

PROCEDURES FOR ASSESSING OF STUDENTS' PRACTICAL SKILLS ACQUISITION IN BUILDING TECHNOLOGY AT NIGERIA CERTIFICATE IN EDUCATION (NCE) LEVEL

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Abstract

The study examines the procedures for assessing students' practical skills acquisition in building technology at Nigeria Certificate in Education (NCE) level. The population for the study comprises all Technical teachers in the School of Secondary Education, Vocational and Technical Programmes, Oyo State College of Education (Technical), Lanlate. Questionnaire was the instrument used in collecting data from respondents. Sampling was not employed for this study due to small size of the population. The data obtained were analyzed through the use of means and standard deviation. The findings revealed that non-availability of practical materials, inadequate training facilities, and the limited time allocated to practical activities are some of the problems often confronted in the evaluation of students' competence in practical skills. It also shows that predetermination of objectives, preparation of checklist, assessing students' independence in handling practical task, assessing students' ability in following the proper steps or procedures, assessing the overall quality of the completed task were some of the indices that could be adopted for the effective assessment of students' competence in practical skills. Based on the findings, conclusion was drawn and it was recommended that government should make training facilities and materials adequate to technical teachers and training institutions, safety education should be emphasised in the teaching and handling of practical, and technology institutions and teachers should be kept abreast of the new trends of evaluation procedures through continue professional development.

Keywords: strategies, students' competence, practical skills, vocational and technical education.

Introduction

Education has been defined as all conscious and direct, incidental and indirect efforts made by a given society to accomplish certain objectives that are considered desirable in terms of an individual's own needs as well as the needs of the society where that education is based. The relationship between education and development is well established such that education is a key index of development. Kpolovie (2012) affirmed that education constituted the core of human development as it is the most crucial institution for

empowering young people with knowledge and skills, which in turn provides them access to productive employment and meaningful contribution to national development.

Vocational and technical education, according to Okoro (2013), does not only required different teaching methods, but also requires different teachers. There exists a three- year programme that prepares teachers for the pre-technical courses (Basic technology) offered in junior secondary schools, and the vocational craftsmen training offered in technical colleges as well

as practitioners of Technology at Technician level. The programme is referred to as the Nigeria Certificate in Education (Technical). The philosophy of the programme, according to the NCCE Minimum Academic standard (2018), "is to provide technical teachers with intellectual and professional background adequate for teaching technical courses /subjects and to make them adaptable to any changing situation in technological development not only in the country but in the world at large".

The objectives of the programme (NCE technical courses) include:

1. To produce quality technical teachers and practitioners of technology capable of teaching Basic Technology in junior secondary schools.
2. To produce NCE (Technical) Teachers motivated to start the so much revolution of technological development right from Nigerian schools.
3. To prepare technical teachers so as to qualify them for degree programmes in technical education (Minimum academic standard, 2018).

The programme is usually offered at specialised colleges of education (conventional colleges of education, and some polytechnics. At the end of the programme, a student specialises in any of the following areas, viz: Automobile Technology, Building Technology, Electrical/Electronic Technology, Metalwork Technology and Woodwork Technology (NCCE Minimum Academic Standard, 2018).

In the past, colleges of education and other institution awarding NCE usually had their focus and practices. The universities to which the colleges were affiliated controlled the quality of academic programme of the affiliated institutions. According to Ughamadu (2012), the diverse curricular used by the affiliated colleges lead to a variation in the quality of the graduates, thus making some universities discriminating against some applicants seeking admission into their degree programmes.

The federal government in its effort to address the aforementioned problem according to Ughamadu (2012) promulgated decree No. 3 of 13th January, 1989 for the

establishment of the National Commission for Colleges of Education (NCCE) to regulate all teachers' education programmes outside the universities.

Technical teachers' preparation according to Aina (2016) is very fundamental if and only if such teachers are to perform the necessary and acceptable task in the methodology of inculcating knowledge, practical techniques in students. They should be fully trained and be proficient craftsmen with reasonable period of industrial and practical experiences (Maaji, 2018). Supporting Aina (2016)'s assertion, Okoro (2013) declared that "All-practical courses must stress practical activity (so that the students can be proficient in their respective fields of specialization). Any technical course in which a large portion of the allotted time is not devoted to practical work, projects, and experiment is not likely to be very successful.

The realisation of the above mentioned objectives as outlined in the NCCE Minimum Academic Standard (2018) lies on the use of appropriate evaluation techniques, as "....evaluation is a learning process" (Enemali, 2010). Unfortunately, in Nigeria, one of the problems associated with skills training is evaluation (Okorie and Ezeji, 2018, Okoro, 2010). This situation necessitates this study to identify the procedures for evaluation of students' competence in practical skills in Nigeria Certificate in Education (technical), Building Technology Education.

Purpose of the Study

The purpose of the study is to identify the proceedings for evaluating students' competence in practical skills in Building Technology Education at Nigeria Certificate of Education level.

Specifically, the study intends to:

1. determine the problem often encountered in the assessment of students' competence in practical skills.
2. identify indices which could be adopted to ensure effective assessment of students' competency in practical skills.

Research Question

The researcher posed the following questions to guide the study:

1. What are the problems often encounter in the assessment of students' competence in practical skills?
2. What are the indices that could be adopted to ensure effective assessment of students' competence in practical skills?

Methodology

The research was a survey type. A survey research employs the study of large and small population by selecting and studying sample chosen from the population in their natural setting without interference so as to discover the relative incidence which by impact can easily serve as forecast (Uzoagulu, 2018).

Scope of the Study

The scope of the study is Oyo State College of Education, Lanlate. It was selected based on the fact that the institution is a post secondary institution offering Nigeria Certificate in Education (Technical), Building Technology Education option within its jurisdiction.

Population of the Study

The population was made up of all the Vocational and Technical Education teachers in the School of Secondary Education (Vocational and Technical Programmes), Oyo State College of Education, Lanlate, Oyo State.

Sample and Sampling Technique

There were forty-two (42) Technical teachers (lecturers) teaching in the School of Secondary Education (Vocational and Technical Programmes), Oyo State College of

Education, Lanlate, Oyo State. Since the population was small, there was no sampling. Thus, the entire population was studied.

Research Instrument

A five-point likert scale questionnaire was developed for the study by the researcher. Seventeen-item questionnaire was titled "Assessment of Students' Practical Skills Questionnaire (ASPSQ)". A total of forty-six copies of the questionnaire were distributed to the respondents by hand to elicit their responses. A total of forty-two copies were collected back from the respondents, representing 86% return. The research questions were answered using mean and standard deviation (SD). A cut off point was determined by finding the mean of the nominal value assigned to the option: Strongly Agreed (SA = 5), Agreed (A = 4), Undecided (UD = 3), Disagreed (DA = 2) and Strongly Disagreed (SDA = 1). Any response therefore, with a mean of 3.50 or above was regarded as acceptable while those below were regarded as rejection.

Validation of Research Instrument

The instrument was validated by experts in Vocational and Technical Education who are lecturers from the Departments of Vocational and Technical Education, Tai Solarin University of Education, Ijebu Ode.

Result

The results of the analysis of the study are presented in Tables 1 and 2 below

Research Question 1

What are the problems often encountered in the assessment of students' competence in practical skills?

Table 1: Means and Standard deviation of problem often encountered in assessment of students' competence in practical skills.

S/N	Problems	5	4	3	2	1	N	X	SD	Remark
1.	Non availability of practical materials	16	11	3	3	3	36	3.96	1.28	Accept
2.	Students' unwillingness to participate in practical	9	6	5	12	4	36	3.11	1.41	Reject
3.	Inadequate training facilities	9	18	3	3	3	36	3.75	1.18	Accept
4.	Limited time allocated to practical	9	15	3	5	4	36	3.56	1.32	Accept

Table 1 shows the solution to the problems encountered in the assessment of students' competence in practical skills. But for item 2, the respondents agreed that students' unwillingness to participate in the practical activities is not one of the problems often encountered in assessing students' competence in practical skills.

Research Question 2

What are the indices that could be adopted for effective assessment of students' competence in practical skills?

Table 2: Means and standard deviation of indices that could be adopted for effective assessment of students' competence in practical skills.

S/N	Procedures	5	4	3	2	1	N	X	SD	Remark
5.	Determining the objectives to be achieved at the end of the practical session before time.	7	17	4	4	4	36	3.53	1.25	Accept
6.	Assessing students' ability in identification of the appropriate tools and materials needed for the job at hand.	11	13	4	5	3	36	3.67	1.28	Accept
7.	Assessing students' plan (blueprint) reading ability.	5	8	13	6	4	36	3.11	1.19	Reject
8.	Observing and assessing how the students' manipulate tools and / or equipment while working.	11	14	3	5	3	36	3.70	0.97	Accept
9.	Assessing students' ability in following the proper step of procedure.	11	10	7	4	4	36	3.56	1.34	Accept
10.	Preparing a checklist for the assessment.	7	16	4	6	3	36	3.50	1.23	Accept
11.	Assessing students' promptness in starting work.	6	12	8	5	5	36	3.25	1.29	Reject
12.	Assessing students' safety considerations.	11	10	7	4	4	36	3.56	1.34	Accept
13.	Making the checklist, available for the students to see prior to the commencement of the practical.	6	14	6	7	3	36	3.36	1.22	Reject
14.	Assessing students' conservation of materials and supplies.	5	15	6	6	4	36	3.31	1.23	Reject
15.	Assessing the speed at which the task is completed.	7	14	4	8	3	36	3.38	1.07	Reject
16.	Assessing the overall quality (performance, durability etc) of the completed task.	9	16	4	4	3	36	3.67	1.21	Accept
17.	Assessing students' independence in handling practical task.	6	17	4	6	3	36	4.16	1.39	Accept

Table 2 shows that the respondents agreed with items 5,6,8,9,10,14,16 and 17 as procedures that could be adopted for effective evaluation of students' competence

in practical skills. The respondents however disagreed with 7, 11,12,13,14 and 15.

Discussion of the Findings

The analysis in Table 1 shows that non availability of practical materials, inadequate facilities and limited time allocated to practical works were some of the problems often encountered in the assessment of students' competence in practical skills. This is in line with the work of Abdullahi (2013) that states that every training school faces the problem of providing and maintaining workshop and appropriate facilities for technical and vocational training programme. According to Umar and Abdullahi (2010), the problems of Technical and Vocational Education (TVE) in Nigeria are made worse by the poor condition / inadequacy of training facilities. Adequate workshop facilities are necessary for any quality learning to take place and assessment is part of the learning process (Enemali, 2010). The limited time allocated to practical is also not helping matters; practical activities require adequate time to come to fruition. It involves preparation, execution and finishing. Students should be given enough time to exhibit their ability in handling practical task so that the teacher's assessment would have a high degree of validity and reliability.

With reference to indices that could be adopted for effective evaluation of students' competence in practical skills. The findings in Table 2 reveal that objectives to be achieved at the end of the practical session should be determined before time. These are assessing students' ability in identification of the appropriate tools and materials needed for the job at hand, observing and assessing how the students manipulate tools and equipment while working. Others are assessing student's accuracy in following the proper step or procedure, preparing a checklist for the assessment, assessing students' safety, consideration, assessing students' independence in handling practical task, and assessing the overall quality of the competence in practical skills. The result is in agreement with the observation made by Miller (2019) that teachers should establish the criteria against which the students' performance will be measured and observation check list should be used by the instructor to make a fair and consistent appraisal of the students.

Similarly, Mohammed, Gayus, Ikwuam and Solomon (2012) stressed the need for safety measure while undertaking practical activities in the laboratory. According to them, safety measure in view of the negative consequence when not observed, one cannot measure the amount of suffering and unhappiness caused by the various avoidable accidents in laboratories and / or workshops. Therefore, assessing students' safety consideration as shown in item 12 should be emphasised when evaluating students' competence in practical skills.

The research work also revealed that students' independence in handling practical task should be considered. This strategy for assessing student's independence in handling practical task is in agreement with the work of Cooper (2016). Cooper stressed that the workers of tomorrow (students) must not only know how to make decisions for his own work roles, but they must also understand how the decision they make may affect others and considered how they perform their roles as independent stakeholders to enhance creativity. Observing and assessing how students manipulate tools / equipment while working and the quality of the finished products or tasks was also revealed by the study. This revelation according to Cooper (2016) is in line with Ma'aji (2012) that process and product evaluation should be combined together in assessing students' practical skills because if the product is not in line with the objectives set out in the first place, then the students' competence is in doubt (Okoro, 2010). The findings were also supported by Ughamadu (2012). Ughamadu, while classifying psychomotor domain, said skilled movement from the fifth level emphasized manipulative skills.

Conclusion

The findings of the study serve as the basis for making the following conclusions:

- Non-availability of practical materials, inadequate facilities and what time allocated to practical are the problem often encountered in evaluating students competence skills.
- Pre-determination of objectives, uses of checklist, assessing students' safety consideration, independence in

handling practical skills/tasks, assessing the overall quality of the product or completed task, observing how the students manipulate the tools and equipment while working are some of the strategies that could be adopted for effective evaluation of student's competence in practical skills.

Recommendations

Based on the findings of the researcher, the following are the recommendations proffered:

1. Stakeholders in programmes involving practical skills acquisition should allocate adequate time to practicals. In a particular course, the ratio 1:3 in terms of theory and practical is recommended.
2. Government should provide adequate facilities and training materials for technical teachers and training institutions to ensure effective acquisition of relevant skills, knowledge and experience and for smooth evaluation exercise.
3. Safety education should be emphasised in teaching and handling of practical works.
4. Continuing professional development (CPD) should be encouraged so as to keep technical teachers abreast of the dynamic of assessment.
5. School administrator should ensure that a checklist is always used in the assessment of students' competence in practical skills.

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