
The Challenges of Psychomotor Assessment in Industrial Technology Education: Nigeria in Perspective

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ABSTRACT

Nigeria society today needs a pragmatic, dynamic and functional Industrial Technology Education which will equip individual with saleable and marketable skills for employment. Thus Industrial Technology Education (ITE) enhances the development of requisite skills for jobs which reduces unemployment to the barest level. This can be well achieved if the tool used to assess the learning outcome is in line with the learning objective. Psychomotor assessment is one of the tool used in Industrial Technology Education to find out how much skill imparted to the student have been achieved. Hence psychomotor assessment is the process of obtaining information that is used in taking decision about students, to give feedback to student about his progress, strengths and weakness and to judge instructional effectiveness as it concern skill acquisition. Psychomotor assessment in Industrial Technology in Nigeria is faced with many challenges which include lack of fund, inadequate qualified teachers, lack of student's interest to study ITE courses, poor planning/policy and poor recording keeping. The paper concluded by recommending that the government should allocate more money in ITE in Nigeria as the money will be use to employed qualified teachers, pay staff, build classroom/workshop.

KEYWORDS: Psychomotor, assessment, education, industrial technology education

Introduction

Over the past two centuries, the world has changed more than ever been known in the history of man. The rate of change is continuing at an ever-accelerating pace and magnitude. Technology has done more to change the way man lives, than all other areas of human endeavours. To be a functional and useful member of the society, it is important that the child learns basic and appropriate ways of interacting and communicating with the people as well as

norms, values, habits and attitude and beliefs of the society either by training, practice, experience or by use of technological media (Obinne & Adagba, 2016).

Assessment provides the necessary feedback required in order to maximize the outcomes of educational efforts. The assessment of learning provides objective evidences necessary in the decision making process in education, as good measurement resulting in accurate data is the foundation of sound decision making. One way in which sound decision can be obtained is the use of performance assessment.

Performance assessments are used to assess the achievement of objectives in the psychomotor domain. The psychomotor domain of educational objectives is concerned with the practical or motor skills possessed by students. Psychomotor domain addresses skills development relating to manual tasks and physical movement. It also covers modern day business and social skills such as communication and operation of information technology equipment like computer, telephone among other, it includes physical movement coordination and use of the motor skills. Psychomotor signifies motor skills which require constant practice and active participation of the learners (Ajileye, 2017). Also psychomotor domain according to Onunkwo (2002) involves motor skills or manipulative skills. These skills involve movement of parts of the human body. For example, dancing involves movement of various parts of the body, writing involves movement of the hand and typing involves movement of the hand. Hence, skills of typing, dancing and writing playing football, all fall under the motor skills of the psychomotor domain. Therefore, psychomotor assessment is a way of finding out how learning objective as it concerns motor skills are achieved.

Learning according to Saunders (2015) is the process of acquiring new knowledge which starts from birth to death, assessment is a fact-finding activity in the domains of learning which help in motivating students, diagnosing student's problems, counselling, ability grouping and promotion. When teachers know how students are progressing and where they are having difficulties, they can use the information to make necessary instructional adjustments such as re-teaching, trying alternative instructional approaches or offering more opportunities for practice. Practical activities are what is needed in teaching skills in Industrial Technology Education (ITE). So that motor skills, will be well acquired.

Industrial Technology Education Industrial Technology Education (ITE) is that form of education that give students knowledge about industry and technology. ITE is seen as education that increases every person's ability to comprehend and apply the concept of industrial and technological system. Industrial Technology Education ITE will produce individuals who can participate and adapt to a dynamic industrial and technological society. This paper explains the concept of assessment, psychomotor domain/assessment, Industrial Technology Education and its roles in manpower development in Nigeria and finally the challenges of psychomotor assessment in Industrial Technology Education.

Concept of Assessment

Assessment is no longer a new concept in the Nigeria educational system. It was introduced into Nigerian schools in the 1980s following the provision of the national policy on education, that educational assessment and evaluation will be liberalized by basing them in a whole or in part on continues assessment of the progress of the individual (FRN, 2004). Assessment according to

Ogah (2015) is the process of collecting information for decision making in education about students, curricular and programmes and educational policies. In the words of Akem and Aduloju (2003), assessment is a mechanism where by the final grading of student in the cognitive, affective and psychomotor domains account in the systematic way of his performance during a given period of schooling. Assessment can be seen as the process of measuring behaviour and using the result obtained in taking decision (Emaikwu, 2011). Assessment involves the collection of information about the child's knowledge, skills and attitudes as well judgement, interpretation and action taken. Educational assessment is used to measure academic progress. It is used to identify the different skills and concepts that individual students have learnt throughout the year (Dibia & Eleben, 2020).

Assessment is an important activity in the process of Industrial Technology Education. Hence, Obinne and Adagba (2016) listed the following as reasons for assessment;

1. To determine that the intended learning outcomes of the subject is being achieved.
2. To provide feedback to students/parents for immediate remediation on their learning, enabling them to improve their performance.
3. To motivate students to undertake appropriate work.
4. To support and guide learning.
5. To describe students attainment, informing decisions on progression and awards.
6. To demonstrate that appropriate standards are being maintained.
7. To evaluate the effectiveness of teaching.

In Industrial Technology Education, all the domains of learning are assessed but psychomotor domain is more important since it asses motor skills acquired.

Psychomotor Domain

Psychomotor domain is concerned with the manipulative skill as represented in body movement, muscular activities/practical skills. The student involves in the manipulation of materials and objects or exhibits mechanical skills (Asuru, 2015). Examples of the psychomotor skill include driving, cycling, drawing, writing, typing, games, athletics among others.

In recognition of the role of psychomotor domain in education especially in Industrial Technology Education, the Federal Republic of Nigeria (2004) listed the aims and objectives of Nigerian education as the acquisition of appropriate skills, abilities and competences both material and physical as equipment for the individual to live in and contribute to the development of his society.

Simpson (1972) as cited in Asuru (2015), listed the levels of psychomotor domain as perception, set, guided response, mechanism, complex overt responses, adaptation and organisation.

Perception: Perception involves the use of sense organs to obtain cues that guide motor activity. It recognizes malfunction by sound of machine, relates music to a particular dance step. Action

words like choose, selects, relates and distinguishes are used in the level of psychomotor assessment.

Set: Readiness to take a particular type of action. It shows desire to type effectively. Action words used in set form of psychomotor include begin, display and move.

Guide Response: Repeating an act demonstrated by the instructor by trial and error.

Mechanism: These are response whose performance have become habitual, and can be performed with some confidence. Action words use here includes, builds, assembles, sketches, constructs, mixes.

Complex Overt Responses: Skillful performance of motor acts.

Adaptation: Skills that are so well developed that individual can modify most patterns to fit special requirements or meet a problem situation e.g. adapts, alters, changes, organizes.

Organisation: This involves making new movement in order to build a particular problem or condition. Here, creativity is emphasized. This creativity results from well-developed and articulated skills possessed by the student involved. He may design a new engine for his departmental television set.

In Industrial Technology Education (ITE), it is convenient to talk about performance tests (psychomotor assessment) as tests that require the use of psychomotor skills, it should be realized that performance tests also require understanding (cognitive) and appropriate attitude (affective) if they are to be satisfactorily accomplished, a technician working on a motor vehicle requires sufficient theoretical knowledge and right attitude, if he is to service the vehicle properly. Using psychomotor assessment to assess the skill of students is very important in ITE, but it is faced with some challenges which make its use ineffective.

The Challenges of Psychomotor Assessment in Industrial Technology Education

According to Abdullahi and Onasanya (2010) and Ibe (2016) the following are some contemporary challenges militating against effective psychomotor assessment in Industrial Technology Education; in Nigeria.

Testing as a Technology: Our focus here is on the standard and quality of test designers especially at the Technical Education. If we look at the policy rate of authentic assessment from the point of view that testing is a technology and it must be viewed as such, then the challenge posed by the quality of test designers and administrators in Nigeria can be understood. Assessment is seen as a technical art and a standardized means for attaining a predetermined end in social, economic, administrative and educational institutions. In the early days of our educational history, we could describe the personnel involved in assessment almost as easily as lay people. In Nigeria, the quality of personnel involved in test designs cannot be compared with what is obtained in the developed world. In the developed world, the standard of assessment procedures is highly specialized in terms of the entire test development processes, the cultural background, the material chosen for psychomotor skills assessment, the validation processes and the groups in the societies. In Nigeria, a large percentage of the test designers are ignorant of the

statistical procedures involved in psychomotor assessment and the advances made with the use of computers.

Equity Issues: The equity issues are more profound and challenging than those of construct validity. It is a basic fact that no common education procedures can produce truly just measures until policy makers put in place appropriate national delivery standards for social, health and educational sectors. The demand here is that we need national system in Nigeria, which implements equity across states and local government areas, we are to use common psychomotor assessment to assess all students in Industrial Technology Education in Nigeria.

Lack of Skill to Construct Good Psychomotor Test Instrument: The validity and reliability of scores obtained by using psychomotor assessment instrument is a function of the quality of the instrument. The quality of an instrument is determined by the level of the skill and knowledge of the constructor of the instrument. Hence, the need for Industrial Technology teachers to have adequate knowledge and skill to construct good assessment instruments cannot be over emphasized. Unfortunately, researcher's evidences have shown that the Nigerian Industrial Technology teachers do not have the necessary knowledge and skill to construct good psychomotor assessment instrument, administer and interpret the scores obtained from their assessment of the students (Marcus & Joseph, 2014).

No Uniformity in Internal Evaluation in Nigeria: The fact that there is no federally agreed implementation guide and the fact that there are no collections of internal assessment items, gives a wider range of opportunity to industrial technology teachers to construct any form of assessment instrument and manner in which internal assessment is implemented. The situation is compounded by lack of uniformity in standards for implementation across schools and therefore there is a problem of comparability of the scores of students from different schools. According to Ayodele (2013) the problem of non-uniformity in the quality of assessment instruments, inconsistency in assessment, administrative procedure and procedure of scoring and grading which varies from teacher to teacher pose problem of comparability of standard. Some schools seem to use this advantage to unduly inflate scores of the students to favour their schools.

Large Class Size: Population explosion in our schools makes it difficult to have psychomotor assessment: Teachers find it difficult to cope with the task of effective teaching of very large number of students and adequately conduct psychomotor assessment. It is common to find classes of thirty students and above in many of Nigerian school classrooms especially in the urban areas. the implication of this is that teachers' workloads become higher as they are required to mark and keep records of the progress of all students.

Inadequate Funding: This is identified as a major problem to the growth of Industrial Technology Education in Nigeria; occasioned by the prevailing adverse economic situation that has inevitably affected all sectors of the economy and government civil service. Funds allocated to industrial technology Education have been grossly inadequate to meet the increasing demands of the programme. Poor funding has effected the number and quality of equipment, infrastructural facilities and instructional materials needed for effective implementation of the programme. Storage of fund also affects the way psychomotor assessment is carried in Industrial Technology Education in Nigeria.

Inadequate Instructional Material: Industrial Technology Education in Nigeria is characterized by insufficient study materials, textbooks and other instructional guides as a result affect student's psychomotor assessment.

Inadequate Qualified Teachers: The major problem affecting psychomotor assessment is inadequate qualified teachers. Most of the teachers in Industrial Technology Education are not qualified to teach technical courses/subjects as a result psychomotor assessment is also affected.

Poor Planning: Industrial Technology Education suffers a great deal from poor planning on the part of policy makers, education planners and administrators in the sector. Often times programmes of ITE are adopted from foreign countries and implemented in Nigeria environment where such programmes cannot thrive considering our culture and local needs. In this case, poor funding, staffing, lack of materials and evaluation (psychomotor assessment) are the direct consequences of poor planning of ITE programmes in Nigeria.

Inadequate Supply of Facilities: In many tertiary institutions in Nigeria especially in ITE, there is gross inadequate supply of business machines for training of students, no modern farm equipment for agricultural students, no standard facility for the fine and applied arts, no ideal equipment for home economics, no superior equipment for technical education and others. Where these facilities are available, they are obsolete, not functioning well and the ratio of students use of these facilities are astronomical. Ten students to one computer is not justifiable.

Lack of Students Interest: Many students who were admitted in ITE programmes do not have good interest of such programme in their heart and this affect their psychomotor assessment. An interaction with many students revealed that the nomenclature of the degree (B.Ed) in most of the Nigerian Universities that offer ITE programme accounts for their indifference since most of them do not want to end up in the classroom as teachers.

Poor Record Keeping: Records obtained from psychomotor assessment are not properly kept for future usage. There is no assessment bank where these scores can be obtained when needed by other teachers or researchers.

Conclusion

Assessment plays a significant role in the nation educational system as at the end of the day, all learners have a vested interest in knowing how successful they have been in learning and what the measure of their success are. Psychomotor assessment helps to assess the motor skills acquired by the learner and finally lead to mastering of skills which give the learner gainful employment. Psychomotor assessment in ITE in Nigeria is faced with many challenges which include poor funding, equity issues, lack of skills by the teachers to construct good psychomotor instrument, inadequate qualified teachers and lack of students' interest in the programme. This challenges can be resolved if government, individual and cooperate bodies should put their resources together into Industrial Technology Education the problems of psychomotor assessment will be the things of the past.

Recommendation

- (1) Use of computer: Psychomotor assessment is very important in Industrial Technology Education and as such it should be treated with greet important. We

are in computer age, where everything is being computerized, psychomotor assessment should not be left beheld. In assessing psychomotor skills, computer should be used. Computer should also be use in keeping the data obtained. This can be achieved though the Federal Ministry of Education by organizing regular in-service training programmes for teachers on how to integrate Information and Communication Technologies (ICTs) in Industrial Technology Education.

- (2) Government should make policy that will make assessment especial psychomotor assessment uniform in all ITE in Nigeria.
- (3) Teachers should be trained by the Federal Government on the skill of developing psychomotor assessment instrument.
- (4) All ITE in Nigeria should have a uniform structure or how to evaluate their students.
- (5) Large class size does not encourage effective psychomotor assessment hence class size should be reduced to the bearest minimum, in computer classes two students to one computer is better.
- (6) Money is the major item that deference the progress in any organisation. Money should be made available in all ITE in Nigeria so that its programmes will be effective. Money is needed to buy equipment, pay workers, build. Classroom/workshop.
- (7) Quality teachers should be employed to teach in ITE. Unqualified teachers will not know how to teach and how to administer psychomotor assessment.
- (8) Federal Government and policy makers should plan ITE programme very well as to get a good result. Poor planning leads to poor result or output in every area of life.
- (9) Students should also be encouraged to take courses in ITE. For many students does not want to take up courses of study in ITE as it will lead them into teaching.

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