REFLECTIONS ON THE NIGERIAN EDUCATION SYSTEM: 
IMPLEMENTING CONTINUOUS ASSESSMENT IN THE 
CURRICULUM DELIVERY OF SENIOR SECONDARY 
PHYSICS

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Abstract
The study reflected on the Nigerian educational system within the context of continuous assessment implementation in the curriculum delivery of senior secondary physics. Simple random sampling technique was used to draw eighty (80) physics teachers from forty (40) purposively selected secondary schools in Ikot Ekpene Senatorial District of Akwa Ibom State to participate in the study. The Extent of Assessment of the three Domains of Educational Objectives Check List (EATDEOCL) was used for data collection. Analysis of data revealed that: all the physics teachers assessed the cognitive learning outcomes (relying on the use of tests only, to the neglect of other assessment instruments); 40.0% of the teachers scarcely assessed the affective domain using observation method, otherwise affective domain was not assessed; virtually at no time was the psychomotor domain assessed. It was concluded that this serious departure from holistic appraisal of attainment of educational objectives underpin the persistent crisis rocking Physics education in the 6-3-3-4 system of education, ultimately resulting in the ongoing transformation to the so-called 9-3-4 system of education. It was recommended that: as part of professional training and certification, every Physics teacher should be equipped with skills involving the construction and administration of continuous assessment instruments.

The central practice underpinning the very purpose of formal education – which is the training of people (especially the young) to learn to develop and use their mental, moral and physical powers – is the assessment of learning outcomes. Assessment has an overwhelming influence on the teaching-learning process. It determines the readiness to learn, how to learn and the worth of what is going to be learnt; It decides the preparedness to teach, what to teach and the teaching method.

According to the National Institute for Educational Development (NIED, 1999), assessment of learners is the process of gathering information about how learners are progressing in the learning. It gathers information about what the learners know and can demonstrate as a result of their learning process. Thus, it provides
objectives evidence, necessary in the decision-making process in education. As correctly pointed out by Cone and Foster (1991), good measurement resulting in accurate data is the foundation of sound decision-making. Nonetheless, the British system of education in the former British Colonies (Nigeria being one) implemented a mode of assessment of learning outcomes, which by the late seventies had become an apology for the Nigerian education system.

Overview of the Colonial (Traditional) Method of Assessment

The colonial method of assessment was a one-shot, summative examination taken only at the end of term or end of the year for the purpose of making decisions regarding the progress of Pupils within the schools. Deng (1987) regretted that, this “onslaught” or devastating final “shot” of assessment caused tremendous anxiety, shock and nervousness in children who dreaded it with morbid fears. It is little surprising that some people resorted to all means, including cheating behaviour and rote learning of facts to ward-off the devastating effect of the final examination.

Eke (2000) adjudged the colonial method of assessment to be very unfair and grossly inadequate, having observed that, Class assignment, quizzes, take-home questions and projects were hardly used in assessing learners… Only the cognitive domain was assessed. The affective domain was ignored … The old system did not also consider fully the psychomotor domain except in very few instances.

This method of assessment failed to take account of the pupils varied potentials (Ikpaye, 1982). The teacher taught only those parts of the syllabuses that would promote chances of their pupils’ success in examination; and pupils only studied parts of the syllabuses likely to produce examination questions (Essien, 2001). There was no way of taking care of the effect of such things as sickness, or other mishaps preventing learners from taking the final examination (Eke, 2000). The result of this was the operation of examination system which then condemned nearly half the society’s most academically talented youths to failure (Ademola, 1994; Essien, 2007). Accordingly, continuous assessment of learning outcomes, an alternative or supplement to high-stake testing of pupils performance, was advocated. Deng (1987) argued that, “education is a continuous process. The assessment of educational process must necessarily also be continuous for a goodness of fit to reign”.

Genesis of Continuous Assessment in the Nigerian Educational System

Continuous assessment was introduced in Nigerian schools by the Federal Government of Nigeria following the adoption of the 6-3-3-4 system of education (NTI, 2000) in 1981. In order to transform the whole educational process, the change to assessment was being made hand-in-hand with the change to outcome-based education, the so-called 6-3-3-4 system of education. Afterall, educational planning and administration acknowledges the fact that we cannot change the instruction process unless we change the assessment process.
What is Continuous Assessment?

The Federal Ministry of Education Handbook, cited in Denga (1987), defined continuous assessment as a mechanism whereby the final grading of a student in the cognitive, affective and psychomotor domains of behaviour takes account in a systematic way, of all his performances during a given period of schooling. Cognitive domain is associated with the process of knowledge and understanding. The affective domain pertains to interest, attitudes, feelings, emotions and other personality traits; Assessment in the psychomotor domain involves assessing learner’s ability to use his hands (Eke, 2000). The focus here is to measure the extent to which the child is able to apply the skills which he has acquired, for example, in practical lessons in integrated science and any other area involving the manipulation of tools or objects (Onwuka, 2000).

Airasian (1991) described continuous assessment as an assessment approach which should depict the full range of sources and methods teachers use to gather, interpret and synthesize information about learners; information that is used to help teachers understand their learners, plan and monitor instruction and establish a viable classroom culture. Thus, “continuous assessment enables us to construct a photo album of assessment containing a variety of assessment pictures taken at different times with different lenses, backgrounds and compositions” (NIED, 1999). Unfortunately, the ‘the photo album’ of assessment of our learners, over the years, reflects an unprecedented apology for the Nigerian educational system.

The Problem

The new policy on continuous assessment was to bring a paradigm shift in educational assessment is several ways. The central characteristic of this shift is the moving of the assessment from a judgmental to a developmental role. The Federal Ministry of Education (FME, 1985), cited in Essien (2001) posited key aspects of this paradigm shift: Continuous assessment was introduced into schools with the view that it would:
- Give the teacher greater involvement in the overall assessment of his pupils.
- Enables the teachers to be more flexible and innovative in their instructions.
- Provide a basis for more effective guidance of the child.
- Provide a basis for the teacher to improve his instructional method.
- Reduce the high incidence of examination malpractice as the success or failure of a student would no longer depend on one-shot type of examination.

Thirty one (31) years today, our educational system is enmeshed in crisis – crisis that manifest in various forms, including production of half-baked graduates, ill-equipped and poorly motivated teachers, abysmal performance of our children in public examinations, perpetration of examination malpractice by virtually all stakeholders in the education industry. This state of emergency arrests the attention of the researcher, provoking a puzzle: in which direction must we point accusing finger? Here is a pointer suggestion: If we wish to discover the truth about an educational
system, we must first look to its assessment procedures (Rowntre, 1987). Edem (1987) was probably responding to this suggestion, when he pointed out that in Nigeria, academic achievement usually receives the greatest attention of teachers, and consequently is most frequently assessed, often to the serious neglect of attitude, interest and aptitude. Incidentally, we can only produce an educated person when the three domains of educational objectives come into play (Onwuka, 2000).

The foregoing scenario motivates this research study, having as its focus the assessment pattern of senior secondary school physics. The reason for the choice of Physics as school subject of investigation is not far fetched. “Physics is a very crucial subject for technological development and as such it’s teaching and learning must be a matter of national concern” (Ladipo, 1985). Unfortunately, physics education has been severely hit by the crisis that engulfed the education sector, and has witnesses attendant abysmal performance, over the years, despite the desire for technological development. The woeful performance calls for investigation, against the backdrop of the recommendation that “any evaluation of this course (senior secondary physics) should cover the three domains of educational objectives, namely, cognitive, affective and psychomotor domains” (Ladipo, 1985).

Research Question
To guide the research study, the following research question was posed: To what extent have the senior secondary physics teachers assessed the three domains of educational objectives, namely, the cognitive, affective and psychomotor domains?

Research Design, Population and Sample Size
Survey research design was adopted for the study. All the professionally trained, secondary school physics teachers in Ikot Ekpene Senatorial District of Akwa Ibom State constituted the population of the study. Simple random sampling technique was used to obtain a sample size of eighty (80) physics teachers from forty (40) purposively selected secondary schools in the senatorial district to participate in the study.

Research Instrument
The instrument used for the study was the Extent of Assessment of the Three Domains of Educational Objectives Check List (EATDEOCL). The EATDEOCL was composed of three sections, namely:
(i) The Extent of Assessment of the Cognitive Domain Check List (EACDCL).
(ii) The Extent of Assessment of the Affective Domain Check List (EAADCL).
(iii) The Extent of Assessment of the Psychomotor Domain Check List (EAPDCL).
The EACDCL, EAADCL and CAPDCL contained 4, 6 and 5 items respectively. The EATDEOCL was constructed by the researcher and validated by two university lecturers in Physics education. The research instrument was administered on the respondents by the researcher, with the aid of a research assistant.
Data Analysis and Results

The EATDEOCL was patterned on a 4-point Likert Scale type with the following scoring key: Strongly Agree (SA) = 4; Agree = 3; Disagree = 2; Strongly Disagree = 1. The mean, X and standard deviation (SD) of responses of the 80 participating physics teachers on each of the questionnaire items were computed. The extent of assessment of each of the three domains of educational objectives was determined based on the value of the mean categorized and interpreted as follows;

SA : \[ x > 3.00 \] = Always
A : \[ 2.00 > x \leq 2.00 \] = Often
D : \[ 1.50 > x \leq 2.00 \] = Scarcely
SD : \[ 1 \leq x \leq 1.5 \] = At no time

Table 1: Extent of Assessment of Cognitive Domain in Physics Education. N = 80

<table>
<thead>
<tr>
<th>S/N</th>
<th>Continuous assessment</th>
<th>X</th>
<th>SD</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In assessing students, I use ……… Test</td>
<td>4.00  (100.0)</td>
<td>1.02</td>
<td>Always</td>
</tr>
<tr>
<td>2</td>
<td>Class assignment</td>
<td>1.80  (45.0)</td>
<td>0.60</td>
<td>Scarcely</td>
</tr>
<tr>
<td>3</td>
<td>Home work</td>
<td>1.55  (38.5)</td>
<td>0.90</td>
<td>Scarcely</td>
</tr>
<tr>
<td>4</td>
<td>Quiz</td>
<td>1.50  (37.5)</td>
<td>0.54</td>
<td>At no time</td>
</tr>
</tbody>
</table>

* Values in bracket are percentage values

Table 1 shows that all the teachers deployed testes in assessing the cognitive domain of learning; the percentage of teachers assessing assignment, home work and quiz are respectively, unimpressive.
Table 2: Extent of Assessment of Affective Domain in Physics Education

<table>
<thead>
<tr>
<th>S/N</th>
<th>Continuous assessment</th>
<th>X̄</th>
<th>SD</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In assessing my students,</td>
<td>1.20</td>
<td>0.95</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td>I use ……….</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interview</td>
<td>1.20</td>
<td>0.95</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td>(30.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Questionnaire</td>
<td>1.10</td>
<td>0.60</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td>(27.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Checklist</td>
<td>1.40</td>
<td>0.80</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td>(35.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Observation</td>
<td>1.60</td>
<td>1.20</td>
<td>Scarcely</td>
</tr>
<tr>
<td></td>
<td>(40.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Anecdotal record</td>
<td>1.20</td>
<td>0.75</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td>(30.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Sociometric technique</td>
<td>1.00</td>
<td>0.66</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td>(25.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>1.25</td>
<td>0.83</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td>(31.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Values in bracket are percentage values

Table 2 reveals 40.0% of the Physics teachers assessed the effective domain of the students learning using observation method, otherwise affective learning outcomes were not assessed.
Table 3: Extent of Assessment of Psychomotor Domain in Physics Education

<table>
<thead>
<tr>
<th>S/N</th>
<th>Continuous assessment</th>
<th>X</th>
<th>SD</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In assessing my students, I use ………. Mechanics experiment</td>
<td>1.2</td>
<td>0.80</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(30.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Optics experiment</td>
<td>1.0</td>
<td>0.91</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(25.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Electricity experiment</td>
<td>1.1</td>
<td>0.77</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(27.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Heat experiment</td>
<td>1.0</td>
<td>1.52</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(25.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Project (constructions such as a model of vernier calipers)</td>
<td>1.0</td>
<td>0.83</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(25.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>1.1</td>
<td>0.77</td>
<td>At no time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(27.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Values in bracket are percentage values

Table 3 reveals that, at no time did the physics teachers assess the psychomotor domain of educational objectives, given the identified continuous assessment instrument, separately and collectively.

Discussion of Findings

In Table 1, the pattern of application of various continuous assessment instruments revealed that all the physics teachers always deployed class test; class assignment and home work are scarcely deployed; while quiz at no time was used as assessment instrument. This agrees with Eke’s (2000) observation that “a good number of teachers rely on test only ………. They therefore grope in the dark and label whatever they do as continuous assessment”. So, the claim by many authors (e.g Amadi, 1987; Edem, 1987) that teachers emphasizes the assessment of the cognitive learning outcomes applies strictly to the usage of tests as continuous assessment instruments. Thus, the old system of assessment is hereby duplicated. Hence, the continuous assessment of cognitive domain of learning implemented by Physics teachers cannot be adjudged good. For, “sound continuous assessment calls for
graded assessment that are based on several methods of assessment” (NIED, 1999). Not (significantly) applying other recommended method (using assignments, home works and quizzes) deprives the teacher of the chance to observe the kinds of behaviour that can only be sampled by these test instruments, including associated teachers’ strength and weaknesses.

Table 2 reveals that, except for scarce assessment via observation method, the affective outcomes is not assessed. “As a matter of fact, what we have in our school system is the discipline centered curriculum projects which focus on the cognitive learning to the neglect of affective processes” (Okonkwo and Osuji, 2006). In the same vein, lending support for the research finding, Edem (1987) observed that academic achievement usually receives the greatest attention of the teachers, and consequently is most frequently assessed, often to the serious neglect of the more intangible human tracts such as interest and attitudes. Eke (2000) believes that lack of knowledge of this aspect of behaviour places a teacher in a weak position in terms of utilizing such information for educational and vocational purposes. On his own part Deng (1987) favoured appraisal of affective behaviour, alleging that data from this domain of learning enable a more complete characteristic of the individual to mirror, with a more complete profile of strengths and weaknesses exposed, so that the students concerned and their parents will understand the basis for choice of educational programme and occupational path.

Table 3 reveals a virtual complete negligence of assessment of psychomotor domain of learning. This finding is in consonance with Amadi’s (1987) observation that: often, the cognitive domain is assessed at the expense of the psychomotor domain because the latter is more difficult and teachers tend to neglect them. Unfortunately, as Ndubisi (1981) rightly pointed out, students who would have been interested in experimentation and creativity would lose such interest if no provision is made for the purpose of assessing objectives which require creativity and originality. Eke (2000) believed that as a fallout, the teacher will tend to have an incomplete picture not only of what the child is able to do now but also what he is expected of in future.

A pool of the findings in Tables 1 – 3 reveals that our educational system has not solved the key problem inherent in the old system, namely, failure to deploy an assessment system that will consider all aspects of learning. A detailed analysis of the pooled findings will result in shocking revelations, namely, our mode of practice of continuous assessment has failed to:

- Account for the pupil’s varied potential.
- Provide a sound basis for effective guidance of the child.
- Provide a basis for effective instructional method.
- Enable the teachers to be more flexible and innovative in their instructions.
- Take care of the effect of such things as sickness, or other mishaps preventing learners from taking the final examination.
The fallout of the persistent pitfalls, therefore, is the crisis situations that rock the education industry for the past decades, manifesting in the production of half-baked graduates, including very high incidence of examination malpractice which undermine the reliability and validity of WAEC/NECO Senior Secondary Certificate Examinations (SSCE), threatening the integrity of the certificates issued by these Institutions (West African Examinations Council, WAEC and National Examination Council, NECO). This heart-yielding scenario constitutes the bed-rock of the failure of the 6-3-3-4 system of education, which is transforming into the 9-3-4 system. This is in total accord with Rowntre’s (1987) warning that, “if we wish to discover the truth about an education system, we must first look to it’s assessment procedures”.

Conclusion

In the continuous assessment of physics education in Ikot Ekpene Senatorial District of Akwa Ibom State, overwhelming emphasis is placed on the cognitive domain of educational objectives (all the physics teachers relying on the use of test only) to the serious neglect of the affective and psychomotor domains of learning. This serious departure from holistic appraisal of attainment of educational objectives underpin the persistent crisis rocking physics education in the 6-3-3-4 system of education, ultimately resulting in the ongoing transformation to the so called 9-3-4 system of education.

Recommendations

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

- As part of professional training and certification, every physics teacher should be equipped with skills involving the construction and administration of continuous assessment instruments.

- The State and Federal Ministries of Education should organize workshops on the construction and administration of continuous assessment as in-service training for serving teachers.

- Besides measuring the cognitive aspects of learning, teachers should also be able to measure the learner’s affective attributes and psychomotor learning outcomes.

- Teachers should be attitudinally prepared to operate the system (by being encouraged to form favourable attitudes towards the practice of continuous assessment; If not, the tendency to ‘cook-up’ continuous assessment will set in.

References


