

ENHANCING MASTERY OF PRACTICAL SKILLS IN STUDENTS OF VOCATIONAL AND TECHNICAL EDUCATION THROUGH ACTIVITY BASED INSTRUCTION

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ABSTRACT

The study seeks to understand the issues and challenges related to the implementations of activity-based instructions on vocational and technical education student in Nigeria. A survey was carried out involving vocational and technical education teachers in all six government owned technical colleges in Lagos State of Nigeria. A total of 150 teachers were selected randomly as respondents for the study. A four point scale items were designed to elicit information from the respondents. The findings of the study indicated that the techniques and the strategies adopted by the teachers of vocational education include: demonstration, field trips, projects, experiments and assignments. Various methods to evaluate students outcome include: process-product through systematic observation. It was evident from the study that constantly focusing on activity to make learning fun can actually hamper those students who make good progress without it. Based on the findings the researcher therefore concluded that good vocational and technical education teachers require the right attitude, have years of professional and practical skills and entrepreneurial experience at the workshop floor of industry and good background knowledge of engineering design.

Keywords: *Vocational education, activity-based learning, practical skills*

1 INTRODUCTION

Vocational and Technical Education according to the Nigerian National Policy on Education (NPE) is a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sector of economic and social life. In pursuance of the above, technical and vocational education shall:

- (a) Provide manpower in applied sciences, technology and business particularly at craft, advanced craft and technical levels;
- (b) Provide technical knowledge and vocational skills necessary for agriculture, commercial and economic development;
- (c) Give training and impart the necessary skills to individual who shall be self reliant economically (NPE, 2004).

The above goals are designed to produce craftsmen and master craftsmen at the Technical College level through various trades like Mechanical, Computer Craft, Electrical/Electronics, Building/Woodwork, Hospitality, Textile, Printing, Beauty Culture and Business Trade.

Prosser (1949), in his theory of Vocational Education pointed out that for every occupation there is a minimum of productive ability, which an individual must possess in order to, secure or retain employment in the occupation. If vocational education is not carried to that point with the individual, it is neither personally nor socially effective. That is, the value of vocational education depends on the ability of the individual to use his training in gainful employment. Therefore, teachers of vocational and technical education must adopt a practical approach to their lesson delivery. Consequently, the use of activity based instruction is most important. Thus, the traditional method of lesson delivery is giving way to activity based instruction. Activity based instruction is the form of classroom activity where the teacher effectively involves the learner in a task. The focus here is on making the abstract concrete and on learning by doing. Francis (2010), pointed out that the activity based instruction can be teacher driven with direction from an instructor or learner driven with the learner having freedom to explore.

Teaching has changed face from the former teacher-monopolized instruction which thrived in antiquity leaving the students as mere recipients and absorber of knowledge to a non-traditional practice and profession. Subong (2010), observed that teaching methods has gone from initiation during the early stage of educational development to non-traditional and modern methods in the present educational set-up. Certain strategies and techniques have come into existence with accompanying frameworks to make the best out of every student through innovative, efficient, and effective instruction. This approach provides opportunities for students to express their freedom to explore possible ways to solve a certain problem or to manipulate materials with the teacher's role reduced to that of facilitator.

Therefore, mastery of skills among students can be achieved through regular involvement in workshop practical activity. They should be allowed to regularly carry out practical exercise on their own under supervision of the teacher at every stage of the work.

Theoretical based instruction in vocational and technical education does not give room for mastery of skills. Constant practice, through manipulation and free self-expression enhances mastery of skills easy. It is ‘constant practice that makes one perfect’.

2 STATEMENT OF THE PROBLEM

The old traditional teacher monopolized instructional method is clumsy and uninteresting to great number of learners. Theoretical instructions by teachers do not promote motivation, interest and mastery of skills that are needed by the learners. In fact, the traditional technique of instruction has contributed to a lot of frustration among learners especially, the slow learners who would surrender themselves to excessive rote learning and memorization. The application of Dewey’s principles of learning by doing (13th July, 1995), which is often adopted by teachers, has been fairly helpful in solving the problem. Adoption of activity-based instruction is expected to be more appropriate in enhancing mastery of practical skills in students of vocational and technical education.

3 PURPOSE OF THE STUDY

The purpose of this study is to seek a better understanding of activity based instruction as implemented among vocational and technical education students. Specifically the study aims to:

1. Find the techniques and strategies used in practical lesson delivering in vocational and technical education.
2. Find methods of evaluation of practical projects in vocational and technical education.
3. Find problems associated with activity based instruction in vocational and technical education.
4. Find the strategies to be adopted in enhancing mastery of practical skills in vocational and technical education.

4 RESEARCH QUESTIONS

The following research questions are raised:

1. What are the techniques and strategies used by teachers of vocational and technical education in delivering their practical lessons?
2. What are the methods of evaluation of practical lessons adopted by teachers of vocational and technical education?
3. What are the problems associated with activity based instruction in vocational and technical education?

4. What are the strategies to be adopted in enhancing mastery of practical skills in vocational and technical education?

5 RESEARCH METHODS

5.1 Population and Sample

The population consisted of all the vocational and technical education teachers presently teaching in the six government owned technical colleges in Lagos State. The number of teachers teaching in these schools is 244.

Twenty-five respondents were selected from each of the six schools resulting in a total of 150 vocational and technical education teachers selected as respondents. All respondents had equal opportunity of being included.

5.2 Instrument for Data Collection

A total number of twenty-seven (27) questionnaire items were generated. These items were divided into four parts to correspond with number of research questions formulated. Part one addressed the issue of techniques and strategies used by teachers of vocational and technical education in delivering their practical lesson while part two elicited information on methods of evaluation on practical lessons by teachers of vocational and technical education. Part three answered the research questions on the problems associated with activity based instruction and part four provided information on strategies to be adopted to enhance mastery of practical skills in students. A four-point response mode was adopted in the questionnaire as medium to express the respondents' opinions. The four-point scale was as strongly agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

5.2.1 Validation of Instrument

The questionnaire was face validated by four experts, one from the Department of Science and Technical Education, Faculty of Education, University of Lagos, another from measurement and evaluation of the Department of Educational Foundation, Faculty of Education, University of Lagos, and a curriculum planner from the State Ministry of Education, Lagos State. They all made their inputs and suggestions and the items were revised accordingly.

5.2.2 Reliability of the Instrument

The reliability of the test was determined using test and re-test procedure. The Spearman Rank Ordered Correlation Coefficient technique was used to calculate the reliability of the data and it yielded a reliability estimate of 0.67 which is considered sufficient for the study.

6 DATA ANALYSIS AND RESULTS

A total of 150 copies of the instrument were distributed. They were all completed and returned. Means and Standard Deviations were employed in data analysis. Means of 2.50 and above were interpreted as “agreed” while means below 2.50 were interpreted as “disagreed”.

6.1 Research Question 1:

What are the techniques and strategies used by teachers of vocational and technical education in delivering their practical lessons?

Table 1 shows that the majority of the respondents agreed that demonstration ($\bar{x}=3.45$), field-trip ($\bar{x}=2.83$), project ($\bar{x}=2.93$), experiment ($\bar{x}=2.94$) and assignment ($\bar{x}=3.32$) are techniques and strategies of teaching that are being used by teachers of vocational and technical education in delivering lessons. Demonstration and assignment have the highest mean of values 3.45 and 3.32 respectively. This shows that these two methods are mostly used by the teachers.

Table 1: Responses of the Respondents on the Techniques and Strategies used by Teachers of Vocational and Technical Education in Delivering their practical Lesson.

S/N	Items	SD	\bar{x}	Remark
1.	Demonstration method of teaching	0.756	3.45	Agreed
2.	Field Trip technique of instruction.	0.896	2.83	Agreed
3.	Project method of teaching.	0.774	2.93	Agreed
4.	Experiment method of teaching.	0.774	2.94	Agreed
5.	Assignment method of teaching.	0.659	3.32	Agreed

6.2 Research Question 2:

What are the methods of evaluation of practical lessons adopted by teachers of vocational and technical education?

Table 2 reveals that teachers of vocational and technical education adopt process, product and formative evaluation methods of teaching in assessing practical lesson of students' outcome. Process and formative have the highest mean value of 3.07 and 3.21 respectively. It is evident from the findings that teachers mostly assess the students at the point of entry into the job (formative evaluation) and step-by-step activities involved the job (process evaluation).

Table 2: Responses of the Respondents on Methods of Evaluation of Practical lessons Adopted by Teachers of Vocational and Technical Education.

S/N	Items	SD	\bar{x}	Remark
6.	Observing and rating the procedures adopted by students in performing a task (Process Evaluation)	0.774	3.07	Agreed
7.	Rating the end product of the performance to see how it satisfies previously determined standard (Product Evaluation).	0,857	2.73	Agreed
8.	Progressive assessment of students on the job (Systematic Observation).	0.662	3.19	Agreed
9.	Initial assessment of students on the job (Formative Evaluation).	0.651	3.21	Agreed

6.3 Research Question 3:

What are the problems associated with activity based instruction?

Table 3 indicates that not all learners enjoy activity based instruction ($\bar{x}=2.53$) and without theory is not a balanced instruction ($\bar{x}=3.37$). It is evident from the study that lengthy practical exercise can be bored to the students ($\bar{x}=2.95$), and much advanced matters (in science) is abstract and does not lend itself to activity ($\bar{x}=2.73$). Also, difficulties of securing equipment, inadequate number of vocational and technical teachers ($\bar{x}=2.70$), available but not regular electric power ($\bar{x}=3.27$), and inadequate training materials ($\bar{x}=3.40$) are challenges associated with activity based instruction. The respondent disagreed that activity based learning can make the entire learning child's play.

Table 3: Responses of the Respondents on the Problems Associated with Activity 'Based Instruction.

S/N	Items	SD	\bar{X}	Remark
10.	Not all learners enjoy activity based instruction.	0.995	2.53	Agreed
11.	Activity based learning without theory is not a balanced instruction.	0.660	3.37	Agreed
12.	Activity based learning can make the entire learning child's play.	0.875	1.80	Disagreed
13.	Lengthy practical exercise can be bored	0.709	2.95	Agreed
14.	Difficulties of securing equipment for practical lessons.	0.808	3.07	Agreed
15.	Inadequate number of technical teachers.	0.975	2.70	Agreed
16.	Much advanced matters (in science) are abstract and does not lend itself to activity.	0.628	2.73	Agreed
17.	Source of electric power is difficult.	0.970	3.00	Agreed
18.	Electric power is available but not regular.	0.857	3.27	Agreed
19.	Inadequate training materials.	0.613	3.40	Agreed
20.	Focusing on activity to make lesson fun can actually hamper those who would make progress without it.	0.658	3.59	Agreed

6.4 Research Question 4:

What are the strategies to be adopted to enhance mastery of practical skills in students?

Table 4 shows that regular workshop exercises ($\bar{x}=3.59$), adequate number of skilled and experienced vocational and technical education teachers ($\bar{x}=3.47$), available and regular electric power ($\bar{x}=3.39$), availability and utilization of training materials ($\bar{x}=3.41$), and equipped workshops ($\bar{x}=3.30$) could enhance activity based teaching among teachers of vocational and technical education. Also, training students on the job and emphasizing skill acquisition rather than certificate can enhance mastery of practical skills among students.

Table 4: Responses of the Respondents on the Strategies to be adapted to Enhance Mastery of Practical Skills in Students.

S/N	Items	SD	\bar{X}	Remark
21.	Regular workshop practical.	0.667	3.59	Agreed
22.	Adequate number of skilled and experienced vocational and technical education teachers.	0.887	3.47	Agreed
23.	Available and regular electric power.	0.784	3.39	Agreed
24.	Availability and utilization of training materials	0.853	3.41	Agreed
25.	Adequately equipped workshops.	0.784	3.30	Agreed
26.	Training students on the job.	0.682	3.27	Agreed
27.	Emphasis skill rather than certificate.	0.784	3.30	Agreed

7 DISCUSSION

The findings of this study revealed that the techniques and strategies adopted by the teachers of vocational education include: demonstration, field trip, project experiment and assignment. These techniques and strategies have identified to be effective in especially teaching practical oriented subject like vocational and technical subjects. Ughamadu (1989), explained instructional strategies as a major element of educational system and maintained, that improper application of teaching method will definitely militate against the growth of education. In the same vein Akinsola (2004), observed that in spite of government effort and that of various educational agencies towards improving the quality of technology education, the method of teaching in Nigeria schools are devoid of relevant techniques and devices, which results in poor assimilation and understanding of subject matter by the students. Teaching and in vocational and technical education is an active process which demands active predication of both the learner and the teacher.

It is evident from the study that teachers employ various methods to evaluate the students outcome. These methods range from process, product, systematic observation, and formative evaluation. Evaluation plays important role in teaching and learning process. Evaluation points out area of weakness and strength of the learners and also indicates how effective a particular teaching method is. Evaluation justifies every learner as against a set standard and expected behavioral outcome.

The findings of the study showed that there are numerous challenges facing the activity based instruction. Some learners do not enjoy the activity based instruction. These group of learners do not enjoy practical rather theory. These could be that students from other disciplines mock and cajole them to be artisans,. However, activity based instruction without theory is not a balanced teaching. The respondents disagreed that the activity based instruction can be seen as child's play. However, length practical exercise can be boring on the part of the students. It is evident from the findings of the study that focusing on activity to make learning fun can actually hamper those students who would make good progress without it.

The finding of the study on both human and material resources were supported by Adeleye (2003), as he pointed out that adequate teaching materials and equipment must be provided to the trainers of vocational and technology education. Adeleye, further stressed that it no gain saying that vocational and technical education is capital intensive and demands a lot of tools equipment before any meaningful development can be made. Furthermore, it is evident from the findings that there are inadequate vocational and technical education delivered, certain necessary ingredients must be available, among which is the availability of qualified and skilled teachers with adequate number of years of experience in vocational and technical education. Anka (2009), in a media interview said for effective teachings in vocational and technical education there should be necessary ingredients such as right teachers with the right attitudes and the right qualification, teaching the right subjects.

The finding also revealed that in some schools there is no electric power supply, therefore, they completely depend on electric generating machine which in most cases may not be able to power the electric machines in the workshops. Consequently, the few schools that are opportune to get the source of electric power from Power Holding of Nigeria do not enjoy regular power supply. These opportune schools are located at the metropolis or cities

8 CONCLUSION

Vocational and technical education is a practical oriented programme, therefore requires right teachers with right attitudes. They should have many years of professional, practical skills and entrepreneurial experience at workshop floor of industry and good background in engineering design. Such teachers should be in a better position to transfer professional practical skills know-how and techniques of production and services to their students. Consequently, professional highly skilled technicians and craftsmen in various industries could be engaged on part time teaching to adequately impact practical experience to the students. Also, capable retired or skilled persons can be hired to teach the activity-based practical skills and transfer their wealth of knowledge to the students.

9 RECOMMENDATIONS

Based on the findings of the study and literature reviewed, the following recommendations are made:

1. Effective instructional techniques and strategies should be adopted by teachers of vocational and technical education. These techniques and strategies include: demonstration, field trip, project, experiment, assignment and many others.

2. Teachers of vocational and technical education should vary their methods of evaluation of their students' outcome. They should involve evaluation techniques such as process, product, systematic and formative.
3. It is hereby recommended that teachers should not be involved in the activity to make lesson fun as this will only hamper the learning of students who would have made progress without it. Activity-based learning should be regularly utilized in the workshop practice for effective skill learning.
4. Prolonged workshop practical could make the students bored; therefore, it could be curtailed.
5. Adequate number of machines, tools and training material should be provided.
6. Adequate number of qualified and skilled technical teachers with the right attitude should be employed.
7. Capable retired skilled persons can be hired to teach on part time to impact their wealth of knowledge to the students.

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