

DEPARTMENT OF EDUCATIONAL
FGUNDATION,
ENUGU STATE UNIVERSITY OF SCIENCE
AND TECHNOLOGY, ENUGU.

**VOL. 1 NO 1** 

OCTOBER 2007

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# PROVING THE PERFORMANCE OF STUDENTS OF METAL ORK TECHNOLOGY TOWARDS ATTAINMENT OF 'NEEDS'

# Dr. B. N. ATSUMBE & I. Y. UMAR

State. State.

subj was designed to identify strategies for improving the performance of metal schnology students of Technical Colleges towards attainment of 'NEEDS' formulated to guide the study. A 28 item questionnaire was developed and used to data from respondents consisting of 12-Teachers and 82-students of Technical in Niger state. The data was analysed using frequency count; mean and t-test the study revealed that both the teachers and students share similar views the majority of the items. It was therefore recommended among others that a supped workshop with tools, materials and machine tools should be provided as a student of the use of internet should be encouraged by the teachers and that imodels and instructional aids in teaching of metal work should be emphasized by states.

#### duction

society expects its education system to meet its aspiration, shape its future, and solution to some of its social, political and economic issues. National Economic mement and Development Strategy (NEEDS) aims to restructure the government is it smaller, stronger, better skilled and more efficient at delivering essential. It seeks to transform the government from a haven of corruption to an in that spurs development and serves the people. Education under 'NEEDS' is a key instrument to empower the children to take charge of their lives in According to FGN (2004) the strategy will aim at the empowerment of the loady. Technical institutions have been recognised as good base for training as an effort to co-ordinate students and property to receive learning at the right time, using proper material and equipment needed to make that worthwhile.

leaching of metal work in post primary schools encourages the acquisition of skills in students, it encourages them to use their hands in making, repairing spare parts. According to Adigun (1997), Technical education was

believed to be for the dropouts or low intelligent students. Metal working trade cannot be left out of this stigma as it is a component of Technical education. Onwuchekwa (2003) maintained that this tends to drive people away from studying this trade. Metal work Technology is very important in technological development of Nigeria, as there is hardy any product in use that has not been made by steel or steel machines. According to Encarta Encyclopaedia (2003), metal works are artistic work made of metal from precious to base fashioned by casting, hammering, joining or combination of these techniques.

Metal work Technology trades, which are taught at Technical college level include foundry work, welding, motor vehicle body building, fabrication and mechanical craft practice (fitting & machining). It is expected that graduates of Technical colleges in metal work after completing the programme will be useful to themselves and society large. According to NBTE (2003), the objective to be achieved by metal work technology students include to appreciate uses of simple tools, develop a creative behaviour, to have self realization and initiative, have the basic workshop skills and knowledge, be able to produce and weld simple tools, must have manipulative skill, be able to identify

faults in machines and be able to repair them.

Isah (2003), remarked that building of well-equipped workshops is of utmost importance in most of the Technical colleges and Vocational centres in Nigeria, in other to achieve the purpose of skills acquisition for which they are set up. In the same van Oranu (1992), maintained that adequate supply of workshop tools will facilitates training to prepare young people for work and skills required for operating machines and also provide such knowledge and skills that are required for technological development Despite moves by government to achieve the aims of being self reliant, the performance of students is declining in Technical Colleges in Niger state. Evidence from Niger State Science and Technical Schools Board revealed that 93.4% pass was recorded in May/June 2003 National Technical Certificate (NTC) result of Technical Colleges in Niger State, 92% in 2004, 90% in 2005 and 87% in 2006, this shows decline in students performance. Atsumbe (2004), maintain that most of our institutions today do not furnish their students with minimum training to fit them for productive work. He stressed that most industries reject the students because they are not aware of what the institutions are doing. This therefore called for immediate action in order to attain 'NEEDS' objectives.

### Purpose of the study

The study sought to find out:

- Current state of tools and equipment for teaching and learning of metal work in Technical colleges of Niger State.
- Factors that will facilitate good performance of students in metal work.
- The strategies for improving the teaching and learning of metal work.

## Research Questions

In order to achieve the objective of this study the following research questions were postulated:

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What is the current state of tools and equipment for teaching and learning of what work in Technical colleges of Niger State? what are the factors that will facilitate good performance of students in metal

work?

What are the strategies for improving the teaching and learning of metal work?

hypotheses are stated and tested at 0.05 level of significance in me following 3-null hypotheses were stated and tested at 0.05 level of significance in erer to guide the study.

There is no significant difference in the mean responses of Teachers and students on the current state of tools and equipment for teaching and learning of

metal work in Technical Colleges of Niger State.

There will be no significant difference in the mean responses of teachers and students on the factors that will facilitate good performance of students in metal

There is no significant difference in the mean responses of teachers and students on the strategies for improving the teaching and learning of metal work.

Method

This section describes research design, area of the study, population, sample and ampling techniques, instrumentation, and method of data analysis used for the study.

Design

Adescriptive survey research was used to seek the opinion of metal work teachers and sudents on the performance of students of metal work technology in the Technical colleges of Niger state.

Area of the study

This study covered all Technical Colleges in Niger State. Niger State is located in the present North Central Geo-political Zone of Nigeria.

Population

The target population for the study consisted of 18-metal work teachers and 117-metal work students in Technical Colleges of Niger state.

Sample and Sampling Technique

Sample of 82-metal work students were drawn from population using random sampling schnique, while all 12-metal work teachers that completed and returned the questionnaire were used for the study.

Instrumentation

A structured questionnaire was the sole instrument used for the collection of data. It was divided into sections A - C based on the research questions. The sections contain 8, 10 and 10 items as shown in tables 1, 2 and 3 respectively. The instrument there fore

consisted of a total of 28 items, rated on a four point scale of strongly agree, Agree, Disagree, and strongly disagree.

Method of Data Analysis

The data was analysed using frequency count, mean, and t-test for all the 3-research questions and hypotheses posed for the study. The cut off point for the mean was fixed at 2.50 being the average of 4 point scale used for the study. Therefore any item that is within a mean range of 2.50 and above was regarded as agree, meaning that items are relevant strategies for improving the teaching and learning of metal work, while any mean below 2.50 was regarded disagree/ irrelevant strategy.

#### Result

The result of the data analyses are presented in the order of research questions and hypotheses posed for the study.

#### Research Question 1

What are the current state of tools and equipment for teaching and learning of metal work?

Table 1 shows the responses of both teachers and students on the current state of tools and equipment for teaching and learning of metal work.

Table 1: Responses of teachers and students on current state of tools and equipment for teaching and learning of metal work.

golaro	all add all ventor that they later to vinde	N <sub>1</sub>	= 12	$N_2 =$	82
S/No	ITEMS	$\bar{X}_{i}$	$\bar{X}$ ,	$\bar{X}$ ,	REMARKS
1	The schools have adequate tools and equipment for practical	2.15	2.30	2.23	Disagree
2	Hand tools like hacksaw, file etc. are available for use in the school workshop	2.56	2.54	2.55	Agree
3	Several machine tools such as lathe, shape, etc. are readily available for use.	2.11	1.99	2.05	Disagree
4	Materials provided are adequate for effective teaching of metal work.	2.20	2.10	2.15	Disagree
5	The utilisations of the facilities provided are encouraged.	3.20	1.40	2.30	Disagree
6	Several operations are usually performed using available tools and equipment.	2.22	1.68	1.95	Disagree
7	Some tools are usually improvised as a result of non availability.	3.15	2.58	2.87	Agree
8	Adequate maintenance is provided for and equipment.	3.20	3.50	3.35	Agree
anl or	Grand mean	2.60	2.26	Hai	LOCAL COLUMN

N<sub>1</sub> = Number of Teachers, N<sub>2</sub> = Number of students,  $\overline{X}_1$  = Mean of teachers  $\overline{X}_2$  = Mean of students,  $\overline{X}_1$  = Average mean of teachers and students.

Table 1 revealed that the two groups of respondents agreed with items 2, 7, and 8 with Table 1 12.55, 2.87 and 3.35 respectively; while they disagreed with items 2, 7, and 8 with mean of 2.55, 2.87 and 3.35 respectively; while they disagreed with other 5-items with mean ranging from 1.95 – 2.30. This indicates a terrible state of tools and equipment for leaching and learning of metal work.

Research Question 2

What are the factors that will facilitate good performance of students in metal work?

Table 2 revealed the responses of both teachers and students on factors that will facilitate good performance of students in metal work.

Table 2: Responses of Teachers and Students on factors that will facilitate good Performance of Students in metal work.

	Die Charles	N <sub>1</sub> = 12 N <sub>2</sub> = 82				
S/No	ITEMS	$\bar{X}_1$	$\bar{X}_{2}$	x,	REMARKS	
9	Rewarding students with outstanding performance in metal work with text books.	3.61	2.40	3.51	Agree	
10	Equipped library for staff and students	2.92	3.46	3.19	Agree	
11	Use models and instructional aids in teaching of metal work.	3.06	2.88	2.97	Agree	
12	Availability of professionally qualified teachers of metal work.	3.54	3.25	3.40	Agree	
13	Encouraging teachers to embark on further training.	2.55	3.02	2.79	Agree	
14	Having teachers that are dedicated to duties.	2.63	2.41	2.52	Agree	
15	Regular workshop practice on all topics taught.	3.06	3.62	3.34	Agree	
16	Enlisting students of metal work into appropriate industrial work experience.	3.25	2.15	2.70	Agree	
17	Paying stipends to metal work students.	2.32	3.82	3.07	Agree	
18	Provision of a well equipped workshop with tools, materials and machine tools.	3.70	3.50	3.60	Agree	
	Grand mean	3.06	3.05			

Information on table 2 revealed that all the factors outlined will facilitate good performance of students in metal work as they were all agreed to with mean ranging between 2.52 and 3.60. The two respondents seem to believed in provision of a well equipped workshop as it has highest mean of 3.60.

Research Question 3

What are the strategies for improving the teaching and learning of metal work?

Table 3 shows the responses of teachers and students on the strategies for improving the teaching of metal work.

Table 3: Response of Teachers and Students on Strategies for Improving the Teaching and Learning of Metal work.

 $N_1 = 12$  $N_2 = 82$ REMARKS **ITEMS** Xz S/No X, XI Provision of classroom facilities and tools 2.84 2.66 2.75 Agree 19 for teaching metal work. 3.51 2.15 2 83 Allocation of funds for maintenance of tools, Agree 20 equipment and machines. Provision of machine tools such as lathe, 2.64 2.70 2.67 Agree 21 shape, Grinding, Drilling and milling. 2.60 2.52 2.68 Regular seminars/workshops for the Agree 22 teachers of metal work. 3.04 3.35 Regular payment of teachers' salary and 3.66 Agree 23 other allowances. 3.61 3.72 Utilising current information through the use 3.82 Agree 24 of internet. Purchasing relevant text books, tools, 2.89 3.02 2.96 Agree 25 equipment, machines and materials. Constant supervision of teachers and 2.79 2.15 3.12 Agree 26 students practical classes. Agree The use of improvised instructional aids 3.42 3.64 3.53 27 should be encouraged. Agree 3.65 28 The use of small scale industrial resource 3.70 3.60 persons, such as road side welders and panel beaters. Grand mean 3.02 3.12

Table 3 revealed that respondents agreed that all the strategies outlined to improving the teaching and learning of metal work is relevant. They were all agreed with mean ranging from 2.60 - 3.72 although students disagreed with item 20, the tri respondents strongly believed in utilizing current information through the use of interest as it has highest mean of 3.72.

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applineses Testing hypotheses tested at 0.05 level of significance are presented in table 4, 5, and total work technology. hypotheses to deferences of significance are presented in table 4, 5, and determine whether differences exist between the responses of teachers and denis of metal work technology.

T-test of Difference between Teachers and Students on Current State of 1-test of Different for Teaching and Learning of Metal work.

			and the contract of the contra	-
X	S.D	N	df Metal work	L
sopers 2.60	1.17	12	92 te Ly Decision	ė
vients 2.26	0.98	82	1.06	ŀ
30010	SALVAN III	511.000	1.98 Accepted	ı
	SD-Star	ndard da		п

x = mean, S.D = Standard deviation; t<sub>c</sub> = t-calculated; t<sub>v</sub> = t-table value df = degree of freedom; N = Number of respondents.

ble 5: T-test of Difference Between Teachers and Students on Factors that will Facilitate Good Performance of Students in Metal work.

ONID	X	S.D	N	df	1		SI BUILD WHEN
achers	3.06	1.05	12	GI -	l <sub>c</sub>	t <sub>v</sub>	Decision
idents	3.05	1.09	82	92	0.03	1.98	Accepted

tole 6: T-Test of Difference Between Teachers and Students on Strategies for Improving the Teaching and Learning of Metal work.

ionb	X	S.D	N	df	t.		Decision
echers	3.12	1.11	12		4	Ly	Decision
udents	3.02	1.08	82	92	0.29	1.98	Accepted

Table 4,5, and 6 revealed that the t-calculated are less than the table value of t, eresults of this tests suggest that the difference between the scores of teachers and dents on the research questions are not statistically different. It is therefore concluded there is no significance difference between the mean scores of the teachers and dents, null hypotheses were then accepted for the 3-research questions.

# dings/Discussion

alysis on table 1 shows that respondents agreed with 3 items and disagreed with 5 This reveals that hand tools are available for use in the school workshop, some are usually improvised as a result of non-availability and that adequate effective is provided for tools and equipment, but materials provided are inadequate effective teaching of metal work, several machine tools are not readily available. 4 also shows that the null hypothesis was not rejected. It is pertinent to note here materials/tools needed for skill development in metal work are not available. This ding to Ejiogwu (1994) resulted because the resources at government's disposal is windling, and have to be rationed out to competing demands, beckoning for urgent

attention. Hence, government is never in position to satisfy the demand for all sections high-lighted to

including education.

A close look at table 2 revealed that all factors high-lighted to facilitate

A close look at table 2 metal work were agreed to, with varying degree A close look at table 2 revealed that agreed to, with varying degrees performance of students in metal work were agreed to, with varying degrees performance of students in rewarding students with outstanding performance of students believed in rewarding students with outstanding performance. performance of students in metal work with outstanding performance acceptance. Respondents believed in rewarding students with outstanding performance acceptance. Respondents believed in rewarding students with outstanding performance acceptance. acceptance. Respondents believed in rewarding and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works having qualified teachers to handle metal work and provision of well equipped works and provision of well equipped works are the provision of well equipped works and provision of well equipped works are the provision of well equipped works and provision of well equipped works are the provision of the provision of the provision of the provis having qualified teachers to handle metal work were rated high. The finding in table with tools, materials and machine tools, as they were rated high. The finding in table with tools, materials and machine tools, as they with tools, as they with tools, as they with tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools, as they will be a second to the tools and they will be a second to the tools and they will be a second to the tools and they will be a second to the tools and they will be a second to the tools as the tools are tools are tools are tools are tools as the tools are tools ar with regard to null hypothesis was not rejud to null hypothesis wa Onwuchekwa (2003), who observed that and contended that with introduction instructional activities in metal work and contended that with introduction entrepreneurial courses in curriculum of Technical College metal work trades, gradus of metal work trades will be equipped with knowledge and skills necessary for them. of metal work trades will be equipped with same vain Oranu (1992), maintained to manage small-scale enterprises. In the same vain Oranu (1992), maintained to manage small-scale enterprises. In the manage small-scale enterprises, in the manage small-scale enterprises, in the manage small-scale enterprises, and also provide such knowledges and also provide such knowledges. work and skill required for operating machines and also provide such knowledge at skills that are required for technological development.

This study also revealed that encouraging teachers to embark on further training regular workshop practice on all topics taught and the use of models and instructor aids in teaching of metal work will facilities good performance of students in metal wa This is in line with Oderigive, (1970), who stressed the importance of instructions facilities in schools and emphasized that effective implementation of metal and technology programme can be done by adequate supply of instructional materials to

good practical training.

The findings of this study as revealed in table 3 shows that several stratege could be adopted for improving the teaching and learning of metal work trades. The finding in table 6 with regard to null hypothesis was accepted. It is important to emphasis that greater priority was laid on utilising current information through the use of interand the use of small scale industrial persons such as road-side welders and perbeaters. This seems to be in line with the current government reform agenda when participation of private sector in the economy through the use of small and metal enterprise investment equity scheme (SMIES) was emphasized (FGN, 2004). This also in line with Adebayo (2003), who emphasised partnership between education at industries in order to develop competence in students and make them a responsibilities citizenship with a focus in entrepreneur's skills. From the fore going, it is evidently dethat Nigeria as a nation should emphasise functional education capable of tuming economy around and ensuring self reliance.

## Recommendations

Based on the findings of this study the following recommendations were made:

As a matter of urgency well equipped workshop with tools, materials machine tools should be provided as a result of collaboration better

Students with outstanding performance in metal work should be rewarded to textbooks by appropriate authorities.

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of models and instructional aids in teaching of metal work should be onsised by the teachers.

distribution of current information through the use of internet should be couraged by the teachers

should be collaboration in the use of small scale enterprises as resources in teaching metal work. gesons in teaching metal work

termer's salary and other allowances should be paid regularly.

reflectionally qualified teachers of metal work should be employed.

dear that the needed type of education in Nigeria is a functional type of in which students will acquire a specific skill in order to be self-reliant. This emphasised in this study. Much can not be said to have been achieved in the to pagrammes. It is hope that 'NEEDS' as government reform Agenda will operate to carry all sectors of education along, particularly metal work trades so as to cestomy around

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