mechanical craft practices in government technical colleges in Rivers state
3. Examining the challenges encountered by teachers in utilizing learning resources for teaching and learning of mechanical craft practices in government technical colleges in Rivers state.

### **Research Questions**

The following research questions are designed to guide the study.

1. What are the learning resources available for teaching and learning mechanical craft practices in government technical colleges in Rivers state?
2. To what extent does the available learning resources be utilized by teachers in teaching and learning of mechanical craft practices in government technical colleges in Rivers state?
3. What are the challenges encountered by teachers in utilizing available learning resources for teaching and learning of mechanical craft practices in technical colleges in Rivers state?

### **Hypotheses**

The following hypotheses guided the study and was tested at 0.05 level of significance.

HO<sub>1</sub>: There is no significant difference between the mean response of teachers and students on the learning resources available for teaching and learning mechanical craft practices in government technical colleges in Rivers state.

HO<sub>2</sub>: There is no significant difference between the mean response of teachers and students on the extent does the available learning resources be utilized by teachers in teaching and learning of mechanical craft practices in government technical colleges in Rivers state.

HO<sub>3</sub>: There is no significant difference between the mean response of teachers and students on the challenges encountered by teachers in utilizing learning resources for teaching and learning of mechanical craft practices in technical colleges in Rivers state.



### Methodology

The study was carried out in Rivers State. Descriptive survey design was used for the study. The population of the study comprised all the mechanical craft practice teachers and National Technical Certificate (NTC) III students in technical colleges in Rivers State. NTC III students were selected because they have spent more time in the school than other set of students. As at the time of the study, there was population of 31 and 61 mechanical craft practice teachers and NTC III students respectively. The population was manageable; therefore, the entire population was used for the study. Self-made survey questionnaire titled "utilization of available learning resources in teaching and learning of mechanical craft practices in government technical colleges in Rivers state" (UALRTLMCP) served as the instrument for data collection. The instrument was partitioned into three sections (A, B, and C), Section A and C were structured in the pattern of 4 point rating scale of Strongly Agree (SA-4), Agree (A-3), Disagree (D-2) and Strongly Disagree (SD-1) while section B was structured in the pattern of Very High Extent (VHE-4), High Extent (HE-3), Low Extent (LE-2) and Very Low Extent (VLE-1). The instrument was face validated by two experts in the Department of Vocational Technology Education in Rivers State University. Also, the instrument was tested to ascertain its reliability using Cronbach Alpha Reliability Coefficient tool. This was achieved through purposive sampling of 9 Mechanical Craft Practice teachers and 12 NTC III students in government technical college in Bayelsa State. The reliability coefficient achieved was 0.74 which confirmed the reliability of the instrument. Copies of the instruments were administered and retrieved by the researcher on the spot of administration. Mean and standard deviation were used to answer the research questions and to ascertain the homogeneity of responses. Also, z-test statistical tool was used to test the hypotheses. Mean score less than 2.50 were rejected while Mean scores equal or greater than 2.50 were accepted. Also, z-calculated values less than z-critical values were accepted while z-calculated values greater than z-critical values were rejected which shows that there was a significant difference between the mean responses of the groups.

### Results and Discussions

**Research Question 1:** What are the learning resources available for teaching and learning mechanical craft practices in government technical colleges in Rivers State?



**Table 1:** Mean Responses on the available learning resources for teaching mechanical craft practices

S/N	Systems	Teachers (n <sub>1</sub> =31)		Students (n <sub>2</sub> =61)			
		$\bar{x}_1$	SD	Decision	$\bar{x}_2$	SD	Decision
1	Vulcanizing cooker/machines	1.62	.76	Disagree	1.74	.72	Disagree
2	Flip chart with pictures	2.51	.75	Agree	2.54	.89	Agree
3	Wheel balancing machine	3.20	.75	Agree	3.03	.69	Agree
4	Clutch alignment gauge	2.67	1.00	Agree	3.33	.85	Agree
5	Phasing calibration machine	1.67	.63	Disagree	2.23	.75	Disagree
6	Hydraulic press	3.15	.81	Agree	2.96	.79	Agree
7	Ring spanner	2.76	.89	Agree	2.68	.89	Agree
8	Adjustable spanner	2.96	.88	Agree	2.87	.83	Agree
9	Combination plier	2.82	.97	Agree	3.06	.98	Agree
10	computer laboratory	1.72	.66	Disagree	1.73	.91	Disagree
11	Textbooks	2.68	.89	Agree	2.96	.91	Agree
12	Sheet metals	2.24	.83	Disagree	2.17	.89	Disagree
13	Arc welding machines	3.02	.95	Agree	3.20	.81	Agree
14	Machine tools	3.71	.76	Agree	2.65	.85	Agree
15	Oxyacetylene welding equipment	2.37	1.01	disagree	2.23	.81	Disagree
16	Projectors	1.76	.89	Disagree	1.87	.95	Disagree
	Total	2.55	.84	Agree	2.57	.85	Agree

Source: Field Survey, 2024

Table 1: on the available learning resources for teaching mechanical craft practices shows that teachers and NTC III students agreed that item 2,3,4,6,7,8,9,11,13,14, respectively are learning resources available in the teaching and learning of mechanical craft while item 1, 5, 10, 12, and 16 respectively are items that are not available in the teaching and learning of mechanical craft practices in government technical colleges in Rivers State. This is based on the grand mean score of 2.55 and 2.57 respectively which is above 2.50 that was earlier stated as the acceptable means. Furthermore, the closeness in the standard deviation for the two groups which is .84 and .85 shows homogeneity in their responses.

**Research Question 2:** To what extent does the available learning resources be utilized by teachers in teaching and learning of mechanical craft practices in government technical colleges in Rivers state?

**Table 2:** Mean Responses on the extent available learning resources are utilized for teaching in mechanical craft practices

S/N	Systems	Lecturers (n <sub>1</sub> =61)		Students (n <sub>2</sub> =103)		Decision
		$\bar{X}_1$	SD	$\bar{X}_2$	SD	
1	Vulcanizing cooker/machines	1.61	.76	1.50	.85	low extent
2	Flip chart with pictures	3.14	.97	2.53	.85	High extent
3	Wheel balancing machine	2.43	.94	2.23	.99	Low extent
4	Clutch alignment gauge	2.41	.71	2.48	.75	Low extent
5	Phasing calibration machine	1.97	.84	1.56	.83	Very low extent
6	Hydraulic press	2.22	1.05	2.48	.79	Low extent
7	Ring spanner	2.49	.66	2.44	1.07	Low extent
8	Adjustable spanner	2.48	.67	2.47	1.05	low extent
9	Combination plier	2.40	.67	2.48	.98	low extent
10	computer laboratory	1.59	.84	1.55	.91	Very low extent
11	Textbooks	2.52	.81	2.52	.91	High extent
12	Sheet metals	2.21	.99	2.41	.79	Low extent
13	Arc welding machines	1.97	.91	2.00	.87	Low extent
14	machine tools (lathe)	2.21	.90	2.12	1.00	Low extent
15	Oxyacetylene welding equipment	1.72	.81	1.91	.62	Very low extent
16	Projectors	1.62	.76	1.76	.86	Very low extent
	Total	2.19	.83	2.15	.88	Low extent

Source: Field Survey, 2024.

Table 2: on the extent to which the available learning resources are utilized by teachers in teaching and learning of mechanical craft practices in government technical colleges in Rivers state, shows that teachers and NTC III students agreed that all the items highlighted outside item 2 and 11, are learning resource that are lowly utilized for the teaching and learning process in mechanical craft practices in government technical colleges in rivers state. This is based on the grand mean score of 2.19 and 2.15 respectively which are below 2.50 that was earlier stated as the acceptable means. Furthermore, the closeness in the standard deviation for the two groups which is .83 and .88 shows homogeneity in their responses.

**Research Question 3:** What are the challenges encountered by teachers in utilizing available learning resources for teaching and learning of mechanical craft practices in government technical colleges in Rivers state?

**Table 3:** Mean Responses on the challenges encountered by teachers in utilizing available learning resources for teaching in mechanical craft practices

Teachers (n <sub>1</sub> =61)				Students (n <sub>2</sub> =103)			
S/N	Systems	$\bar{x}_1$	SD	Decision	$\bar{x}_2$	SD	Decision
1	Overcrowded classroom/workshops	2.59	.97	Agree	2.70	.85	Agree
2	Limited time allocation	3.78	.42	Agree	3.53	.85	Agree
3	Inadequate machine tools	3.26	.94	Agree	3.47	.99	Agree
4	Low teacher competence	2.72	1.01	Agree	3.58	.75	Agree
5	Outdated workshop facilities	3.37	.84	Agree	3.56	.83	Agree
6	Limited resource material	3.22	1.05	Agree	3.58	.79	Agree
7	Lack of periodical update of knowledge & skills	3.74	.66	Agree	2.55	1.07	Agree
8	Poor facility maintenance	3.70	.67	Agree	2.67	1.05	Agree
9	Poor funding	3.51	1.00	Agree	2.71	.91	Agree
10	Poor electricity supply	3.31	.95	Agree	2.99	.93	Agree
	Total	3.32	.85	Agree	3.13	.90	Agree

**Source:** Field Survey, 2024

Table 3: on the challenges encountered by teachers in utilizing available learning resources for teaching and learning of mechanical craft practices in government technical colleges in Rivers state, shows that teachers and NTC III students agreed that all the items highlighted are the challenges encountered by teachers in utilizing available learning resources for teaching and learning of mechanical craft practices in government technical colleges in Rivers state. This is based on the grand mean score of 3.32 and 3.13 respectively which are above 2.50 that was earlier stated as the acceptable means. Furthermore, the closeness in the standard deviation for the two groups which is .85 and .90 shows homogeneity in their responses.

**Hypothesis 1:** There is no significant difference between the mean response of teachers and students on the learning resources available for teaching and learning mechanical craft practices in government technical colleges in Rivers state.

**Table 4:** z-Test Analysis on the teaching and learning resource available for the teaching of mechanical craft practices

Category	N	X	SD	DF	z-cal.	z-cit.	Remark
Teachers	31	2.55	.84	90	0.15	1.96	Not significant
NTC III Students	61	2.57	.85				

**Source:** Researchers' field survey, 2023

Data in table 4 above reveal that z-calculated (0.15) is not greater than z-critical (1.96) at 0.05 level of significance. Therefore, the null hypothesis was accepted, hence there is a no significant difference between the mean responses of teachers and NTC III students on the learning resources available for teaching and learning mechanical craft practices in government technical colleges in Rivers state.

**Hypothesis 2:** There is no significant difference between the mean response of teachers and students on the extent to which the available learning resources are utilized by teachers in teaching and learning of mechanical craft practices in government technical colleges in Rivers state.

**Table 5:** z-Test Analysis on the extent to which the available teaching and learning resource are been utilized for the teaching of mechanical craft practices.

Category	N	X	SD	DF	z-cal.	z-cit.	Remark
Teachers	31	2.19	.83	90	0.29	1.96	Not significant
NTC III Students	61	2.15	.88				

**Source:** Researchers' field survey, 2023

Data in table 4 above reveal that z-calculated (0.29) is greater than z-critical (1.96) at 0.05 level of significance. Therefore, the null hypothesis was accepted, hence there is no significant difference between the mean responses of teachers and NTC III students on the extent to which the available learning resources are utilized by teachers in teaching and learning of mechanical craft practices in government technical colleges in Rivers state.

**Hypothesis 3:** There is no significant difference between the mean response of teachers and students on the challenges encountered by teachers in utilizing learning resources for teaching and learning of mechanical craft practices in government technical colleges in Rivers state.

**Table 5:** z-Test analysis on challenges encountered by teachers in utilizing available learning resource for the teaching of mechanical craft practices

Category	N	X	SD	DF	z-cal.	z-cit.	Remark
Teachers	31	3.23	.85	90	0.71	1.96	Not significant
NTC III Students	61	3.13	.90				

**Source:** Researchers' field survey, 2023

Data in table 4 above reveal that z-calculated (0.71) is greater than z-critical (1.96) at 0.05 level of significance. Therefore, the null hypothesis was accepted, hence there is no significant difference between the mean responses of teachers and NTC III students on the

challenges encountered by teachers in utilizing available learning resources for teaching and learning of mechanical craft practices in government technical colleges in Rivers state.

## Conclusion

From the findings of the study in table one, it revealed that learning resources such as flip chart pictures, wheel balancing machine, clutch alignment gauge, arc welding machine, machine tools (lathe) among others are available for the teaching of mechanical craft while learning resources such as sheet metal, oxyacetylene welding equipment, among others are not available. More so, table two it shows that these learning resource available are not or lowly utilized for the teaching and learning of these craft, this is in line with a study carried out by Uzoagu in Ogundu (2018) which discovered that poor students' performance in Technical colleges in Nigeria was a result of inadequate and non-functional training facilities. Okwelle and Allagoa (2014) opine that the ability of the teacher to effectively utilize the available instructional materials optimizes the attainments of instructional situation; this varies with the level of utilization. Finally, it was deduced in table three that some of the puzzle encountered by teachers in the effective utilization of the available learning resources include, overcrowded classroom/workshop, limited time allocation, low teacher competence, lack of periodic update of knowledge and skills, etc.

## Recommendations

Teaching and learning of mechanical craft practices in technical colleges in Nigeria is associated with numerous challenges. These challenges need to be addressed to improve on the overall quality of government technical colleges programmes in the country and Rivers State in particular. Thus, to achieve positive results in this regard the following are recommended,

1. Governments at all levels should provide adequate funding, training facilities and qualified teachers for all mechanical craft programme,
2. Set up a board or unit whose responsibilities shall be investigating/tackling the challenges faced by technical colleges, especially in carrying out practical activities.
3. Make provision for periodic on-the-job skill training for teachers to boost their effectiveness and efficiency towards the technological advancement of the programme.

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