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Manpower Development Strategies and the Use of Instructional Media in the Teaching of Mathematics in Cross River State Secondary Schools

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Abstract
Inadequate use of appropriate vocational instructional methods and relevant productive instructional media in technical colleges accounts for poor acquisition manipulative skills and competencies needed for effective job performance in the world of work. To carry out this study, four research questions derived from the purposes of the study were formulated. A sample of 120 respondents obtained through stratified random sampling techniques were selected from a total population of 200 technical teachers in four technical colleges in Cross River State. Questionnaire of four-point likert scale validated and tested for reliability was use for data collection. Simple mean at 2.5 cut-off point was used for data analysis. Recommendations were based on the findings of the study.

Keywords: *Manpower, Development, Strategies, Instructional Media, Technical Colleges*

Background to the Study

Manpower development of any nation such as Nigeria to a great extent is achieved through education. Nigeria as a developing nation cannot industrialize the develop economically without the ability to achieve functional education. Such abilities come through technical education. It is for this reason that the National Policy on Education revised (2004) emphasized the teaching of technology in secondary schools in Nigeria at the introduction of the present 6:3:3:4 system of education. The emphasis according to the policy is geared towards the training of technical personnel with adequate practical skills relating to occupations in various sectors of the economy and social life. Technical education, the main sources of technical manpower (technicians,

technologist, craft-men etc) is practical oriented. Its study demands effective use of appropriate instructional methods in a conducive classroom s and well-equipped workshops which ought to be a replica of the industry where the learner shall subsequently work (Duru 2006:96). Supporting this view considering the relevance of instructional media in technical manpower development, Uga (1981) and Kanu in Surma 2008:20 stressed that for effective teaching and learning to take place, instructional media must be acquired and effectively utilized in instructional situations. But, it is obviously in the recent time that technical teachers rely on the traditional methods of teaching which are not suitable for technical instruction. This practice which is devoid of effective use of workshop is not acceptable and needs urgent redress. Technical instruction in technical colleges should therefore be delivered with suitable instructional methods and relevant media in order to communicate more concretely the concepts of the industry, which are difficult to learn verbally. It is against this background that my interest to embark on this study was aroused.

Statement of the Problem

Inadequate use of appropriate vocational instructional methods and relevant productive instructional materials in teaching technical courses in technical collage account for poor acquisition of practical skills competences required for effective job performance in the worlds of work (Duru, 2006). Similarly, the tools and equipment without which practical skills can be developed in learners are either lacking or grossly inadequate in technical college in the recent time. Where this tools and equipment are available, some of them are not function due to depreciation, inferiority, lack of maintenance and repairs (Uzoagulu 2006) or lack of consumable training materials required to turn- on the equipment. This inadequacy makes technical teachers to resort to verbal reaching. Without effective use of instructional equipment in instructional situation, the intended instruction is hampered and the technical manpower of the economy is half-baked and unproductive. This is the problem of this study

Purpose of the Study

The purpose of this study was to:

1. Determine the constraints in the use of vocational instructional methods in teaching technical courses.
2. Determine whether the workshops of technical colleges are well equipped with functional equipment.
3. Determine the use of productive instructional materials in teaching technical courses.
4. Determine the constraints in the use of productive instructional materials in teaching practical skills

Research Questions

This study sought answers to the following questions:

1. What are the constraints in the use of vocational materials methods in teaching technical courses?

2. Are the workshops of technical colleges equipped with functional equipment?
3. Are productive instructional material effectively utilized in teaching technical courses?
4. What are the constraints in the use of productive instructional materials in teaching practical skills?

Methodology

Population for the Study

The population for the study consists of all the technical teachers in the four technical colleges in the three educational zones in Cross River State. Technical teachers are teachers who teach technical subjects such as woodwork, metal work. Electrical installation, technical drawing among others.

Sample and sampling Technique

A sample of 120 technical teachers obtained through stratified random sampling technique was use for the study. The stratified sample consist of 40 graduate technical teachers and 0-graduate technical teachers, 10 graduate and 20 non-graduates teachers from each of the four technical colleges respectively. The reason for using stratified sampling technique is to ensure that both graduate and non-graduate teachers are well represented in the sample for more accurate information.

Instrument for Date Collection

The instructional foe data collection was the manpower development questionnaire (MDQ) developed by the researcher. The question consist of section A and B. section A deals with the respondents personal data such as set and qualification while section B is made up of 20 items of questionnaire grouped according to the to the four research question. A four –point likert rating scale of strongly agree 4 to strongly disagree 1 in which responses are required from the respondents were provided.

Validity and Reliability of the Instrument

To increase the validity of the instrument, three experts in measurement and evaluation in uncial certified the instrument for face and content validity. On the other hand, a test – retest method of establishing the reliability of the instrument was adopted. Using spearman Rank – Order correlation coefficient of 0.8 was obtained. This indicates that the instrument was reliable and used for data collection.

Method of Date Analysis

The data collected were presented in tables 1, 2, 3 and 4 according to the four research question. Using descriptive statistics, a mean at 2.5 cut –of point was employed to determine the level of agreement or disagreement in the respondent's responses to the four point rating scale.

Data Analysis and Result

Research question 1

What are the constraints in the use of vocational instructional method in teaching technical courses? Questionnaire item 1-5 provided answer to research question 1. To answer the question, the respondents are asked to indicate the extent to which they agree or disagree with the constraints in the use of conational instructional methods.

Table 1: Mean Response of the Constraints in the use of Vocational instructional Methods in teaching Technical Courses

Items	Constraints	Mean	Decision
1.	Lack of hand tools and machines tools	3.31	Agree
2.	Lack of consumable materials	3.24	Agree
3.	Lack of drawing instruments	1.97	Disagree
4.	Poor attitude of technical teachers to teaching	3.17	Agree
5.	Congested classrooms	1.79	Disagree

Source: Journal of research in Education. Volume 4, Number 2, 2007

Table 1 Shows that respondents disagree that constraints such as lack of drawing instruments and congested classroom hinder effective use of vocational instructional methods in teaching technical courses. They however, agreed that lack of hand tools, machine tools, consumable training materials and poor attitude of technical teachers to teaching are the militating constraints as indicated by the mean scores of the items analyzed.

Research Question 2

Are the workshops of technical colleges well equipped with functional equipment? Questionnaire items 6-10 answered research question 2. To answer this question, the respondents are required to indicate the extent to which they agree or disagree with the functionality of equipment in the workshops of technical colleges.

Table 2: Adequacy of Functional Equipment in the Workshop of Technical Colleges N = 120

Items	Functional Equipment	Mean	Decision
6.	Adequacy of functional work benches	2.98	Agree
7.	Sufficient functional bench vices	2.29	Disagree
8.	Superior hand and machine tools	1.81	Disagree
9.	Adequate functional machines tools	2.1	Disagree
10.	Sufficient functional hands tools	2.3	Disagree

In table 2, the respondents agreed that the workshops of technical colleges contain adequate functional workbenches. On the other hand, they disagreed that sufficient bench vices, adequate machine and hand tools are not functional or in good working condition and of inferior quality as indicated by the mean scores of the items analyzed.

Research Question 3

Are productive instructional materials effectively utilized in teaching technical courses? Questionnaire items 11-15 provided answer to the research question 3. To answer the question, the respondents are asked to indicate the extent they agree or disagree with effective utilization of productive instructional materials in teaching technical courses in technical colleges.

Table 3; Effective Utilization of Productive Instructional Materials in Teaching courses

N=120

Items	Utilization	Mean	Decision
11.	Hand tools are effectively utilized	2.08	Disagree
12.	Machine tools are effectively employed	1.76	Disagree
13.	Consumable materials are effectively utilized	3.08	Agree
14.	Potable power tools are effectively employed	1.91	Disagree
15.	Drawing instrument are effectively utilized		

In table 3, the respondents agreed that consumable training materials and drawing instruments are effectively utilized as show by the mean scores of the items analyzed.

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Research Question 4

What are the constraints in the use of productive instructional materials in teaching practical skills? Questionnaire items 16-20 provided answer to the research question 4. To answer this question, the respondents are requested to indicate the extent they agree or disagree with the constraints in the use of productive instructional materials in teaching practical skills.

Table: Constraints in the use of productive instruction materials in teaching practical skills. N=120

Items	Constraints	Mean	decision
16.	Irregular electricity supply	3.11	Agree
17.	Lack of maintenance of equipment	3.16	Agree
18	Lack of consumable materials	3.85	Agree
19.	Non-payment of hazard allowance	1.85	Disagree
20.	Inadequate practical lesson period	1.67	disagree

Table 4 shows that the respondents disagreed that the constraints such as non-payment of hazard of allowance to technical teachers and inadequate practical lesson periods hinder effective utilization of productive instructional materials in teaching practical skills. They however, agreed that irregular electricity supply, lack of maintenance and repair services of equipment and lack of consumable training materials are the constraints show by the mean scores of the items analyzed.

Discussion of Findings

In table 1, the result reheated that lack of hand and machine tools, consumable training materials and poor attitude of technical teachers to teaching are the constraints in the use of vocational instructional methods in teaching technical courses in technical colleges. This finding is consistence with Uzoagulu (1996) and Duru (2002) who observe that many technical teachers in the recent time use inappropriate instructional methods in teaching. This is due to lack of instructional tools and equipment while they suppose to deliver their lessons in workshop environment, which ought to be a replica of the actual industry where the learner will subsequently work.

On the other hand, poor attitude of technical teachers to teaching which is as a result of poor remunerations, irregular payment of salaries etc. creates negative attitude, make them play truancy and teach only then they like even without appropriate vocational instructional method. In table 2, the result showed that instructional devices such as bench vices, hand and machine tools in the workshop of technical colleges are not functional and sub-standard for effective technical instruction. Supporting this view, Duru (2001) asserted that many technical institutions in the recent time lack of necessary tools and equipment. In view of the assertion, Ababa (1981) in Duru (2001) expressed dismay that an attempt in teaching practical skills in training institution often fail due to lack of equipment. These inadequacies are unacceptable because effective technical instruction should be given in a well-equipped workshop that workshop that would compete favorably with the occupation where the trainee shall work. Table 3 revealed that productive instructional materials such as hand and machine tools are not effectively utilized by technical teachers in instructional situations.

This findings is in line with the view of Dike (1989) who reported that technical teachers should know how to use productive instructional device before employing them in teaching otherwise their use will amount to mere presentation of beautiful gadgets to the learners which will make no impact on practical skills development. In table 4, the result revealed that irregular electricity supple, lack of maintenance of equipment and lack of consumable training materials required to turn-on the equipment are the constraints in the use of productive instructional materials in teaching practical skills. This findings is supported by Uzogulu (1996) and Duru (2001) who asserted that tools and equipment in training instantiatons cannot be effectively used for instructional activities due to lack of electricity supply, maintenance and repairs of equipment, and consumable training materials in the workshop. No matter the quantity and quality of machine tools in the workshop, they cannot be employed for any meaningful practical purpose without electricity require d for their operations.

Conclusion

The purpose of this study was to investigate manpower development strategies and the use of instructional media in technical colleges. Based on data analysis, the result led that.

1. Lack of hand and machine tools consumable training materials and poor attitude of technical teachers to work are the constraints in the use of vocational instructional methods in teaching technical courses.
2. Adequate instructional equipment such as bench vices, machine tools and hand tools in the workshop of technical colleges are not functional and inferior quality.
3. Instructional equipment such as hand tools, machine tools and portable power tools are not effectively utilized in teaching technical curses.
4. Irregular electricity supply to power machine tools, lack of maintenance and services of equipment and lack of consumable training materials to turn on the equipment are the constraints in the use of productive instructional materials in teaching practical skills.

Recommendations

Based on the findings, the following recommendations are made

1. Adequate tools and equipment and relevant consumable training materials should be provided in technical colleges to enhance effective teaching and learning.
2. Technical teachers should be well remunerated and their salaries allowance paid regularly to make develop positive attitude to work.
3. Maintenance team should be established in every technical college for effective maintenance of tools and equipment to make them functional and in good working condition.
4. Regular electricity should be supplied to technical colleges to power and make machines tools functional.

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