THE ROLE OF IMPROVISATION IN THE EFFECTIVE TEACHING AND LEARNING OF MOTOR VEHICLE MECHANICS WORK AT TECHNICAL COLLEGE LEVEL

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Abstract

Teaching and learning are two activities that are both geared towards the attainment of educational objectives. The attainment of these objectives has been ineffective, simply because of lack of necessary instructional materials, tools and equipment in our technical colleges. This paper therefore focuses attention on the role of improvisation in teaching and learning of motor vehicle mechanics works at technical college level. The paper examined the concept of improvisation, teaching and learning, the need for improvisation in motor vehicle mechanics work, improvisational skills required by the technical teachers as well as selection and use of improvised materials. It was recommend that technical teachers should be encouraged to design and construct prototypes of improvised equipment; States Science and Technical Schools Boards should organize workshop and conferences at least once in a year for technical teachers on improvisation of instructional materials and equipment; and improvisation should be teachers, students and parents concerned so as to reduce the financial burden on government.

Introduction

Motor Vehicle Mechanic Work is one of the vocational technical education programmes which involve the acquisition of scientific knowledge in design, selection of materials, construction, operation and maintenance of motor vehicles. According to Doyin (2004) Motor vehicle mechanics is a vocational programme, and a vocational programme is all about preparing one for a specific occupation. Vocational programmes are generally designed to prepare individuals for a gainful employment as semi-skilled or skilled worker or technicians or sub-professional in recognized occupation and in new and emerging occupations or to prepare individual for enrolment in advanced technical education programme (Ugwaja,2010). Motor vehicle mechanics work at technical college level consists of three components/subjects grouping as follows: Service station mechanics work, Engine maintenance and refurbishing, and Auto electricity.

The programme of motor vehicle work in Nigeria technical colleges is designed to produce competent motor vehicle craftsmen for Nigeria technical and industrial development (Aruku, 2007).The objective of motor vehicle mechanics work is to enable graduates to test, diagnose, service and repair any fault relating to conventional motor vehicle assembly main

units and system to the manufacturers specification (NBTE,2001). MAET (2005) stressed that motor vehicle mechanic students need the following skills and abilities:

an interest in mechanical/electronic system in motor vehicle, good problem solving ability, good vision, hearing and sense of smell, manual dexterity and mechanical aptitude, ability to communicate well in English, physical fitness and strength, ability to drive a range of vehicles, ability to read technical diagrams and illustration, have concern for safety and responsible work attitude; and interest in keeping up to date with technology.

From the above it can be seen that motor vehicle mechanics work should equip technical students with necessary theoretical knowledge and practical skills that will enable them secure paid employment, be able to set up their workshops and be self-employed and even employ others. Teaching and learning through which these objectives ought to be achieved have witnessed a lot of criticisms because students are not learning enough. Their performances in school examinations have continued to decline. Similarly their performances in industries where they are employed have also been poor. Several factors have been identified for these poor performances. Some of these factors according to Ngember (1996) include the inability of technical teachers to improvise and to embrace the use of improvised materials for teaching and learning of technical courses. Zambraxu (2006) lamented that the use of improvisational material has not been institutionalized in some of our technical colleges. The teaming population of students in our schools and the scarcity of real instructional materials such as tools, models and equipment, according to Igweh (1999) called for improvisation of instructional materials. Technical teachers who are charged with the responsibility of improvising these instructional materials to meet the need and interest of the students are found wanting, simply because they have not been motivated by the concerned authorities to do so (Wingoddy, 2003).

Technical subjects which motor vehicle mechanics work is an integral part of cannot be understood without practical demonstration with real practical equipment and so on. In most technical colleges there is poor funding, those models, tools equipment and materials are lacking (Garmneri, 1998). Furthermore, motor vehicle industries worldwide has witnessed a lot of changes, these changes are as a results of rapid advancement in technology. Motor vehicle teachers therefore need to improvise various parts of motor vehicles such as engine components so as to be able to cope with these changes. But, evidences from literature

revealed that technical teachers rely heavily on the use of chalks, chalkboards and outdated text books for the entire teaching.

There is need for a diversified instructional material such as models, equipment by motor vehicle mechanics teachers. Teachers need to revisit their attitudes with a view to imbibing the improvisational models and equipment that will aim at improving teaching and learning of motor vehicle mechanics work and consequently lead to the good performance of students in the area of skill acquisition and school examinations. In other words, teachers needs to shown the tradition of chalks, chalk boards, and outdated text books and improvised, embraced and incorporate the improvisational materials in teaching and learning of motor vehicle mechanics work at technical college level.

Concept of Improvisation

Improvisation is the making of substitutes from local materials found at home or school premises when the real or original material/equipment is not available. Ashilokun(2004) defined improvisation as the act of using alternative teaching materials and resources whenever there is lack or shortage of actual teaching process. Aleburu (1999) in Igweh (2009) saw improvisation as the choice of the best instructional materials which enable teachers to achieve some carefully specified educational objectives. In the words of Eniayeju(1983) improvisation in teacher education is the act of using alternative materials and resources to instruction whatever there is lack or shortage of first hand instructional aides. Accordingly, Ordor and Azeke (1986) cited in Igweh (2009) identified three kinds of improvisation to include: as mere substitute, as a creation of substitute and as an original creation.

Bomide(1986) however opined that improvisation as a role substitute and as a role simulation. He further explained that it serves as substitute when the original material is slightly modified in order to perform novel function in an experimental set up like glass cup substituting a beaker or a building model substituting a normal building. Furthermore, Maduabum(1990) asserted that improvisation is an equipment and material which the teacher uses to help the achievement of lesson objectives. From the foregoing analysis it can be seen that improvised materials/equipment should be able to convey special messages just like the original material.

Teaching and Learning

Teaching is a conscious or deliberate effort on the part of a more experienced person to impact practical skills into a less experienced person. In the words of Santrock (2004) teaching is an attempt to help someone acquire, or change some skills, knowledge, ideas or appreciation. He further explained that one of the cardinal objectives of teaching is to assist the learners develop physically, intellectually, emotionally, morally and socially in a manner that he/she will be able to exploit his/her potentials maximally. Thus teaching can influence the acquisition of desirable changes in the behaviour of learners.

Akinote (2005) explained that teaching as the interaction between a teacher and student under the teacher's responsibility in order to bring out the expected change in the learner's behaviour. The process of teaching includes schooling, teaching, training, instructing, indoctrinating, adapting and initiating ideas (Rais, 2004).

From the above analysis it can be seen that teaching is a human undertaking the of which aim is to help learners to learn. It is an interaction between a teacher and a student under the teacher's guide and for teaching to be effective the teacher needs to know how the students grow, learn, think, feel and respond to outside influences in their development (Wraser, 2003).

Learning on the other hand, is a change in behaviour due to experience. It is the process by which behaviour is initiated modified or changed. It is a process by which we acquire and retain attitudes, knowledge, understanding, skills and capabilities that cannot be attributed to inherited behaviour patterns or physical growth. All these reveal that learning is a process that is used to accomplish set goals by the learner (Oguntonade, 1998). Hakah (2005) explained that learning is the acquiring of habits, knowledge and attitudes involving new ways of acquiring practical skills. He further stressed that it is a changing of individual's ways of responding which comes from his thinking, perceiving emotional reaction or other psychological activity, and that skill learning is facilitated when there is explanation, demonstration and meaningful practices.

From the foregoing analysis, it can be seen that teaching and learning activities that goes on in the workshop revolve around the teacher and learner. and that the type of relationship that exists between the teacher and learner to a large extent determines whether or not learning will take place. According to Wayridge (2001) a good relationship with the learner is the most significant single element in satisfactory teaching. Apart from the personal

rapport with individual learner, the general way by which the teacher interacts with the students in the workshop is another crucial factor in teaching learning process. All together, teaching is a process that facilitates learning. The teacher is the facilitator and act as a catalyst by stimulating and encouraging students to learn. And that teaching/learning process that places the learner at the centre of all activities in the workshop is known as child-centred education. The learner should be an active participant in the process, as this is the only way by which learner can be free, happy, creative and well developed individuals.

There are two sides to any effective teaching-learning situation. There is usual theoretical side which has to do with the teaching of facts and knowledge. The second side has to do with the teaching of practical skills and attitudes. This according to Adedokun (2007) involves muscular dexterity, and coordination of mind and muscles. He further stressed that this essentially the practical side of teaching-learning situation. For any effective teaching and learning teacher must ensure that his/her teaching skills, attitudes and assessment of students knowledge is applied in the right mix for optimum effect of any particular objective. In other words, teacher must put in place every necessary tools, materials and equipment that could enhance learning; and this can simply be attain though improvisation.

The Need for Improvisation in Motor Vehicle Mechanics Work

Ashilokun (2004) lamented that no effective technical teaching can take place without equipment and current students' population in our technical colleges in the face of dwindling economy justifies the need for improvising technical equipment and materials. Limited original equipment and materials provided by the authorities concerned can no longer meet students' demand. This situation therefore underscores the need for improvisation to supplement imported equipment and materials. Improvisation helps to take care of population explosion which is phenomenal in schools by providing more materials and equipment which would have been very expensive to procure (Igweh, 2009). Alonge (1983) expressed the need for improvisation as follow:

(i) To bridge the gap between abstraction and reality. Instead of teaching in abstraction a similar item is presented for learner to see and it becomes real.

(ii) To make teaching/learning of instruction very easy. The learner understands better when he/she sees something that is being talked about in its real form.

(iii) To save cost, because it will be cheaper to improvise than to buy the actual materials.

(iv) To encourage creativity in teaching and learning situation.

Furthermore, Gwangwam(1998) outlined the role of improvisation in teaching and learning to include:

(i) it presents next to real situations to students in the absence of real thing.

(ii) it fills the vacuum that otherwise have existed in the teaching and learning process.

(iii) it provides a frame of reference on which students can focus their attention during workshop activities.

(iv) it makes students participate in creative and physical thinking when they are involved in making or sourcing those needed materials.

(v) being actively involved in improvisation process, the students acquire problem solving skills, manipulative skills, scientific attitude and knowledge needed in solving everyday problems.

(vi) improvisation helps in focusing teaching and learning process easier.

From the foregoing, it is clear that teacher can adopt improvisational materials/equipment to improve teaching and learning of motor vehicle mechanics work at technical college level. It can further be inferred that there is need to improvise equipment and materials that are needed for effective teaching. However, certain skills that are needed by the teachers so as to be able to easily improvise according to National Teacher Institute (2008) includes: creativity, practical skills, design skills, resourcefulness, research skills, initiative, positive work habits and proficiency in technical illustration. In the words of Iwuozor (2000) any teacher in science and technology who intends to achieve maximum result from the use of improvised materials should be guided by the following on the selection and use of such materials:

(i) Comprehensive knowledge of subject matter to be taught.

(ii) Thorough understanding of learning process generally.

(iii) Knowledge of available improvised materials.

(iv) Material selected be valid and authentic to knowledge or skill to be taught.

(v) Cover topic/subject matter intensively and extensively; and

(vi) Reflect awareness of individual differences.

Conclusion

From the discussion so far, it is clear that lack of necessary instructional materials and equipment are the major constraints on teaching and learning of motor vehicle mechanics work in our technical colleges. It was also evident that improvised materials have great roles to play in teaching and learning of motor vehicle mechanics. The only way out to supplement the very scarce equipment and material is to urgently encourage technical teachers to achieve some carefully specified educational objectives.

Recommendations

The inadequacy of instructional materials that will improve teaching and learning of motor vehicle mechanics work has made improvisation imperative. To make individuals most especially motor vehicle mechanics teachers to be aware of the role of improvisation in teaching and learning, the following recommendations should be are made:

(1) Technical teachers should be encouraged to design and construct a prototype of improvised equipment. Such equipment could mass be reproduced so as to be distributed to other technical colleges where they are needed.

(2) Government should be charged with the responsibility of funds to assist technical teachers from not spending their meagre salary.

(3) Science and Technical School's Boards should organize workshop and conferences at least once in a year for technical teachers on the improvisation of instructional materials and equipment.

(4) Improvisation should be teachers, students and parents concern so as to reduce financial burdens on the government.

(5) Government at all levels should encourage improvisation of technical instructional materials and equipment.

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