

Improving Strategies for Teaching and Learning of Metal Work in Government Technical Colleges in Rivers State

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ABSTRACT

The study focused on students perception on improving strategies for the teaching and learning of Metal Work in Government Technical Colleges in Rivers State. Also the study was to find out the availability of equipment for teaching and learning of metal work subjects. A structured questionnaire was used to collect data for the study. Data collected were analyzed using mean, percentages and frequency. The findings of this study revealed that Metal Work is taught using the following teaching methods: Demonstration strategy, field trip strategy, lecture strategy, Discussion strategy, Discovery strategy and Workshop strategy. The advancement in technology has created room for improvement in teaching strategies in the workshop. The study revealed that 91% of the respondents agreed that the use of computers, the internet, digital presentations, video strategy, slides and power point presentation lead to many improvement of strategies for teaching and learning of metal work. Availability of equipments for teaching and learning of Metal Work is very important for the purpose of practice in the workshop. The findings revealed that 100% of the respondents agreed that Turning (lathe) Machines were available in the workshop. Other machines available include: Drilling Machines, Sawing Machines, Clamps (Vices), Milling Machines, Grinding Machines, although some of them were inadequate. It was recommended that sufficient learning equipment be provided, particularly mixer machines and band saw machines. Also the available equipment should be duly maintained and technicians should always be on ground to supervise students during learning and practice times to improve quality teaching and learning of metal work. Computers should be provided with internet facility for easy comprehension and presentation of work.

Key words: *Strategies, Technical colleges, Learning, Machines, Metal, Teaching and teaching methods,*

Introduction

Teaching methods have become diversified with the advent of new technology. Prior to this period, traditional methods such as demonstration, field trip, lecture, discussion, discovery and workshop were utilized in teaching of metal work. Advances in technology have paved way to increasing number of new teaching methods to help the student teaching and learning process. Computers, the internet, digital presentations, audio and video strategies are now available for a better learning experience. While such advancements have made things simpler for most teachers and students, traditional teaching methods will continue to play an important role in student education (Arzelonline, 2012 and Amesi, Akpomi and Okwuanaso, 2014). Teaching method

comprises the principles and methods used for instruction to be implemented by teachers to achieve the desired learning in students.

These strategies are determined by subject matter to be taught and the experience of the learner. For a particular teaching method to be appropriate and efficient it has to be in relation with the characteristic of the learner and the type of learning it is supposed to bring about (Wikipedia, 2016). However, for the strategy to work, students and teachers must have access to metal work equipment, computers, the internet, tools and materials in their various workshops. Practical work needs application of what has being taught. In order to actualize the learning process by the student, materials to work with must be provided. Strategies for improving teaching and learning of metal work will influence students behavior and learning process when they use computers, internet and power point presentation. The intent and choice of teaching methods must take into account the nature of the subject matter for what it is going to be used in the interest of the learner. Eric (2013) posits that traditional teaching styles have evolved with the advent of differentiated instruction, prompting teachers to adjust their styles toward students' learning needs. Hence teachers must incorporate Computers, the internet, digital presentations, and video strategies with traditional method to enhance teaching and learning of metal work.

According to Arzelonline (2012), there is no other method that invokes a student's attention than a physical demonstration. Demonstrations in the classroom can raise students' curiosity while reinforcing memory retention. Students remember their lessons better when a demonstration is done with real object and computer presentation. By proving that a concept can be applied in the real world, students will appreciate it better. Leni (2013) and Akpomi (2013) noted that Demonstration method involves showing, doing and telling the student the points or emphasis on the subject of discussion. It is mostly used as a technique of acting on the object of the subject matter. This method makes the students participate more by actually doing the practical examples of the teacher's work in the workshop. The teacher shows how to operate, manipulate an equipment while the class observes. The procedure of the work is done step-by-step by using good metal. The more you practice on bending and cutting of the metal the better you become at it.

An educational field trip can be an integral part of the instructional plan. Good field trips provide participants with firsthand experience related to the topic or concept being discussed in the class. They provide unique opportunities for learning that are not available within the four walls of a classroom. An example of this would be a visit to a metal work industry. A trip such as this would allow participants to see first-hand the different techniques of cutting and shaping metals as discussed in the workshop (Brian and Linda, 2004). Prem (2012) stressed that field trips involve excursions outside the classroom setting for the purpose of making relevant observation that concerns metal work practice in the workshop. The teacher should incorporate computer and internet in the trip process. Information received must be properly documented to enable the teacher use it in class. Students will obtain specific information about teaching and learning of metal work while on field trip. It is also important to ensure that field trip compliments the lesson by meeting specific expectations. Students must have necessary background knowledge prior to field trip in order to gain more from what they were taught in class. Paris (2014) and Amesi, Akpomi and Amadi (2014) stated that lecture method is just one of several teaching methods used in schools by teachers. It's usually considered the primary one. The lecture method is convenient and usually makes the most sense, especially with larger classroom sizes. This is why lecturing is the standard for most college courses. Lecturing lets professors address most people at once, while still conveying the information that is most important, according to the lesson plan. Lecture method is a practice that spoon feed the learner with information of facts and allows students to

take notes. The teacher talks most of the time and thus makes teaching teacher-centered. Natasha (2014) noted that the main focus behind the teacher-centered approach is the idea that the teacher is the main authority figure. The teachers' role in this approach is to pass on the knowledge and information needed to their students. In metal work class the student must understand the information in order to be able to execute the work in the lathe machine. Eric (2013) and Amadi and Adesope (1996) opine that discussion strategy is best-suited for lab activities that will allow the student participate in the workshop by contributing to the question ask. Discussion is effective when the students are involved in the discussion. Learning becomes easier on the part of the student.

Richard (2016) stated that discovery strategies are techniques for generating and developing ideas. The method occurs when an individual is involved mainly in using the mental processes to discover some concepts or principles. This means that mental and physical activities an individual is able to grasp will enhance creative ideas in the application of the metal practical work in the workshop. A discovery method involves an unstructured exploration in some problem solving experience in which the student can draw general conclusions from data which is gathered through various mental and physical processes. The learner needs to use all the discovery capabilities acquired in class to succeed in the practical application. According to Eric (2013), workshop strategy includes making available equipment like turning machines, computer with internet, drilling machines, milling machines and grinding machines in the workshop. Workshop strategy is to put the skill learnt into action. Teaching and learning with relevant equipment will enable students develop knowledge and skills to solve problems related to metal work in the workshop. There is a popular saying that "Practice makes perfect and learning is made easier by doing. Adequate practical use of equipment, computer, internet, machines, digital presentations, video strategies, slides and power point presentation helps the students develop basic skills in metal practical work. It stimulate students interest in metal work.

The-attic (2016) and Julie (2001) stated that a workshop strategy sets up a framework and structure in which students work to develop interest and sharpen skills learnt in workshop. Frequent practical use of equipment and machines in the workshop arouse the interest of the learners to do more thereby making teaching and learning more interesting. Equipment in the workshop offers students a wealth of experience that stimulates individual student's ability for positive creative work. Availability of equipment and machines with constant practice in the workshop will improve teaching and learning of metal work. It will make students to understand and developed positive interest in the class. The availability of equipment and machines in the class significantly contributes to improve educational performance of the student. When teaching and learning equipment and machines are used correctly, they assist the teachers in capturing learners attention and imagination. This is because all learning experiences utilize three domains of Bloom's taxonomy: cognitive, affective and psychomotor. This study focused on students perception on strategies for improving the teaching and learning of metal work in Government Technical College in Rivers State and to determine the availability of equipments for teaching and learning of metal work.

METHODOLOGY

For the purpose of this research work, the research design adopted was the survey type. The population of the study consists of Vocational students studying metal work in government technical colleges (Government Technical college Trans-Amadi Port Harcourt, Government Technical college Ahoada, Government Technical college Tombia, Government Technical college Ele-Ogu) in Rivers State. The sampling size was 108 students randomly selected as follows: twenty-seven (27) students were randomly selected from each of the four technical colleges in Rivers State. The instrument for the data collection was a structured questionnaire. The instrument was divided into three sections. Section A elicited information on students

perception on traditional teaching strategies for teaching and learning of metal work. Based on 4 point rating scale of Strongly Agree (SA = 4 points), Agree (A = 3 points), Disagree (D = 2 Points), and Strongly Disagree (SD =1 Point). Section B elicited information on students perception on improved strategies used for the teaching and learning of metal work. Section C elicited information on the availability of equipment in teaching and learning of metal work. The data collected from respondents were analyzed using frequency, mean and percentages.

RESULTS AND DISCUSSION

Table 1: Students perception on the use of traditional teaching strategies for improving the teaching and learning of metal work.

S/ N	STATEMENT	SA	A	D	SD	TOTAL	MEAN	REMARK
1	Demonstration strategy improve the teaching and learning of metal work.	53 (49.1)	28 (25.9)	20 (18.5)	7 (6.5)	108	3.18	Agreed
2	Field trip strategy improve the teaching and learning of metal work.	65 (60.2)	18 (16.7)	20 (18.5)	5 (4.6)	108	3.32	Agreed
3	Lecture strategy improve the teaching and learning of metal work.	53 (49.1)	30 (27.8)	20 (18.5)	5 (4.6)	108	3.21	Agreed
4	Discussion strategy improve the teaching and learning of metal work.	47 (43.5)	32 (29.6)	24 (22.2)	5 (4.6)	108	3.12	Agreed
5	Discovery strategy improve the teaching and learning of metal work.	55 (50.9)	30 (27.8)	13 (12.0)	10 (9.3)	108	3.20	Agreed
6	Workshop strategy improve the teaching and learning of metal work.	51 (47.2)	38 (35.2)	19 (17.6)	0 (0)	108	3.30	Agreed

Midpoint = 2.50

Any mean score <2.50 suggests disagreement

Any mean score >2.50 suggests agreement

Table 1 shows that 75% of the respondents agreed that Demonstration strategy improve the teaching and learning of metal work. The mean score of 3.18 confirms this agreement with the statement. Table 1 revealed that 76.9% of the respondent agreed that Field trip strategy improve the teaching and learning of metal work. The result of the table above shows that 76.9% of the respondents agreed that Lecture strategy improve the teaching and learning of metal work. The above finding reveal that 73.1% of the respondents agreed that Discussion strategy improve the teaching and learning of metal work. Table 1 shows that 78.7% of the respondent agreed that Discovery strategy improve the teaching and learning of metal work. Also, table 1 shows that 82.4% of the respondents agreed that Workshop strategy improve the teaching and learning of

metal work. The mean scores of the strategies displayed above confirms agreement with the statements in column one.

Table 2: Percentage of Agreement on improved strategies for teaching and learning of metal work

Improving Strategies Used	Frequency of response *N= 108	Percentage of Agreement
Computers, Internet, Digital Presentations, Video Strategies, slides and power point presentation	98	91%

*N means number of the sample size of the study which is 108.

Table 2 revealed that 91% of the respondents agreed that improving strategies for teaching and learning of metal work includes the use of computers, internet, digital presentations, video strategies, slides and power point presentation.

TABLE 3: Availability of equipment for teaching and learning of metal work.

N/S	EQUIPMENT	AVAILABILITY	PERCENTAGE
1	Turning (lathe) Machines	108	100
2	Drilling Machines	102	94.4
3	Sawing Machines	101	93.5
4	Clamps (Vices)	65	60.2
5	Milling Machines	60	55.6
6	Grinding Machines	75	69.4
7	Hack Saw	77	71.3
8	Power tools Machines	67	62.0
9	A.C and D.C Welding Equipment	79	73.2
10	Cutting Machines	58	53.7
11	Mixer Machines	50	46.3
12	Arc and torch welding Machines	58	53.7
13	Band saw Machines	52	48.1
14	Acetylene and oxygen equipment	58	53.7
15	Vertical and pedestal drilling Machines	60	55.6

Multiple responses

Table 3 Shows that 100% of the respondents indicated that turning (Lathe) machines were available. Drilling machines were available as were indicated by 94.4% of the respondents. 93.5% of the respondents confirmed that sawing machines were available. Also available as indicated by 60.2% of the respondents were clamp (vices). 55.6% of the respondents indicated

that milling machines were available. Grinding machines were available as indicated by 69.4% of the respondents. 71.3% of the respondents confirmed that Hack saws were available. Power tools machines were available as were indicated by 62.0% of the respondents. Table 3 also reveal that 73.2% , 53.7% , 53.7%, 53.7% and 55.6% of the respondents indicated that A.C and D.C welding equipment, Cutting machines, Arc and torch welding machines, Acetylene and Oxygen equipment and Vertical and Pedestal drilling machines were available respectively. Table 3 shows that Mixer Machines and Band saw Machines were inadequate in the workshop.

CONCLUSIONS

The study examined students perception on strategies for improving the teaching and learning of metal work. The findings indicates that the respondents agreed that Demonstration strategy, Field trip strategy, Lecture strategy, Discussion strategy, Discovery strategy and Workshop strategy were teaching strategies utilized in metal work. The study also revealed that 91% of the respondents agreed that improving strategies for teaching and learning of metal work includes the use of computers, internet, digital presentations, video strategy, slides and power point presentation in Technical colleges in Rivers State. The study revealed equipments that were available in improving the teaching and learning of metal work. Some of them were turning (Lathe) machines, drilling machines, sewing machines, A.C and D.C welding equipment.

RECOMMENDATIONS

The following recommendations were made based on the result of this research.

1. Metal work teachers should apply the improved teaching strategies identified in this study to improve the teaching and learning of metal work.
2. Rivers State Government should provide funds to purchase more mixer machines and band saw machines in metal work workshop.
3. Students should participate more in the industrial training outside the classroom setup in order to acquire more knowledge and skills on the use of computer, internet and, Digital Presentations,.
4. Availability of equipment in the class will improve the teaching and learning of metal work.
5. Metal work students should learn how to use computer with internet and equipment in the workshop, as to enable them to design, fabricate and construct materials during introductory technology.
6. Metal work teachers should be sent on training to learn more on how to use computer, internet, Digital Presentations, Video Strategy, slides and power point presentation in teaching and learning metal work courses.

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