Effect of Continuous Assessment on Low-Achieving Secondary School Students' Performance in Physics and Study Habit

By

Benson Adesina Adegoke (Ph.D)

Abstract

Low-achieving students generally perform below average in school subjects and research has shown that this may not be unconnected with the level of their study habit. Research has shown that continuous assessment can help improve students' performance in school subjects and as well as their study habits. However, little attention has been paid to finding out the extent to which continuous assessment practice can help improve the performance of low-achieveing students in physics. It is against this background that, in this study, the author examined the effect of continuous assessment practice on the performance of low-achieving students in physics as well as their study habit. Four hundred and ninety-eight students who were randomly selected from four senior secondary schools in Ona Ara Local Government Area, Oyo State, Nigeria participated in the study. Six intact science classes were used. However, based on the Physics scores of the 498 students in the previous school-based examinations, 113 students whose scores were below 40 % were identified and denoted as low-achieving students. There were two groups: Continuous Mode of Assessment Group and Conventional Mode of Assessment Group. The study lasted six weeks. In the continuous assessment group, the treatments included classroom instructions, end of the leasson assignment and four weekly tests. In the conventional group, there were classroom instructions and end of the lesson assignments too. However there was one monthly test. Three instruments, namely, Classroom Teaching Guide (CAG), Physics Achievement Test (PAT) and Study Habit Questionnaire (SHQ), were used. Data obtained were analysed using Analysis of Covariance. Results showed that the performance in PAT of low-achieving students in the experimental group improved considerably and better than their colleagues in the control group. The study habits of the low-achieving students in the experimental group also improved and better than the low-achieving students in the control group. The results of this study show that giving weekly tests and assignments can be used to improve the performance of low-achieving students in physics as well as improve their study habits. Therefore physics teachers should give weekly tests and assignments to their students. This can help improve their performance in physics as well as their study habits.

Introduction

In the Nigeria school system and in fact in most African countries that were colonised by Britain, there are two forms of traditional examinations. These are internal and external examinations. The former is the type conducted by each institution for its own use in assessing the progress of its students. This type of examination is usually conducted at the end of term and sometimes every month during the term. But no matter how often these examinations are conducted, it is generally the result of the end of the year examination that is used for making the decisions on the student. The feedback which is essential to learning is sparingly given, and when given, it is usually at the end of the term and session. According to Black and William (2004) the assessment feedback, if at all it exists often has

negative impact particularly on low-achieving students who are usually led to believe that they lack ability and so are not able to learn physics. Moreover, the results of the tests are to weed out the low-achieving students from science /Physics class. It is pathetic that at the end of SSSI, some tests termed weeding tests are usually given to sort out those who will not be allowed to take physics in SSS II.

A second type of examination which operates in the Nigeria's school system is known as external examination. In general, this type of examination is conducted by external examining bodies in the sense that they have not been responsible for teaching the students. Examples of such examining bodies include The West Africa Examination Council (WAEC), National Examination Council (NECO) and the National Board for Technical Education (NABTE). A major weakness of these forms of examination procedures is that assessment of students is for the purpose of evaluation, that is, passing value judgement on the performance of the students; and perhaps to grade and award certificates to the students. The emphasis is always on the cognitive domain. No doubt, only the high-achieving students will benefit from this assessment procedure. This form of assessment procedure fails to take into cognisance the psychological orientation of the low-achieving students and the need to use the results of examination for advising them.

Having realised this, and in an effort at improving the learning outcomes of all categories of students, the Federal Government of Nigeria introduced continuous assessment practice into the grading system in schools. This is expressly stated in the Nigeria's National Policy on Education which came into being in 1977 and revised in 1983 and 2004 that "educational assessment and evaluation shall be liberalised by their being based in whole or in part on continuous assessment of the progress of the individual" (National Policy on Education, Federal Government of Nigeria [FGN, 2004] p.4, section 1, subsection (9g). The policy emphasises that assessment of learners at all levels of the educational system in Nigeria should be based on continuous assessment. At this juncture, a pertinent question that arises is: What is continuous assessment?

Continuous assessment is 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 or her performances during a period of schooling. Ojerinde and Falayajo (1984) stated that effective implementation requires that teachers give several tasks and activities using such tools as group assignments, individual assignments, several tests and quizzes at different times. The marks from such tests, quizzes and activities accumulate up to between 30 % and 40% of the total marks obtainable at the end of the term or academic session. According to Adegbile (2011) proper and effective implementation of the continuous assessment practice will serve as catalyst for an objective evaluation of students and the school system in its entirety. Such gains as observed by Adegbile (2011) Adisa (2004), and Durowoju (2014) include reduction in the rate of examination malpractice, reduction in the number of dropouts and improved learning outcomes.

According to Black and William (Mikre, 2010) any assessment practice for which the first priority in its design and practice is serving the purpose of promoting students' learning is described as continuous assessment. It

differs from assessments designed primarily to serve the purpose of accountability, ranking students or certify their competence. An assessment practice is more helpful for enhanced learning if it provides information that instructors and students can use as feedback in their progress and help one another and in modifying the instructional process. Such assessment is also called "assessment for learning" when the evidence from the assessment is used to adapt the teaching work to meet teaching needs and difficulties.

The place of continuous assessment in promoting students' learning outcomes and especially for low-achieving students is very high considering the fact that continuous assessment practice falls within cognitive and constructivists learning paradigms (Shepard, 2001). As defined by James (1958) and Dewey (1956), constructivism means exactly that each child constructs meaning from experience and that the child is the active agent processing information and experience from the world. When the students are given several assignments and tests, and motivated to do them, this will improve their study habit. During private study, knowledge and facts gained by the students are more likely to be meaningful than the ones heard in the class.

On the other hand, the traditional method of assessment is based on behaviourists' theories of learning and conventional psychometric principles (Mikre, 2010). The traditional method of assessment emphasises that students should be given credit when they do well in examination. The traditional method of assessment is not so much concerned about the meaningfulfulness of the knowledge the student had gained. The emphasis is on rewarding the student with high grade if he or she passess well in the examination. Shepard (2001) has also suggested that traditional assessment perspectives, based on behaviourist theories of learning and conventional psychometric principles conflict with implications of assessment for learning represented by the emerging cognitive and constructivist learning paradigms.

It appears that when practiced properly, continuous assessment tends to bring about improved learning outcomes among students. This is evident from results from different parts of the world. For example, results of study conducted by Hassan (2008) in Mombasa, Kenya; Mikre (2010) in Ethopia; Pérez-Martnez, García-García, Perdomo and Vllamide-Diaz (2009) in Madrid, Spain; Kapamwe (2010) in Zambia; and Onuka and Durowoju, (2011) in Nigeria showed that continuous assessment can indeed help students overcome their learning difficulties. In their study, Pérez-Martnez, García-García, Perdomo and Vllamide-Diaz (2009) investigated an objective analysis of the continuous assessment under the application of the European Higher Education Area in four courses of different schools at the Universidad Politécnica de Madrid for more than three years. The hypothesis tested was that "the success of students following continuous assessment would be greater than those following the traditional final assessment". The results of the study showed that the percentage of passed students increased from 55.6% to 85% when continuous assessment was applied and average grade point increased to 1.62 points.

Although some researchers have found out that continuous assessment practice tend to enhance students learning outcomes, its implementation in the school system are fraught with all kinds of problems and misconceptions.

For example, Bruce-Agbogidi (2005) found out that continuous assessment practice is seen as continuous testing whereby teachers administer only achievement tests once in a month. Moreover, very few teachers give feedback and offer little or no remediation. It is quite revealing that teachers pay more attention on cognitive domain and little or no emphasis on the affective and psychomotor domain. Ugodulunwa and Mustapha (2005) and Opoola (2006) found out that teachers are incompetent in the developing and use of continuous assessment tools. Results of study conducted by the Universal Basic Education Commission [(UBEC) (2003)] show that teachers have deviated from the recommended mode of implementation of continuous practice as spelt in the National Policy on Education. This probably explains why Attah and Binda (2001) found no significant relationship between continuous assessment scores and end of term examinations in mathematics among some secondary school students in Nasarawa State, Nigeria.

Perusal of the literature in physics education shows that there is dearth of studies on the extent to which continuous assessment can help improve the performance of low-achieving students in physics. Although some studies on the influence of continuous assessment practice have been conducted in Nigeria e.g. Adisa, 2004, Attah and Binda, 2001, and Durowoju, 2013, emphasis was not on low-achieving students and none has been conducted in the area of physics education. On the basis of this, empirical evidence is needed to show the extent to which continuous assessment practice can be used to improve the performence of low-achieving students in Physics. The import of this becomes clearer if one considers the enthusiasm which many students show in physics at the beginning of senior secondary school level. Many of them show enthusiasm to read medicine, engineering, and the sciences at the University, but unfortunately the enthusiasm dies out as a result of their performance in the weeding tests and examinations at the end of second term and third term in SSI. Therefore a major focus of this study was to find out the extent to which continuous assessment practice could help low-achieving students do well in physics.

The importance of good study habit in improving the performance of students cannot be overemphasised. Study habit is the pattern of behavior adopted by students in the pursuit of their studies that serves as the vehicle of learning. It is the degree to which the student engages in regular acts of studying. Study habit is characterized by appropriate studying routines (e.g. reviews of material, frequency of studying sessions, etc.) occurring in an environment that is conducive to studying. According to Menzel (Rana & Kausar 2011), many students fail not because they lack ability but because they do not have adequate study skills and more importantly their study habit is very poor. College students who have difficulty in academics frequently do not have adequate study habits. A central problem noted was that many of these students had not learned how to take effective notes and effectively manage time for studying (Mutsotso & Abenga 2010).

It can however be postulated that as the teacher gives more assignments and tests to the students, the students are more likely to study at home than when tests and assignments are sparingly given. Therefore, the second focus of this study is to determine the extent to which frequency of assignments and

tests improves the study habits of the low-achieving students.

Specifically two major hypotheses advanced for testing are:

Hypothesis One: The performance in physics of low-achieving students in the group where the teacher adopts continuous assessment will be better than their colleagues in the group where the teacher adopts the conventional method of assessment.

Hypothesis Two: The study habits of low-achieving students in the group where the teacher adopts continuous assessment will be improved beter than their colleagues in the group where the teacher adopts the conventional method of assessment.

Methodology

Participants

Four hundred and thirteen senior secondary school two students who were drawn from four senior secondary schools in Ona Ara Local Government Area, Oyo State, Nigeria participated in the study. Six intact science classes were used. Based on the scores of the students in the previous examinations in SSSI, those whose scores fell below 40% were identified and denoted as low-achieving students. There were 113 of such students. Though all the 498 students were present in the intact classes sampled, and all of them were taught by the researcher, analysis of pre and post tests centered on the mean scores of the 113 identified low-achieving students. There were two groups, namely, continuous assessment (experimental) and conventional (control). Three intact classes each were assigned to each of the groups. Among the 113 students who were sampled, 60 (53.1%) were boys and 53 (46.9%) were girls. Their ages ranged between 16 and 18 years (mean age = 16.8 years; SD = 1.3).

Instruments

Three instruments were used. These were: Classroom Teahing Guideline, Physics Achievement Test (PAT) and Study Habits Questionnaire (SHQ).

CTG: There were two versions of CTG. These were CTG version A for participants in the experimental group and CTG version B for participants in the control group. I prepared the two versions. CTG contains the steps taken in this study in the two contrasting groups. The two versions of CTG were strictly followed by the researcher in the implementation of the experiment. The topics covered in this experiment include motion, speed, velocity and acceleration, frictional forces, and momentum as prescribed in the science/Physics curriculum for senior secondary school two students by the Federal Ministry of Education, Abuja, Nigeria.

PAT: I constructed this test. It was constructed to determine students' achievement in physics. It was used as pre- and post-test. I decided to use an essay test rather than multiple choice test items because I wanted to check the students' level of conceptual understanding of physics and ability to organise thoughts logically. Although multiple choice tests could be used to achieve this, they were not used in order to avoid the situation where the students could arrive at the correct answer by guessing. PAT consists of ten restricted response essay test items. It tests students' ability to state definitions and principles, explain concepts, show relationships between data and use the data to solve quantitative problems. The maximum marks obtainable in the PAT was 50. The administration of the

physics achievement test took 65 minutes. See Appendix I for the details. *SHQ:* This was adapted from sections A and B of Bakare' (1977) study habits inventory. It consists of 12 items. For each of the items, the responses and the scoring were: Almost Never =1, Less than half of the Time =2, About Half of the Time=3, More than Half of the Time=4 and Almost Always=5. (See Appendix II). The major modification was in the rendition of the stems of statement in the Bakare's study habits inventory. The reliability of the 12 items was determined by using Cronbach Alpha. A reliability coefficient of 0.85 was obtained. The SHQ was administered to the students before after the experiment.

Procedure

The physics teacher in each school served as research assistant. This study was a quasi-experimental design. Nevertheless, efforts were made to reduce all contaminants that could have confounded the findings. For example, the students were pre-tested. The study lasted six weeks. However the first and the sixth weeks were used for pretests and posttests respectively. Therefore four weeks were used for actual teaching and learning activities in the classroom. In each of the two groups, there were three sessions (*one double* period of 80 minutes and *one single* period of 40 minutes) per week. In all there were 12 sessions. All the teachings were carried out during the normal time scheduled for physics on the official school time table. This was to avoid disruption to the school schedules.

Six research assistants were employed. These research assistants were postgraduate diploma students (Physics/Education) in the Department of Teacher Education/Institute of Education, University of Ibadan (2012/2013 session). Each of the four research assistants was assigned to a class. I explained to them the purpose of the research. The continuous assessment practice to be adopted was explained to them. Moreover, the continuous assessment guideline was given to each of them. To ensure compliance with the classroom teaching guidelines, I paid unscheduled visits to the participating schools to monitor the teaching and learning activities in the sampled classes.

Experimental group: continuous mode of assessment

Sixty two low-achieveing students were in this group. Pre-experimental analysis of the previous scores in physics showed that low-achieving students had a mean score of 37.85 (SD = 1.73).

The students in this group received instruction in physics. There were 12 sessions of teaching and at the end of each session, students were given home and class assignments. During the first 10 minutes of each session as from session two, feedback and remediation were given. Details of activities involved in the experimental group are as listed:

Steps involved in the continuos mode of assessment

Week One

The teacher

Before the commencement of the experiment

a) The teacher informs the students the reason for their participation in the study, i.e. to help improve their performance in physics, especially those whose average scores in physics in the previous examinations were below 40.

b) He announces the topics for the four weeks of the study and

encourages the students to read up these topics in their physics textbook.

c) He administers the pretests (PAT and SHQ).

d) He announces to the students that at the end of the fifth week, examination will be conducted.

e) He announces to the students that there will be weekly tests during the last period for physics each week.

During the class teaching – learning activities

Week Two

First lesson

a. The teacher takes attendance of the students in class
b. He teaches the first topics and give examples of how to solve numerical problems in physics
c. He jots on the chalkboard and instructs the students to copy into their note books.
d. At the end of the lesson he gives assignments to the students.

Second lesson

a. During the second lesson, the teacher uses about 10 minutes to provide feedback and remediation on the assignments given, then follows steps a to d as in first lesson.

Third lesson

a. During the third lesson, the teacher uses about 10 minutes to provide feedback and remediation on the assignments given, then follows steps a to d as in first lesson
b. About 15 minutes to the end of the third lesson for the week, the teacher conducts the weekly test.

During the third, fourth and fifth week, all the steps in week one were repeated. So, in all, four weekly tests were administered to the students in addition to class assignments.

The post tests (PAT and SHQ) were administered during the sixth week.

Conventional group

Fifty one low-achieveing students were in this group. Pre-experimental analysis of the previous scores in physics showed that low-achieving students had a mean score of 38.18 (SD = 1.50).

The students in this group received instruction in physics. There were 12 sessions of teaching and learning activities and assignments were given at the end of each lesson. However in contrast to the weekly tests given to the students in the experimental group, the usual monthly test was given at the end of the 5th week, in the conventional group.

Details of the activities involved in the experimental group are as listed:

Steps involved in the conventional mode of assessment

Week One

The teacher

Before the commencement of the experiment

a) The teacher informs the students reasons for their participation in the study, i.e. to help improve their performance in physics, especially those whose average scores in physics in the previous examinations were below 40.
b) He announces the topics for the four weeks of the study and encourages the students to read up these topics in their physics textbook.
c) He announces to the students that at the end of the fourth week the usual monthly test will be given.

d) He administers the pretests (PAT and SHQ).

During the class teaching – learning activities

Week Two

First Lesson

a. The teacher takes attendance of the students in class
b. He teaches the first topic and gives examples on how to solve numerical problems in Physics
c. He jots on the chalkboard and instructs the students to copy into their note books.
d. At the end of the lesson he gives assignments to the students.

Second lesson and third lessons

During the second and third lessons respectively, the teacher uses about 10 minutes to provide feedback and remediation on the assignments given, then follows steps a to d as in first lesson

Week Three, Four and Five

During the third, fourth and fifth week, all the steps in week one were repeated. However, the conventional monthly test was given at the end of the fifth week. So in all, only one test was administered to the students in addition to class assignments.

The post tests (PAT and SHQ) were administered during the sixth week.

In each of the contrasting groups the students had the opportunities to take active part in the teaching and learning activities. The main difference between the contrasting groups was the frequency of tests.

Data analysis

Mean, standard deviation and Analysis of Covariance were used to analyse the data.

Results

Hypothesis One: The performance in physics of low-achieving students in the group where the teacher adopts continuous assessment will be better than their colleagues in the group where the teacher adopts the conventional method of assessment.

Tables 1 presents the descriptive statistics (mean and standard) of the students' scores in physics achievement test.

Table 1: Descriptive Statistics in Physics Achievement Test

Groups	Mean Pre Physics	SD Achievement	Mean Post Physics	SD Achievement	Mean Gain
Experimental	2.36	0.81	25.15	7.41	22.79
Control	2.39	0.79	20.70	6.54	18.31

Table 1 shows that low-achieveing students in the experimental group had higher mean gain (22.79) in achievement in Physics than colleagues in the conventional group (18.31). Moreover, in the post physics achievement, low-achieveing students in the experimental group performed better (25.15) than low-achieving students in the conventional group (20.70). The mean difference between the two groups is 4.45. Because PAT was administered to the students before (as a pretest/covariate) and after the experiment, a one-way ANCOVA was conducted. Table 2 shows the results of the Test of Between Subjects Effects.

Table 2: Tests of Between-Subjects Effects

Source	Sum of Squares	Df	Mean Square	F	Sig.	η^2
Corrected Model	3024.202	2	1512.101	57.145	.000	.510
Intercept	909.348	1	909.348	34.366	.000	.238
Pre-PAT	2466.692	1	2466.692	93.220	.000	.459
Treament	607.225	1	607.225	22.948	.000	.173
Error	2910.700	110	26.461			

The Between Group Test of Significance shows that the mean difference (4.45) is statistically significant, $F(1, 110) = 22.95$, $p < 0.01$. The effect size ($\eta^2 = 0.173$) is large. About 17.3% of the variance in the low-achieveing students' scores in PAT was due to treatment.

It can then be inferred that the performance in physics of low-achieving students will be improved if the physics teacher adopts continuous assessment.

Hypothesis Two: The study habits of low-achieving students in the group where the teacher adopts continuous assessment will be improved than their colleagues in the group where the teacher adopts the conventional method of assessment.

Tables 3 presents the descriptive statistics of the students' scores in the study habits questionnaire.

Table 3: Descriptive Statistics in Study Habits Questionnaire

Groups	Mean Pre Study Habits	SD	Mean Post Study Habits	SD	Mean Gain
Experimental	19.09	8.16	44.10	Experimental	25.01
Control	19.03	7.93	41.52	Control	22.49

Table 3 shows that the low-achieveing students in the experimental group had higher mean gain (25.01) in study habits than colleagues in the conventional group (22.49). Moreover, in the post assessment of their study habits, low-achieveing students in the experimental group had higher mean score (44.10) than their colleagues in the conventional group (41.52). The mean difference between the two groups is 2.52. Because the Study Habits Questinnaire was administered to the students before (covariate) and after the experiment, a one-way ANCOVA was conducted. Table 4 shows the results of the Test of Between Subjects Effects.

Table 4: Tests of Between-Subjects Effects

Source	Sum of Squares	Df	Mean Square	F	Sig.	η^2
Corrected Model	3654.582[a]	2	1827.291	101.829	.000	.649
Intercept	14673.207	1	14673.207	817.692	.000	.881
Pre-StudyHabit	3467.598	1	3467.598	193.238	.000	.637
Treament	180.880	1	180.880	10.080	.002	.084

Error	1973.914	110	17.945

The Between Group Test of Significance shows that the mean difference (2.52) is statistically significant, F (1, 110) = 10.08, p = 0.002. The effect size (η^2 = 0.084) is moderate. About 8.4% of the variance in the low-achieveing students' score in study habits questionnaire was due to treatment. It can then be inferred that the study habits of low-achieving students will be improved if the physics teacher adopts continuous assessment.

Discussion

The results of this study show that the performance of low-achieving students in physics can be improved greatly by the use of continuous assessment. This result lends credence to the fact that the practice of continuous assessment involves procedures designed to serve the purpose of promoting and enhancing students' learning. When instructors change their practice in assessment to the form that is known as continuous assessment, according to Mikre (2010), students change their behaviour so that everyone shares responsibility for the students' learning and improvement of learning outcomes.

The improvement in the performance of low-achieving students in the continuous assessment group could be as a result of the frequency weekly tests given to them. It appears that the more and frequent the tests are, the more the low-achieving students are motivated to study harder. This could be in terms of reading at home and devoting more time for consulting relevant reading materials while solving problems in the exercises at the end of the chapters in their physics textbook. This observation was also raised by Durowoju (2014) in her study.

The findings of this study are in consonance with that of past researches such as Hassan (2008) in Mombasa, Kenya; Mikre (2010) in Ethopia; Pérez-Martnez, García-García, Perdomo and Vllamide-Diaz (2009) in Madrid, Spain; and Onuka and Durowoju, (2011), and Durowoju (2014) in Nigeria. The results of these researchers showed that continuous assessment can indeed help students overcome their learning difficulties. For example, results of the experiment conducted by Durowoju (2014) show that the use of continuous assessment with feedback and remediation helped in improving students learning outcomes in commerce. Also the study of Pérez-Martnez, García-García, Perdomo and Vllamide-Diaz (2009) showed that success of students in the continuous assessment group was greater than those in the traditional final assessment". Moreover, their study showed that the percentage of passed students increased from 55.6% to 85% when continuous assessment was applied and average grade point increased to 1.62 points.

The results of this study show that as the number and frequency of tests increases students in the performance of students in the weekly tests improved. This observation is remarkable and it shows that assessment should not be separated from learning. As observed by Mikre (2010), assessment is not something that follows and is separable from learning, rather assessment shapes, and is part of the learning process. Much has been written (e.g. Adegbile, 2011, Mikre, 2010) about the need to integrate assessment practices with instruction to enhance student learning, assessment and instruction should be seamless, each contributing to the goal of improved learning.

The results of this study are instructive in the sense that all categories of students in the continuous assessment group benefitted. Although the focus of this study was on low-achieving students, no doubt, the performance of high- and moderate-achieving students' were not hampered. Because a typical classroom in most public senior secondary schools consists of students with different learning abilities and psychological orientations – among so many others; some are high-achieving learners while some are low-achieving learners. Therefore for effective teaching and learning to take place, and to raise the level of achievement of all the students in physics, there is the need for a physics teacher to identify each of these traits in his or her students and then apply the most appropriate assessment procedure. If students who are regarded as low-achieving students are interested in taking physics, it is then the duty of the teacher to devise teaching and assessment methods that can help retain them in physics class as well as help them to perform well in both teacher-made tests and public examinations. At the same time, efforts should be geared towards not hampering the progress of high-achieving students.

Conclusion

The results of this study show that continuous assessment practice can be used to promote the learning outcomes of low-achieving students in physics. When physics teachers adopt continuous assessment practice by giving them series of tests, low-achieveing students tend to pay more attention to their study and consequently achieve better results. Therefore, physics teachers should adopt continuous assessment while teaching physics. This is because those who have been labelled as low-achieving students tend to do better than they hitherto and more importantly high and average achieving students will not lose anything but also gain from the procedure.

References

Adegbile, J.A. (2011). *Continuos Assessment in Curriculum and Instruction*. Ikeja-Lagos: Somerset Ventures.

Adisa, B.S. (2004). Continuous assessment practice as correlates of students' learning outcomes in junior secondary schools in Lagos State. In O. A. Afemikhe and J. G. Adewale (Eds.) *Issues in Educational Measurement and Evaluation in Nigeria*, Ibadan: Educational Research and Study Group, Institute of Education, University of Ibadan, Nigeria.

Attah, G.B. and Binda, S.I.A. (2001). Correlation analysis of continuous assessment and examination marks in Mathematics. In P. N. Lassa and J. A. Aghenta (Eds.) *Proceedings of the 26th Annual Congress of Nigeria Academy of Education*, 12 -16 November.

Black, P. and William, D. (2004). Inside the Black Box: *Phi-Delta Kappan, 86(1):9-21*

Bruce-Agbodi, E.T. (2005). *Continuous assessment: Implementation by secondary school teachers in Port Harcourt*. An unpublished M.Ed thesis, Institute of Education, University of Ibadan, Nigeria.

Dewey, J. (1956). *The child and curriculum: The school and society*. Chicago: University of Chicago Press.

Durowoju, E.O. (2014). *Effect of continuos assessment modes on students' learning outcomes in secondary school commerce in Ibadan, Nigeria*. An unpublished

doctoral thesis. Institute of Education, University of Ibadan.

Federal Government of Nigeria (2004). *National Policy on Education* (4th ed.) Abuja: Federal Ministry of Education.

Hassan, N.B. (2008). The effect of integrating continuous assessment into KCSE Examination on students academic performance in Mombasa secondary schools. Retrieved from www.uonbi.ac.ke/faculties/turnopdf.php?project.id.3291.

James, W. (1986). *Psychology*. New York: Macmillan.

Kapamwe, W.M. (2010). The implementation of school based assessment in Zambia. *Educational Research and Review*, 5, pp.99-102.

Mcmillan, H.J. (2003). Understanding and improving teachers' classroom assessment decision making: implication for theory and practice. *Educational measurement: issues and practice 22(4), 34-43.*

Mikre, M. (2010). The role of assessment in curriculum practice and enhancement of learning. *Ethiopian Journal of Education and Science*, 5 (2), pp. 101 – 114.

Mutsoto, S.N. and Abenga, E.S. (2010). Study methods for improving quality learning and performance in higher education. *Education Research and Review*, 5, 803 – 813.

Ojerinde, D. and Falayajo, W. (1984). *Continuous Assessment: A New Approach*. Ibadan: University Press

Onuka, A.O.U. and Durowoju, E.O. (2011). Continuous assessment for improved learning achievement and achievement in Business Management. *Journal of Pedagogical Thought*, 4 pp. 35 – 52.

Pérez-Martnez, J.E.; García-García, M.J.; Perdomo W. H. and Vllamide-Diaz, M.J. (2009). Analysis of the results of the continuous assessment in the adaptation of Universaid, De Madrid to European Higher Education Area. Proceedings of the Research in Engineering Education Symposium 2000. Palm Grove, OLD 6.

Rana, S. and Kausar, R. (2011). Comparison of study habits and academic performance of Pakistani British and White British Students. *Pakistani Journal of Social and Clinical Psychology*, 9, 21 – 26.

Shepard, L.M. (2001). *The role of classroom assessment in teaching and learning*. In V. Richardson (Ed.), Handbook of research on teaching (4th ed.). Washington DC: AERA.

Ugodulunwa, C.A. and Mustapha, A.Y. (2005). Strategies for quality assurance in educational assessment at the University level. *Nigeria Journal of Curriculum Studies*, 12, 10 – 17.

Universal Basic Education Commission (2003). *National Assessment Report*. Abuja: UBEC.

Appendix I
Physics Achievement Test

1) Define (a) linear momentum and (b) Impulse
2) State the principle of conservation of linear momentum
3) State two (a) laws of friction (b) methods of reducing friction
4) Explain the difference between speed and velocity
5) Define the term "force". What is the SI unit of force?
6) State the Newton's first and second laws of motion
7) An external force of magnitude 100 N acts on a body of mass 15kg for 3 minutes. Calculate the change in the speed of the body.
8) Sketch the diagram of the motion of a body which is brought gradually to rest after moving with uniform speed for some time.
9) An oject of mass 5.0kg moves with a velocity of 10 ms^{-1}. Calculate its momentum.
10) A body is pulled through a distance of 350 m by a force of 20N. If the power developed is 0.4KW, calculate the time for which the force acts.

Appendix II
Study Habits Questionnaire

Statements	**Responses**				
How often do you	**Almost Never**	**Less than Half of the Time**	**About Half of the Time**	**More than Half of the Time**	**Almost Always**
1.Stop doing the home assignments if the tasks involved are too hard?					
2.Study only the easier part of the assigned homework?					
3.Make up missed lessons if you are absent from physics class?					
4.Put off assignments until last minute?					
5. Stick to assigned homeworks until it is completed?					
6.Begin your assignments as soon as the teacher gives them to you?					
7.Allow assigned homework to pile up?					
8.Watch video rather than doing home work?					
9.Study for at least three hours each day after classes?					
10. Read your physics textbooks at home?					
11.Go out to play football instead of reading?					
12.Solve problems in your physics textbook?					