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ENHANCING STUDENTS PERFORMANCE IN THE METALWORK TRADE IN KATSINA STATE TECHNICAL SCHOOLS

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ABSTRACT

The study of strategies for enhancing students' performance in the metalwork trade in Katsina state technical schools carried out as a result of poor performance of students in the schools. This study therefore aimed at identifying the way for improving student's performance for technical schools. To carry out the study, a five (5) point likert scale was adopted. The instruments made up of 46 structured questionnaire items validated by three experts. Four (4) research questions were used to collect data from 135 metalwork trades teachers in the school of Katsina State Nigeria. Mean statistics were used to analyze the data. The findings of the study among others revealed that the respondents needs to obtain additional professional qualification, computer numerical control machines, functional machines, functional stand-by generator, frequent supply of electricity, project method, questioning techniques, role play, independent study, learning mode, programmed instructional method, cognitive apprentice instructional strategy, educating parents the importance of technical education, scholarship to both teachers and students, office facilities, accommodation and vehicle loan to the teachers. The study recommended that there should be a special allowances (hazards) to metalwork trades teachers where individuals as well as Non-Governmental Organizations should be involved in the provision of needed materials for teaching and learning, teachers should also advance their knowledge to the modern world of technology. And the government should therefore increase the funding system in technical education to meet the global change.

Key words: Schools, Metalwork, Mean, Performance, Strategies.

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1. INTRODUCTION

Metalwork is an integral part of Technical and Vocational Education (TVE) as entails the process of manipulating metal for the usefulness of mankind. Aladetan (2012) asserted that no one certainly knows where and when metal working began, but archaeologist assumes that metalworking preceded the emergence of the first civilization. The metal workers defend on extraction and manipulation of metal works for producing of precision component for industries and technical application that range from construction, transportation. The important of the metalwork cannot be over emphasized, because without metal, good and services would cease to move around the globe on the scale we are today. Many individuals have been trained and still receiving training on the metalwork to became Craftsmen, Technicians, Technologists and Engineers in modern world of today. However, skill in metal work trades at the technical college level are intended to produce competent craftsmen with sound theoretical and practical skills.

The goal of the Technical and Vocational Education as stipulated in the National Policy on Education (NPE, 2020) are geared toward trained manpower in applied science, technology and business particularly at craft, advanced craft and technology levels and to give training and in part the necessary skills to individuals who shall be self-reliant economically. However, The Katsina State Technical Schools lack the Professional and qualified teachers to teach the subject, coupled with absence of a well-organized and equipped standard workshops, as well as dearth of Proper guidance and counselling, and Communal support. Similarly, Erickson (1980) Olunlaya (2002) and Amao (2009) agreed that qualified metalwork teacher's, availability of classrooms, workshops and instructional materials should be sufficient for the curriculum. Lack of the above provisions affects students' performance in metalwork which is the integral part of Technical Education. Based on the above context, this was designed to find out strategies for improving students' performance.

2. LITERATURE REVIEW

Related empirical studies with respect to the techniques to enhance student's performance in the metalwork trade at Katsina State technical schools are presented.

Sule (2001) carried out a study on student performance on metalwork trades is a strategies for boosting nation economy. The study adopted the survey method. The population of were 379 students receiving training on various metalwork

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trades. Data collected were analysed using the mean. The result of data analysis revealed that a change in performance is based on teacher's capacity and adequacy of machines and other related tools.

It is asserted by Willison (2001) that in the United States these concerns have led to the new idea particularly for genetic skills such as problem solving, team work and communication. Ellis (2001) identified three benefits of using instructional materials. First, instructional material make content easier to understand and learn. Second instructional materials also help students separate information from what might be interesting but not essential. Thirdly, instructional material diseases the necessary semantic information processing skills required to learn the material. By making the organization of content information easier to understand instructional material allow material to be addressed at more sophisticated levels. Finally students who use instructional material may become more strategic learners. An individual approach to task is called strategy (Bulgren and Lenz), in Ellis (2001) strategies include how a person thinks and acts when planning, executing evaluating a task and its subsequent outcome.

Buchanan and Boddy (2004) carried out a study on new trend in metalwork. The population comparisons some selected states in America totalling 1230 metalwork technology teachers with no sample taken. Frequency counts, mean, percentages, rank order were used to answer the research questions while to last chi-square and Anova were used to test hypothesis at 0.05 level of probability. The result revealed that overall pattern of knowledge and skill required by technology a metalwork trades teachers has changed or altered due to advance technology of modern day metalwork machines. The study of Offiong, Akpan and Usoro (2013) funding vocational and technical education in Nigeria in term of global economic recession. An article publishes in international journal of arts and humanities, Bahir Dar, Ethiopia. The researcher aimed at determining the educational funding pattern in Nigeria, particularly assess the method of funding vocational and technical education in Nigeria in time of economic recession.

Based on the findings the researchers conclude that vocational and technical education as a workshop-based and skills development oriented program is capital intensive as it places a heavy demand on equipment, tools, personals and special workshops to accommodate the emerging technologies associated with vocational training. The singular effort of government in funding vocational and technical education has so far not paid off considering the serious dearth of equipment tools, men power and structures which could have helped to salvage Nigeria from her present technological backwardness. The fact remains that since government alone cannot adequately fund vocational and technical education supplementary funding has to be sources from else were if the system must survive and saleable entrepreneurial skills imported to the Nigeria youth. This will no doubt stem the rising tide of youth restiveness, kidnapping armed robbery, political thuggery and other vices that remain in bone of the nation.

Bamidele and Onwonoye (2014) carried out a research skills requirement by the technical and vocational apprentship trainee for national integration and transformation a well-structured questionnaire items was divided into parts and sections were used to collect data from the respondents. Mean statistics was used to answer the 2 research questions posed for the study. Standard deviation of each item from the mean was also determined to find out how common the opinion respondents were: while t-test at 0.05 level of significance was used to test the hypothesis. Findings the study reveals that: ability to identify working materials needed for a specific project in their various trades is needed, dismantling and assembling of relevant components skilfully is required; ability to repair identified faults is also required; ability to estimate the cost of a specific repair is needed at very high level; identification of relevant tools that are needed to carry out a specific job and also fund that the skills acquired are beneficial to the individual and the society. Idjawe and Imarhiagbe (2014) conducted a research an investigation to ascertain the factors affecting the functionality of metalwork machines in technical colleges for quality delivery of program. This study was carried out to ascertain the factors affecting the functionality of metalwork machines in technical colleges. A 20 items questionnaire was developed to elicit information from the responded. Mean statistics was the statistical tool used to analyse the research questions.

of electricity power supply and faulty condition affect the functionality of metalwork machines during practical. Six recommendations were made to address this gap created in technical colleges' competencies.

3. RESEARCH METHODOLOGY

Research Design

This study is a descriptive research in which a survey design will be adopted in an attempt to achieve the aim of the project. Survey research design is considered suitable for this study because it sought the opinions of metalwork technology teachers in Technical schools in Katsina State of Nigeria on the strategies for improving students' performance.



Study Area

The study will be conducted in the seven educational zones in Katsina State. These are: Daura Zonal Education Quality Assurance, Dutsin-ma Zonal Education Quality Assurance, Funtua Zonal Education Quality Assurance, Katsina Zonal Education Quality Assurance, Malumfashi Zonal Education Quality Assurance, Mani Zonal Education Quality Assurance. It covers all the Technical Schools in Katsina State.

Population and Sample of the Study

The target population for this study is 135 (one hundred and thirty five) respondents, made up of the Director Technical Ministry of Education Katsina State, seven zonal Directors and their Assistants, Director Technical Katsina State Science and Technical Education Board, Director school services Katsina State Science and Technical Education Board and his assistant, Principals, vice principals and teachers.

Instruments for Data Collection

A structured questionnaire items is based on the research questions. The instrument divided in two parts. Part 1 is on general information about respondents. Part 2 which contain the sections on the questionnaire such as: section A deals with qualification of teachers teaching the trades, section B is on instructional materials and other facilities, section C focuses on strategies, section D is on improving students' performance, section E is on teachers and students empowerment.

Validation of the Instrument

The instrument to be used in this study will be subjected to face and content validation which will be conducted by 3 experts in the field of Technical Education from Bayero University Kano, Hassan Usman Katsina Polytechnic, and Umaru Musa Yar'adua University Katsina. Accordingly, validation of the instruments involves collecting and analysing data to assess the accuracy of an instrument.

Method of Data Collection

The instrument will personally administer to the respondents with the help of two (2) research assistants. The two research assistants will be briefed on the methodology for the administration of the instrument and retrieval after they have been duly completed.

Method of Data Analysis

The data collected from the respondents will be analysed using Descriptive Statistics (Mean and Standard Deviation). Descriptive Statistics Method was employed in this project because it is considered as the simplest, most convenient and bias free. In addition, a five point Liker scale was used. However, any of the research question to be accepted its grand Mean must not be less than 2.50, otherwise it will be rejected. The research was guided by four (4) research questions.

4. RESULTS AND DISCUSSION

The empirical results and related discussions/analysis are presented in this section. The data obtained were analysed according to research questions; it was presented in a tabular form using mean level frequency table.

REASEARCH QUESTION 1:

What are the qualifications of teachers teaching metalwork trade in the technical schools of Katsina State?

In order to ascertain the qualifications of teachers teaching metal work trade, the following ways were identified and presented in the research questionnaire for respondents who indicated their level of agreement as shown in (table-1) below.

Table 1: The mean ratings of respondents on the qualification of metalwork trades teachers in technical schools of

								REMARK
S/N	ITEM	SA	Α	U	D	SD	MEAN	S
1	All teachers teaching metal work have good	63	22	11	19	20	3.65	Accepted
	technical background.							
2	Teachers teaching metal work trades in	70	20	20	11	14	3.89	Accepted
	Schools of Katsina State attain at least a minimum teaching qualification.							
3	The method of teaching adopted by	68	22	18	07	20	3.82	Accepted

Katsina State.



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	teachers are effective							
4	Teachers of metal work trades make	48	50	02	14	21	3.66	Accepted
	good use of teaching aids while							
	teaching							
5	Teachers of metal work trades use	40	40	17	08	30	3.38	Rejected
	simple vocabularies in class appropriate							
	to the level of students							
6	The teachers teaching metal work trades	20	10	21	34	50	2.37	Rejected
	obtain any additional professional							
	qualification							

Table 1: Research question 1 indicates that respondents have all the needed qualification for teaching in Technical Schools of Katsina State except items 5 and 6. The items the respondents have the necessary qualifications are 1, 2, 3, and 4 with corresponding mean ratings of 3.89, 3.82, 3.66 and 3.65 respectively. These items focus on all the teachers teaching metal work trades have good background, the teachers teaching metal work trades in schools attain at least a minimum teaching qualifications, the method of teaching adopted by teachers are effective and teachers of metal work trades makes good use of teaching aids while teaching. This showed that the respondents have the needed qualifications of teachers teaching metal work trades in the technical Schools of Katsina state, Nigeria.

RESEARCH QUESTION 2:

To what extent the instructional materials in the technical schools and other facilities for teaching the metal work trades are available in Katsina State?

In order to ascertain the availability of instructional materials in the Technical schools and other facilities for effective teaching of metal work trades, the following ways were identified and presented in the research questionnaire for respondents who indicated their level of agreement or disagreement as shown, in (Table 2) below.

 Table 2: The mean ratings of respondents with regards to the availability of instructional materials in Technical

 Schools and other facilities for teaching metal work trades.

S/N	ITEMS	SA	Α	U	D	SD	MEAN	REMARK
7.	There is a standard metal work trades	48	41	07	30	09	3.65	Accepted
	workshops in the school							
8.	There are adequate materials for	40	48	12	15	20	3.54	Accepted
	practical exercises in the schools							
9.	The workshops in the school are at the	48	41	07	30	09	3.66	Accepted
	size to accommodate all students during							
	the practical							
10.	There are enough machine tools in the	45	45	20	20	05	3.75	Accepted
	school workshops							
11.	Computer Numerical Control machines	08	02	05	67	53	1.85	Rejected
12.	All machines in metal work trades	12	17	10	38	58	1.94	Rejected
	workshops are functional							
13.	The basic hand tool such as measuring,	48	57	03	20	07	3.88	Accepted
	marking out, cutting, striking, holding							
	device etc. are assorted							
14.	Adequate sheet metal work tool in the	40	48	12	15	20	3.54	Accepted
	workshops							
15.	Adequate foundry and forging tools and	38	40	10	28	19	3.40	Rejected



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	devices in the workshops							
16.	There are functional projectors/audiovisuals	09	05	09	60	52	1.21	Rejected
	facilities							
17.	Frequent supply of electricity for	07	16	10	49	53	2.07	Rejected
	operation of machines and other devices							
18.	Functional standby generator in the	13	16	05	58	43	2.24	Rejected
	school							

Table 2 in research question 2 indicated that the respondents agreed with six (6) items out of the twelve (12) items on this questionnaire, disagreeing with the remaining six (6) items. Items 7, 8, 9, 10, 13 and 14 recorded greater availability of instructional materials needed with corresponding mean rating of 3.74, 3.69, 3.65, 3.66, 3.54 and 3.54 respectively, these items focused on the enough machine tools in the schools workshops, The basic hand tools such as measuring, marking out, cutting, striking, holding device etc. were assorted, There was a standard metal work trades workshops in the school. The workshops in the school were at the size to accommodate all students during the practical, there were adequate materials for practical exercises in the schools, adequate sheet metal work tools in the workshops. This indicated that the respondents needed all the items highlighted above with regards to availability of instructional materials and other facilities in technical schools in Katsina State, Nigeria.

RESEARCH QUESTION 3:

What are the teaching strategies employed by the technical teachers for teaching metal work in Technical School of Katsina State?

In order to ascertain the teaching strategies employed by technical teachers teaching metal work trades, the following ways were identified and presented in the research questionnaire for the respondents who indicated their level of agreement or disagreement as shown in (table 3) below.

S/N	ITEMS	SA	Α	U	D	SD	MEAN	REMARK
19	Demonstration method	61	59	03	07	05	4.21	Accepted
20	Explanatory instructional method	53	49	18	05	10	3.96	Accepted
21	Project method	06	05	05	57	62	1.78	Rejected
22	Field-trip/ exhibition	53	49	18	05	10	3.96	Accepted
23	Questioning technique	03	07	05	43	77	1.63	Rejected
24	Constructivist approach method	03	01	07	48	76	1.57	Rejected
25	Group discussion instructional method	06	49	05	67	08	3.57	Accepted
26	Programmed instructional method	01	04	12	63	55	1.76	Rejected
27	Lecture method	38	34	25	18	20	3.38	Rejected
28	Guided discovery method	03	05	01	60	66	1.65	Rejected
29	Learning mode	04	06	03	56	66	1.71	Rejected
30	Role play	06	09	06	61	53	1.91	Rejected
31	Independent study	07	06	04	50	68	1.77	Rejected
32	Cognitive apprentic instructional	05	04	06	50	70	1.69	Rejected
	strategy							
33	Collaborative learning method	44	45	21	20	05	3.76	Accepted
34	Buzz group approach	02	09	05	49	70	1.69	Rejected
35	Systematic reporting strategy	08	08	09	60	50	1.99	Rejected
36	Meta learning strategy	03	02	11	49	70	1.65	Rejected

 Table 3: The mean ratings of respondents with regards to teaching strategies employed by metal work trades teachers in Technical Schools.
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Table 3 in research question 3 showed that the respondents agreed with 5 items out of the 18 questionnaire items. The items where respondents have highest employed strategies for teaching metal work trades in technical schools were 19, 20, 22, 25 and 33 which corresponded with the mean ratings of 4.21, 3.96, 3.96, 3.74 and 3.57 respectively. These items focused on the demonstration method, explanatory instructional method, field trip and exhibition, collaborative learning method and group discussion instructional method. This showed that the respondents needed the strategies employed in teaching metal work trades in technical schools of Katsina State, Nigeria.

RESEARCH QUESTION 4:

What are the ways of improving student's performance in the metal work trades in Katsina State?

In order to ascertain the proper ways of improving student's performance in the metal work trades, the following ways were identified and presented in research questionnaire for the respondents who indicated their level of agreement and disagreement as shown in (Table 4) below.

S/N	ITEMS	SA	Α	U	D	SD	MEAN	REMARKS
37	The ratio of students to hand tools	50	63	10	07	05	4.08	Accepted
	is always 1:1							
38	Prompt payment of teachers	48	50	17	11	09	3.86	Accepted
39	Organizing educational visit to	40	44	40	11	20	3.54	Accepted
	industries for students by the							
	schools							
40	Educating parent/guardian on	14	19	02	39	61	2.15	Rejected
	importance of technical education							
41	Providing a well-organized library	44	45	22	14	10	3.73	Accepted
	in the schools for teachers and							
	students for further research/e-							
	library							
42	Using audio-visuals devices during	03	04	07	68	53	1.78	Rejected
	the lesson by the teachers							
43	Frequent practical to the students	48	50	02	14	21	3.66	Accepted
44	Recruiting qualified metal work	54	41	20	10	10	3.88	Accepted
	teachers and technologist							
45	Creative practical project by the	63	22	11	19	20	3.65	Accepted
	students							
46	Conducive learning environment	55	60	08	07	05	4.13	Accepted

Table 4: The mean ratings of respondents on the ways of improving student performance in the metal work trades.

Table 4 in research question 4 indicated that the respondents agreed with all the items except items 40 and 42 out of 10 items. The items which have higher rate of improving students' performance were 37, 38, 39, 41, 43, 44 and 45 which corresponds with the mean ratings of 4.13, 4.08, 3.88 3.86, 3.73, 3.66, 3.65 and 3.54 respectively. These items focused on conducive learning environment, the ratio of students to hand tools was always 1:1, prompt payment of teachers, providing a well-organized library in the schools for teachers and students for further research e-library, recruiting qualified metal work teachers and technologist, frequent practical to the students, creative practical project by the students and organizing educational visit to industries for students by the schools. This indicated that the ways of improving students' performance were needed by the respondents for improving student performance in metal work trades in Technical Schools of Katsina State, Nigeria.

5. FINDINGS OF THE STUDY

Based on the data collected and analyzed, the following findings were made:

- 1- Qualification of teachers teaching metal work trades in technical schools
- a. All teachers teaching metal work trades have a good technical background.



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b. Teachers teaching metalwork trades in schools attained at least a minimum teaching qualification.

- c. The method of teaching adopted by teachers was effective.
- d. Teachers of metal work trades used teaching aids while teaching.
- 2- Availability of instructional materials in Technical Schools and other facilities for teaching the metal work trades
- a. There were standard metal work trades workshops in the school.
- b. There were adequate materials for practical exercise in the schools workshops.
- c. The workshops in the schools were at the size to accommodate all students during the practical.
- d. There were enough machine tools in the school workshops.
- e. The basic hand tools such as measuring, marking-out, cutting, striking, and holding tools etc. was assorted.

3- Teaching strategies by technical teachers for teaching metal work trades in technical schools

- a. Demonstration method
- b. Explanatory instructional method
- c. Fieldtrip and exhibition
- d. Group discussion instructional method
- e. Collaborative learning method

4-The ways of improving students' performance in metal work trades

- a. The ratio of students to the hand tools was always 1:1
- b. Prompt payment of teachers
- c. Organizing educational visit to industries for students by the schools
- d. Providing a well-organized library in the schools for teachers and students for further research.
- e. Frequent practical for the students
- f. Recruiting qualified metal work teachers and technologist
- g. Creative practical projects by the students

6. **DISCUSSION**

The findings of this study on the qualification of the teachers teaching metalwork trades in the technical schools of Katsina State revealed that the metal work trades teachers need to obtain additional professional qualification in various fields. The professional qualification is obtained by allowing teachers to undergo into the course or training to acquire a certificate. This was in line with the view of Nura (2014).

Moreover, the findings of this study on the availability of instructional materials in technical schools for teaching metalwork trades revealed that the metal work trades teachers' uses instructional materials and other facilities but still they are in need of some.

This finding is in line with other studies conducted on instructional materials. However, results from such studies have shown that the use of instructional materials improved the performance of students (Bower, 1982; Paivio, 1986; Reed, 1985; Dwyer, 1987; Fleming, 1987; Mayer, 1989; Anglin & Carney, 1987; Bassey, 2002).

Furthermore, the findings of this study on teaching strategies employed by technical teachers revealed that the metal work trades teachers are fully adopted on five teaching strategies or methods out of eighteen methods were structured. This finding is in line with that of Nura (2014) who found out that demonstration, explanatory, instructional method, field trip, exhibition, group discussion and collaborative methods are positively effective in teaching technical subjects, and are good in changing the performance of students.

Additionally, the findings of this study on strategies for improving the performance of the students in the metal work trades revealed that the metal work trades teachers are improved since almost all the teachers are fully improved based on the survey research, questionnaire item, ten structures items used shows that hence teachers are improved and the students are equally improved.

This is in line with the research of Nura (2012) who found out some point as a ways of improving students' performance, some of these are: the ratio of students to hand tools, frequent practical, conducive learning environment, recruiting qualified teachers, use of audio-visuals devices, educational visit, well organized library, prompt payment of teachers, among others are very important in terms of improving students' performance in metal work trades. He also found out that to improve the student performance, the above mentioned ways must be put into consideration.



7. CONCLUSION

This study has achieved its objectives of investigating the strategies of enhancing students performance in the metalwork trade in Katsina State technical schools. The findings of the study show that the Metalwork Trades teachers have a good background in technical courses, they attain at least minimum qualification to teach the courses, despite that, the Metalwork trades teachers need to obtain any additional professional qualifications. The results also revealed that the metal work trades teachers' uses instructional materials and other facilities but still they are in need of some. The findings, however, revealed that the metal work trades teachers are fully adopted on five teaching strategies. The findings of this study revealed that the teachers are improved and the students are equally improved.

Implication of the Study

The findings of this study would serve to call the attention of the government in providing adequate and latest instructional materials. It will also help the school managers to ensure that adequate supervision is carried out in the school and to ensure that only professional teachers are assigned to teach metalwork trades in Technical Schools. It also helps community members to contribute their quarter in ensuring the security in the instructional materials, machines and other facilities for their children in Technical Schools.

8. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made.

- 1. There should be motivation informs of allowances (hazard) or incentives to the metalwork teachers.
- 2. Since it is difficult for the government to provide everything needed by teachers and students, individual, none governmental organization (NGO's) and communities should be involved in the provision of some of the needed material for teaching and learning.
- 3. Teachers should inculcate the habit of researches and advancing their knowledge so as to be acquainted with new inventions, new technologies and new method of teaching technical courses.
- 4. Government should initiate a program that enables schools to use the machines and equipment provided.

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