



STRATEGIES FOR TEACHING AND ASSESSING STUDENTS' PRACTICAL PROJECTS IN VOCATIONAL AND TECHNICAL COLLEGES IN NIGERIA

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Abstract

This paper examined the concept of vocational and technical education, practical projects, teaching as well as assessment of practical projects and their types in vocational and technical education. The paper has highlighted on the strategies to be adopted by vocational and technical education teachers teaching and assessing practical projects in vocational and technical colleges in Nigeria. These include careful planning of what to teach in the school's workshop, use of variety and appropriate teaching techniques such as demonstration method, project method, simulation method, etc, process assessment, product assessment and competency-based assessment. This will go along way in helping vocational and technical education teachers in imparting the required knowledge, experirnce and skills to learners and assess the students' practical projects on mastery of skills required for practical work.

Keywords: *Strategies, Teaching, Assessment, Practical Projects, Technical Colleges.*

Introduction

Vocational and Technical Education (VTE) is the type of education that requires the inculcation of practical skills to learners so that they will be able to practice learnt experiences in real life situation with the hope that

after graduation they will become self-reliant if not employed by other people. Therefore, Vocational and Technical Education impart knowledge, skills and competencies to the learners. As such, it prepares an individual to be gainfully employed or become employer of labour (Abdullahi and Ali, 2012).

According to National Policy on Education (2004:30), Vocational and Technical Education is:

- a. An integral part of general education;
- b. A means of preparing for occupational fields and for effective participation in the world of work;
- c. An aspect of lifelong learning and a preparation for responsible citizenship;
- d. An instrument for promoting environmentally sound and sustainable development; and
- e. A method of alleviating poverty.

According to Federal Government of Nigeria (2004), graduates of Nigerian Vocational and Technical Education should be able to:

- i. Secure employment in an industry.
- ii. Set up their own business, become self-employed and employ others.
- iii. Pursue further education in post secondary technical institutions such as Polytechnics, Colleges of Education (Technical), and Universities of Technology.

In view of the above, it is important to create teaching and learning situations that will equip students with skills and knowledge to perform complex tasks and solve real-life problems.

Practical work is an integral component of Vocational and Technical Education subject teaching and therefore, it is imperative to assess students on practical work to ascertain their mastery and competency of skills required in carrying out practical tasks. Teachers and instructors are required to guide the students properly during practical work. Equally important, subject teachers and instructors are required to assess the

students' practical work using appropriate assessment tools with a view to identify areas of strength and weakness so as to provide feed-back to learners and the school authority for proper actions to be taken.

Literature Review

The Concept of Teaching

Teaching is an attempt to bring about desirable changes in human learning, abilities and behaviour in order to contribute to better living. Teaching is the process of imparting knowledge, experience, values and or skills to learner(s) with the aim of attaining specific objectives.

Teaching helps people to gain the knowledge, skills and attitudes they need to be responsible citizens (Dorgu, 2015). Awotua-Efebo (2001) sees teaching as an interaction between a teacher and a student under the teacher's responsibility, in an attempt to bring about the expected change in the students' behaviour. Teaching in the view of Filani (2010) is a systematic process of imparting desirable knowledge, values, attitudes and skills to the learner.

However, Lamido, Dogara and Gofwan (2015) opined that teachers of Vocational and Technical Education need to use more sophisticated strategies and materials to impart knowledge and skills on students using laboratory or workshop equipment. In the same vein, Ajayi and Ekunayo (2009) pointed out that teaching and learning has gone beyond the teacher standing in front of a group of students and disseminating information to them without their participation.

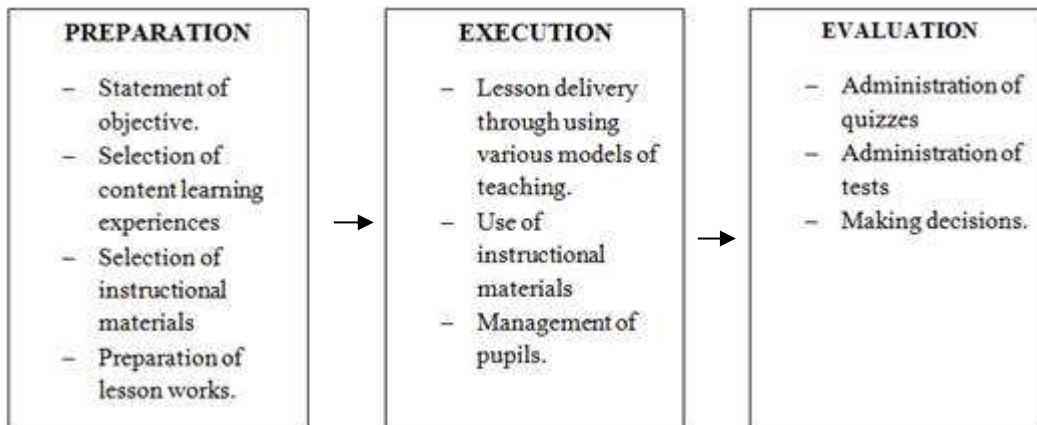
Components of Effective Teaching

Three major components of effective teaching have been identified by Awotua- Efebo 2001:

1. **Preparation:** - Here the teacher plans the lessons he/she intends to teach including all the activities needed to put the lesson together.
2. **Execution:** - Here the teacher is involved in communicating the lesson to the students as prepared in the lesson plan using the designed teaching model/strategies.

3. **Evaluation:** – Here the teacher does all it takes to ensure that the lesson is effective considering the teaching model used for a particular class. Students are evaluated at the end of the lesson through tests, assignments, quizzes, etc.

Components of Effective Teaching.



Adopted from Awotua- Efebo 2001.

Assessment

In education, the term assessment is used to denote a process of evaluating a learner's attainment after one has undergone a learning process. Therefore, assessment is a process for making a particular educational decision.

According to Cecil (2006), assessment is any systematic procedure for collecting information that can be used to make inferences about the characteristic of people or object. In the same vein, Anikweze (2005) describes assessment as the process of investigating the status or standard of a learners attainment or the attainment of a group of learners, where group instruction prevails, with reference to expected outcomes which must have been specified as objectives.

Strategies for Teaching Practical Projects

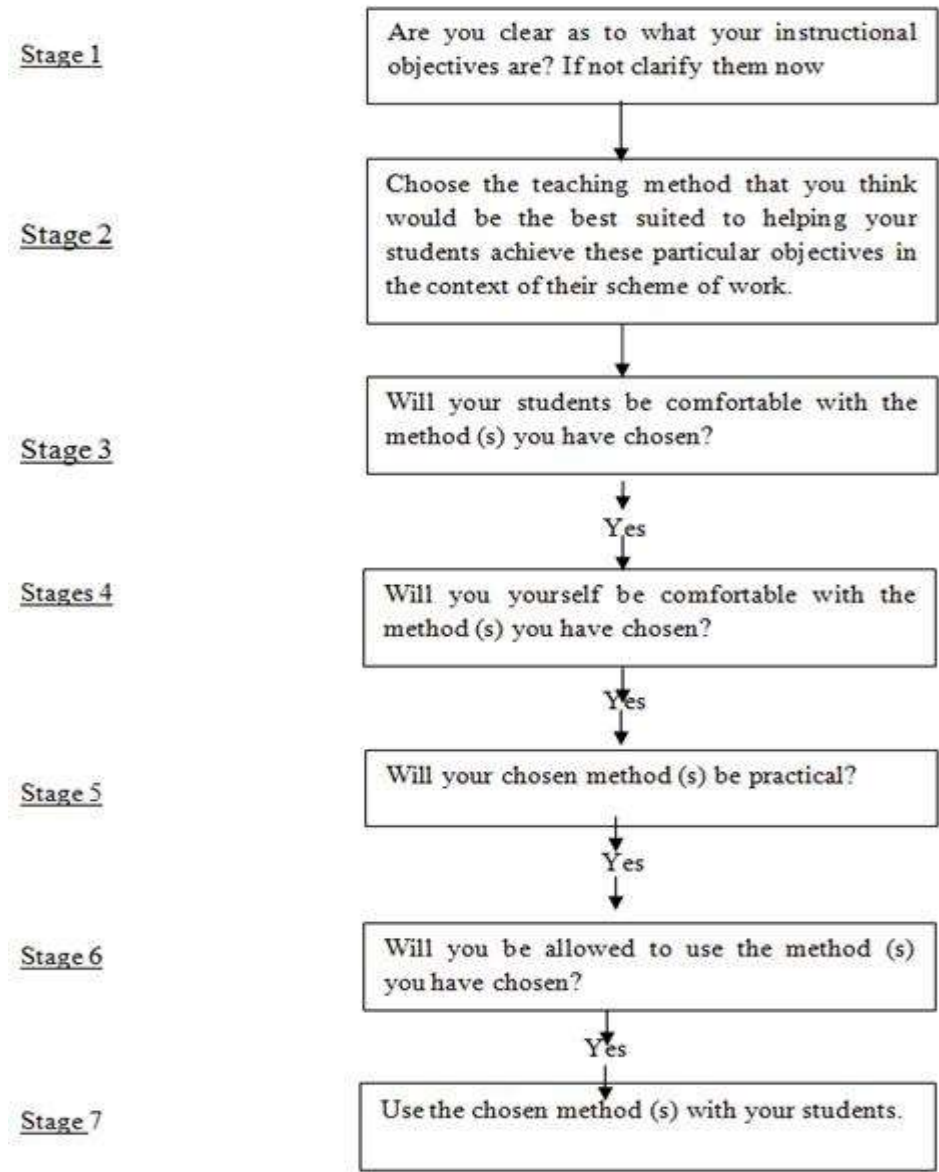
Planning before the actual teaching of practical projects in Vocational and Technical Education is necessary because teachers are required to

carefully arrange the school workshop, select appropriate and adequate instructional materials and prepare a good lesson plan of what to teach. However, certain factors must be considered when selecting a particular teaching method that could be used by a teacher in teaching and learning process. Ema and Ajayi (2011) as well as Ajileye (2012) outlined the following criteria which are necessary for the selection of instructional methods as follows:

- a) **The nature of the Subject:** Sciences or arts oriented subjects require different teaching methods that suit such disciplines. Science subjects could be better taught using demonstration and experiment methods.
- b) **Instructional Objectives:** Teaching methods should be selected based on the type of instructional objectives that are expected to be achieved. Therefore, the instructional objectives a teacher intends to achieve at the end of a lesson determines to a large extent the choice of teaching method to be used in teaching the subject.
- c) **Learner's Characteristics:** The choice of method to be used should be based on the learner's characteristics. This includes his age, class, intellectual capacity, background, maturational level, fitness etc. Example, a method used with the physically challenged cannot be used with the normal students/pupils.
- d) **Teacher's abilities, interest and knowledge of subject matter:** The teacher is the master of his class. He must be a master of the subject matter and has ability in using the chosen method. He should be competent in the chosen method so as not to expose himself to embarrassment. This is why a teacher has to enrich and update his knowledge by reading at length and attending workshops, seminars and conferences.
- e) **Time:** The time allocated to a subject in the school time-table should be considered when determining the choice of teaching method. Methods like role-playing, simulations can be done within double periods. However, when there is little time to cover large scheme of work, teachers often opt for lecture method.
- f) **Availability of Resources:** These determine what teaching methods to use in a given lesson. For example, a chemistry or biology teacher cannot embark on using demonstration method if he does not have the required tools, specimens and chemicals.

- g) **The size or number of students:** The size or number of students/pupils to be taught is a determining factor in the selection of teaching method: Demonstration method may be appropriate for teaching a small group of students/pupils but practically impossible for a teaching a large class.

Programme Chart for Selecting Appropriate Teaching Method.



Adopted from Ellington & Earl, 1998.

There are many methods of teaching practical project work. However, among the best skills - based methods of teaching and training in VTE are:

- a. **Demonstration Method:** This is one of the most effective methods of teaching skills competencies or performance related subjects in science and technology. A job or work procedures can be explained in a workshop setting after which students' activities follows. Student under this method are made to observe a procedure or technique that illustrate specific skills, principles or concepts, thereafter students where then asked to try to copy or imitate those actions, and those steps by steps techniques lead to acquisition of skill. The teacher is expected to:
 - i. Analyze process in sequential steps
 - ii. Assemble equipment and materials
 - iii. Check operation of machinery and equipment
 - iv. Allow students to try out
 - v. Reinforce learners' effort in try outs.
- b. **Project Method:** According to Sa'idu (2008), project method aids in acquiring practical knowledge, skill and sense of cooperation that exist among students. The learning activities may be carried out individually or in groups under the supervision of the teacher. It is a student-centered method suitable for small groups, large groups or even individuals. In this method, learners collectively or individually clarify fact, acquire new knowledge, skills, appreciation and solve identified problems under the guidance and supervision of a teacher.
- c. **Simulation Method:** Simulation and the role play are synonymous and both can be used as methods or techniques to reinforce methods. The method is used either to imitate or copy an event or model or perform acts of testing knowledge in a controlled setting.

Strategies for Assessing Practical Projects

Project assessment in Vocational and Technical Education varies according to the level of training. Enemali (2010) opines that assessment in Vocational and Technical Education is a systematic process of determining

how well a learner carries out a task and in what ways the learner is making progress towards stated objectives of instruction.

There are two ways of assessing students' practical projects in Vocational and Technical Colleges namely:

- a. **Process Assessment:** This involves assessing students' practical projects while they are executing the work and rating the level of performance. With this method, all steps, procedures followed to arrived at the final product(s) are observed, marked or graded by the teacher and or instructor. Enemali (2010) argued that process assessment is intendend to provide feedback to the teacher concerning learning that is in progress, so that its strong points can be preserved and its weak points eliminated. Thus, process assessment focuses on the ability of the learner to demonstrate practical skills while carrying out practical project or tasks.
- b. **Product Assessment:** This entails assessing the final project or product produced by student at the end of the practical work and marks or grades are awarded by the teacher. In product assessment , final product or completed project work produced by the learner is judged in order to determine the degree to which the objectives of the lessons are achieved. However, certain criteria are usually set on features to be assessed in the final product.

However, a combination of process and product assessment techniques is the most effective way of assessing students' practical projects. For each practical project activity, the student is expected to know requisite tools/apparatus, procedures, and techniques involve in carrying out practical work.

Alternatively, competency-based assessment could be adopted as a better way of assessing practical project. This technique of assessment uses one or more methods of observation, rating, and recording of actual performance of students for performing well in a practical project. In the competency-based technique, assessment includes carefully designed performance exercises or tasks, teacher assessment of completed student's

project and teacher assessment of regular workshop work using systematic method of rating (Abdullahi and Ali, 2012).

Methodology

This paper is an opinion paper therefore; the data used in writing the paper were mostly generated from secondary sources which include government documents, newspapers/magazines, journal articles as well as analysis of scholars and authors' works related to the problem of the study.

Conclusion and Recommendations

Conclusion

The paper has highlighted the strategies to be adopted by teachers of Vocational and Technical Education in teaching and assessing students' practical projects in Vocational and Technical Colleges Nigeria. This is because students in Vocational and Technical Colleges were exposed to practical projects which lead to production of different products in the school's workshop by using different tools, equipment and machines. Although, the paper was able to suggest strategies to be adopted by VTE teachers in teaching and assessing students' practical projects in Vocational and Technical Colleges in Nigeria, there is need for further studies to find out the efficacy of the strategies used by VTE teachers in assessing students' practical projects in the country.

Recommendations

1. School's workshop should be used by teachers when teaching practical projects to enable the students be acquainted with the workshop's tools, equipment and machines.
2. Government should equip the schools' workshops with the required kits, tools, equipment and machines to make it easy for teachers to assess and evaluate student's practical projects.
3. A combination of process and product assessment strategies should be used by teachers in assessing student's practical projects.

4. A competency-based assessment could be adopted by teachers where necessary to assess student's practical projects.
5. School heads should monitor the teaching and assessment of student's practical projects in their schools to ensure that students were taught and assessed by their teachers using the right tools, equipment and machines.

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