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CONTINUOUS ASSESSMENT AS PREDICTOR OF ACHIEVEMENT IN BASIC SCIENCE IN JUNIOR SECONDARY SCHOOLS

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ABSTRACT:

This study examined the extent to which continuous assessment (CA) scores in Basic Science predicted students' achievement in Junior Secondary School Certificate Examination (JSSCE) in the same subject in Afikpo Education Zone, Ebonyi State, over a three year period (2013, 2014, and 2015). The population of the study comprised secondary school (JSS) students in 79 secondary schools who participated in the JSSCE within the three years of this study. The sample size consisted of 30 students drawn from 30 secondary schools, making a total of 900 students for the three years. The study adopted the predictive research design. One research question was answered and one hypothesis was tested to check the predictive strength of CA and achievement. Coefficient of reliability based on Pearson Product Moment Correlation (PPMC) was used to answer the research question while the regression analysis (using multivariate modeling) was used to test the hypothesis on the strength of the relationship between the two variables. The raw scores of students' CA and their JSSCE results were obtained from the Education Development Center (EDDC), Abakaliki and the instruments were standardized instruments by the National Examinations Commission (NECO). The results of the study revealed that; CA is not a strong predictor of students' achievement in JSSC examination for 2013, 2014 and 2015. Predictive strength of CA is highest for 2013, followed by 2014 and lastly 2015 respectively; test of significance on the relationship between CA and JSSCE is not significant for 2013, 2014 and 2015. Based on the results and their implications, recommendations were made.

KEYWORDS:

CONTINUOUS ASSESSMENT, ACHIEVEMENT, COEFFICIENT OF RELIABILITY, JSSCE, PREDICTIVE.

BACKGROUND TO THE STUDY

A most important function of education is assisting the individuals for self-development, self-discovery and realizing the latent potentials in them in order to be productive in life. This means that, education is a vital tool needed for the formation of sound minds from childhood to adulthood in any school system, where learning and skill acquisition take place for the total development of the individual, the society and the nation (Omirin and Ale, 2008). For the educational institutions to fulfill the function of human development, several science subject areas are planned and implemented. At the senior secondary school levels, Biology, Chemistry, and Physics are studied. At the junior secondary schools Integrated science (now Basic Science) is implemented while at the primary schools (Primary Science but, now Basic Science and Technology) is being implemented. This study centres on the Junior Secondary School and on Basic Science.

Hornby (2001) sees science as a body of knowledge that involves logical reasoning and empirical methods, with a view of formulating universal laws that governs human existence on earth, and aimed at finding solutions to human problems in nature. Okeke (2007) sees science as a systematic process of obtaining testable/verifiable knowledge about nature and natural occurrences, utilizing careful observation and experimentation. This definition is appropriate for science education as well as reflects the process and product nature of science. The above views explain why science is vital to human existence for facilitating the understanding of the universe and how it can be effectively manipulated for the utmost benefit of man and for economic development.

Science forms the basis upon which a nation is judged as, either developed or under developed. Ogunleye and Babajide as cited in Awodun, Olusola and Oyeniyi (2011) observe that scientific knowledge boosts national prestige, military might, national income and international rating of the country. Science gives birth to the production of micro computers and their innovative applications which earned the developed countries of United States of America and Japan unparalleled national wealth, military potential and enviable national prestige. It needs be noted that science has become such an indispensable tool that no nation, developed or developing, wishing to progress in the socio-economic sphere, will afford to relegate its learning in schools to the background.

Science learning is formally organized in the school system to achieve some objectives and the Nigerian educational system has gone through various structural changes, one of which was the introduction of Integrated Science (now Basic Science) curriculum. Integrated Science curriculum was introduced into Nigerian educational system in the

early 1970s, was viewed as the only science that reflects the true nature of science (Igwe, 2003). Also, Bajah in Igwe (2003) sees Integrated Science as a science in which concepts and principles are presented so as to express the fundamental unity of scientific thought and avoiding premature or undue stress on the distinction between the various scientific fields.

The introduction of the Integrated Science curriculum follows a worldwide curriculum reform which was engendered by the launching of the Sputnik in 1957, by the then United States of the Soviet Russia (USSR). Maduabum (1989) observes that the innovation brought into focus a new era in science and mathematics. However, Akpan in Igwe (2003) observes that prior to this new effort (introduction of integrated science), science teaching in Nigeria was predominantly taught as nature study.

In 1982, the 6-3-3-4 system of education was introduced which entailed six years primary education, three years post primary, that is, junior secondary 1-3 (JS 1-3), and three years senior secondary 1-3 (SS 1-3). Thus the introduction of integrated science was aimed at making Nigeria one of the technological giants in the world. In the views of Premium News Nigeria (2014), basic science emerged from the restructuring of the pre-existing structure of Integrated Science curriculum to fill some observed gaps. It was introduced as a core subject at the Junior Secondary School level to introduce students to the world of science and to prepare them for higher education in Science and Technology. The new reform has a 9-years basic education structure. That is, nine continuous and uninterrupted education from primary school up to the first three years in secondary school (Primary 1 to Junior Secondary 3).

Based on the new 9-years basic education curriculum, basic science is studied at three levels. One is the primary level where we have basic 1 to 3 (the lower basic) and 4 to 6 as the middle basic and lastly, the upper basic level which comprises the first three years in secondary school, called the Junior Secondary 1 to 3 (JS 1 to 3). At these levels, the three aspects of natural sciences are taught along with elementary technology. It is important to note that all these changes emanated from the observed gaps of socio-economic and technological development of the country. These efforts are, therefore, geared towards improving the quality of education and that of science teaching and learning in Nigerian schools. To this end, the new Basic Science Education curriculum in Nigeria is in place and this is what this study is investigating the relationship between Continuous assessment scores and achievement in three years.

Basic Science connotes activities and principles that form the bases for the understanding of other higher activities and principles in science. It is linked to the foundation of advanced sciences which exposes the students, at tender stage, to the rudiments of other science-based subjects. It is therefore the pivot on which other sciences are built such as Biology, Chemistry and physics. It is therefore obvious that effective handling of Basic Science Education in the school system will lead Nigeria to becoming one of the top twenty world economies in 20-2020.

It can be argued that any educational programme desirous of achieving the purpose for which it has been designed, should have an effective mechanism for determining its level of success. This brings in evaluation as a necessity in determining the success of Basic Science in Nigeria and especially in Afikpo Education Zone of Ebonyi State. The term 'evaluation' has been viewed as; a process that follows the collection of data, including analyses and reflection, as well as decision based on the data collected (Straight, 2002). This means that when data are collected about a programme or students' progress, and same used to make decisions about the programme or students; then, evaluation has taken place. Ehiametolor (2014) sees evaluation as the act of examining something in order to judge its value, quality, importance, extent or condition. He emphasized that the terms 'evaluation' and 'assessment' are synonymous as both relates to the process of determining the amount of knowledge a student has acquired through the process of instruction. This goes on to show that assessment is an instrument for evaluation and it could be internal or external.

Assessment could be internal or external involving the teacher made instruments such as; class tests, quiz, assignments, projects, tern papers, field studies recap exercises, demonstration and role play. Nwebaza (2010:6) views all these as "classroom continuous assessment strategies", which are "…tools or procedures that are used in the classroom to understand the academic achievement level of the learner in terms of their knowledge, attitudes and values". External assessment, on the other hand, refers to tests or assessment instruments designed and administered on the students by external examination bodies, outside the school environment such as West African Examinations Council (WAEC), National Examinations Council (NECO). National Business and Technical Examinations Board (NABTEB) and Junior Secondary School Certificate Examinations (JSSCE).

Assessment is a very important activity in any educational setting because of its unique function in measuring the achievement level of a given programme. Awofala and Babajide (2013) state that assessment should be systematic, comprehensive, cumulative and guidance oriented. In view of this important role of assessment in education, continuous assessment was introduced at various levels in (primary, secondary tertiary education) in Nigeria. The Federal Republic of Nigeria (FRN, 2013:7) states that "… educational assessment will be liberalized by basing them in whole or in part on the continuous assessment of the progress of the individual". This was done to ensure adequate assessment in the adopted 6-3-3-4 system of education and to equally make education more reliable, valid, objective and comprehensive (USAID, 2013). Continuous assessment is a therefore, critical component in any educational policy or reform, and offers a methodology of measuring students'

achievement while using the findings to improve their success in a programme.

Continuous assessment is a classroom strategy implemented by teachers to ascertain the knowledge, understanding and skills attained by students. Teachers do administer assessment in a variety of ways over time so as to enable them to observe multiple tasks and to collect information about what the students know, understand and can do. Greaney in Nwebaza (2005:8) sees assessment as "any procedure or activity that is designed to collect information about knowledge, attitude, or skills of the learners or group of learners; … a process through which an individuals' work or performance is judged". Continuous assessment is an ongoing process. Aggarwal in Nwebaza (2005) states that continuous assessment is a continuous testing as it does not solely depend on formal testing but involves every decision made by the teacher in the class to improve students' achievement. It includes class exercise; take home assignment and recapitulation exercise.

Based on the above view-points, Continuous Assessment is used frequently during school years and is part of teacher/students interaction. Students receive feedback from teachers based on their performance. This allows them to focus on topics they have not mastered. As a result of this, teachers identify which of the topics need to be reviewed, the students that need remediation and those that are ready to move to the next and more complex of the work. With all these procedures in place, it could be possible for one to predict a student's future performance, especially in an external examination such as Junior Secondary School Certificate Examinations (JSSCE), based on his or her performance in the continuous assessment. This is what this paper is out to present.

Edokpayi and Suleiman (2011) observe that results obtained from Continuous Assessment can be used to predict performances in examinations such as JSSCE. This is because academic performance is the scholastic standing of a student at a given moment or how an individual is able to demonstrate his or her intellectual abilities. This confirms the expectation that Continuous Assessment can be used at various levels of educational programmes to ascertain the level of achievement and to predict a students' future achievement in the programme such as basic science. Daniels and Schouten in Edokpayi and Suleiman (2011) emphasize the use of grades in examination and reported that grades obtained through continuous assessment do serve as predictive measures in determining students' future academic performance. Therefore, a prediction of future examination results such as Junior Secondary School Certificate Examination (JSSCE) could be made with reasonable success on the basis of the result of a previous examination such as their performance in continuous assessment.

On the contrary, Okwelle and Wali (2002) argued that continuous assessment cannot be effectively used to predict future academic performance of students. This was because some of the instruments used in the continuous assessment programme are not validated and as such are not reliable instruments in making prediction. There is also the argument that a student's achievement in a given examination is not only governed by the quality or quantity of the continuous assessment but other factors such as the quality of teachers, teachers' teaching methods, school type and gender. It follows that the influence of these possible confounding variables needs to be verified; may be in another study.

Based on these divergent views, it is obvious that there exist differences in the levels of achievement of students in CA and JSSCE. These observed differences could affect the predictive value of continuous assessment in schools. The fact that continuous assessment has been attributed with such good qualities as being systematic, diagnostic, comprehensive, cumulative and thus formative in nature, it therefore becomes imperative to find out whether continuous assessment is performing the above functions and if it can actually be used as a predictor of students' future performance in Basic Science at JSS level in Afikpo Education Zone of Ebonyi State.

STATEMENT OF THE PROBLEM

Continuous assessment carries 40% of the final grade of students in junior secondary schools certificate examination (JSSCE), while the final examination carries 60%. This is to say that the CA should be a good determinant of the students' academic standing on educational objective, just as the internal or any external examination. Based on this, is it possible for a student, who has impressively progressed from primary through secondary school, (based on the records or data obtained from his continuous assessment), to perform creditably in any external examination such as WAEC or NECO. This situation leaves a lot of questions and answers on the credibility or otherwise of continuous assessment as predicting students' achievement.

If it is serving its predictive purpose, why is it that students whose cumulative records show academic excellence, could not achieve the same feat when exposed to external examination like WAEC, since both assessments are based on the same curriculum. Again, if it is not serving its predictive purpose, could it be that teachers who are responsible for the collection and analysis of information used in Continuous Assessment are manipulating these data? Or could it be that some of the instruments used for the data collection lack validity and therefore not reliable? Could it be that the students consistently cheat throughout the processes of assessment and thus come out with good grades that do not correlate with their true achievement?

The problem of this study was to ascertain if the continuous assessment scores in Basic Science can predict students' achievement in JSSCE in the same subject in 2013, 2014 and 2015 students' JSSCE results (scores).

PURPOSE OF THE STUDY

The major purpose of this study was to find out whether continuous assessment scores (CAS) could predict students' achievement in Basic Science in Junior Secondary School Certificate Examination (JSSCE). Specifically, this study aimed at finding out whether students' continuous assessment scores (CAS) in Basic Science could predict their achievement in JSSCE in the same subject.

SIGNIFICANCE OF THE STUDY

The main beneficiaries of the result of this study include teachers, students, curriculum developers, policy makers, textbook authors and researchers.

To the teachers the study would add to similar studies already conducted to support or criticize the use of Continuous Assessment in schools as instrument for measuring achievement. That is to say, the result of the study would help teachers to ascertain whether the purpose of Continuous Assessment as a measure of achievement is being met in our school system, so as to encourage or discourage its use. The result of the study would equally help them to re-strategize their assessment methods in order to give the best to their students.

On the part of the students, it would provide useful information on the importance of Continuous Assessment in encouraging achievement in science subjects. That is, students would be encouraged to work harder, continuously rather than wait for the examination period before engaging in any serious preparation. For the curriculum developers, the results of the study would give them further insight into weak part of the curriculum, giving room for better planning.

The findings would help the administrators to make decisions as to what extent the continuous assessment programme could be implemented in our school system. The result would also enhance the theories and practice of education especially in such areas as measurement and evaluation. To the textbook authors, the findings would provide them useful information that could be added to the existing ones. Finally, the result would be useful to the general reading public by providing information on the influence of CA on students' achievement in schools.

SCOPE OF THE STUDY

This study focused on the extent to which continuous assessment scores (CAS) could predict Junior Secondary School Certificate Examination (JSSCE) results of students in Basic Science in the public schools in Afikpo Education Zone. This study was delimited to the results (including CA) of students who participated in the state organized JSSC examination in Afikpo Education Zone. Results were collected from Education Development Center (EDC) Ebonyi State.

RESEARCH QUESTION

The following research question was formulated to guide this study.

What is the predictive strength of students' continuous assessment scores (CAS) on (JSSC) examination achievement in Basic Science in Afikpo education zone?

HYPOTHESIS

The following hypothesis was tested at 0.05 alpha levels.

The students' continuous assessment scores (CAS) in Basic Science subject does not predict their achievement in JSSC examination in the same subject.

THEORETICAL FRAMEWORK

CLASSICAL TEST THEORY (CTT)

Classical Test Theory (CTT) was created by Charles Spearman in 1904. This was not much in use until 1966 when M.R. Novick brought it into focus. CTT is a branch of psychometric (the science of measuring mental capacities and processes) that aims at predicting the outcome of entire test or responses of specific test item based on complete tests and test items used for data collection. It is often used in conjunction with other test theories (in psychological testing) to measure or predict the outcomes of some tests, the difficulty of items within a test, and/or the ability of test takers using test scores.

CTT aims at understanding and improving the reliability of tests. Its main assumption is that each person has a true score T that will be obtained if there were no errors in measurement. This means that a person's true score is the expected number of correct scores over a repeated number of independent test administrations. However, it has been reported that test users do not observe a person's true score, only an observed score X. This shows that the observed score =true score + some errors. This is illustrated by the equation;

$X = T + E$ Where X = observed score; T = True score and; E = Error.

This shows that CTT is concerned with the relationship between the three variables; X, T and E in a population. This relationship describes the quality of test score which is the reliability of a test, Wikipedia (2014). This is achieved through a test retest approach or repeating the alternative of the same test and obtaining the same score.

Using previous score, CTT can predict which test question can be answered correctly and which population tends to answer the questions correctly. This means that CTT can make reliable predictions based on population of the people or on the individuals depending on the purpose of the test. The predictive value of CTT applies to its ability to show that a test item or instrument is reliable over time when test is repeatedly used to establish reliability or alternative test reliability to determine the value.

RESEARCH METHODS

The research adopted a predictive research design using correlation study to investigate the predictive ability of Continuous Assessment Scores (CAS) on Junior Secondary School Certificate Examination (JSSCE) results in Basic

Science. Nwana (2008) further emphasized that correlation design focuses attention on whether or not there is a relationship between one variable and another. He gave examples of such studies as; intelligent test and achievement test; secondary school entrance examination and school certificate examination; mock school certificate and school certificate.

The area of the study was Afikpo education zone, in Ebonyi State, of Nigeria. Ebonyi state is one of the thirty six states in Nigeria. It is located at the south eastern part of Nigeria. Ebonyi state has boundaries with the following states; Benue state in the north, Abia state in the south, Cross River state in the east and Enugu state in the south. The people of Ebonyi State are predominantly farmers while some are civil servants and traders. Ebonyi state is made up of three Education Zones. There are Abakaliki, Onueke, and Afikpo Education Zones. The major focus of this study, however, is on the Afikpo education zone in Ebonyi state.

The population of the study comprised Junior Secondary School three (JSS III) or Upper Basic (III) students in 79 Junior secondary schools who participated in the Junior Secondary School Certificate (JSSC) Basic Science examination in Afikpo Education Zone of Ebonyi State for 2013, 2014 and 2015 years. From the 79 schools, thirty (30) schools were randomly selected for each year making a total of thirty (30) schools for the three years. Then from each of the thirty (30) schools, thirty (30) students' records of examinations and continuous assessment were obtained. This gave a sample size of 900 students that participated in this study for the three years.

The instrument that was used for data collection was the students' achievement records of Continuous Assessment (CA) and JSSCE. The records were as obtained from the Examination Development Center (EDC), Abakaliki, Ebonyi State. The years covered by the records were 2013, 2014 and 2015.

The data needed for this study were the raw scores of Continuous Assessment Scores (CAS) and Junior Secondary three (JSS-III) Certificate Examination results which were obtained both by the teachers and the examination body (NECO). It is assumed that these data are well validated by the examination body (NECO) and need no further validation. The CAS and JS-3 certificate examination results were the raw data which had already been generated both from the teachers and the examination body and kept in the centre. They are adjudged reliable and as such suitable for use for the study.

The data used for this study (the continuous assessment scores and the Junior Secondary-111 Certificate Examination results) were collected at the Examination Development Center (EDC), Abakaliki, Ebonyi State, by the researchers.

Pearson Product Moment Correlation was used for the research questions. This was used to determine the strength of the relationship between the variables x and y (a set of the two paired scores). The correlation coefficient r will be calculated. The t-test statistics at 0.05 level of significant was used to determine the significance of the values of R- for each of the hypotheses

The correlation coefficient was interpreted according to Table 1

TABLE 1: INTERPRETATION OF CORRELATION COEFFICIENT

0.80 - 1.00	Very high, near perfect relationship.
0.60 – 0.79	High relationship.
0.40 - 0.59	Moderate relationship.
0.20 – 0.39	Low, definite, positive relationship
0.00 – 0.19	Very low, virtually no relationship.

Nwana (2008)

RESULTS AND DISCUSSION

RESEARCH QUESTION 1

What is the predictive strength of students' continuous assessment scores (CAS) on (JSSC) examination achievement in Basic Science in Afikpo education zone between 2013-2015?

Pearson Product Moment Correction (r) through stepwise regression was used to determine the relationship between continuous assessment (CA) and achievement scores in Junior Secondary School Certificate Examination (JSSCE) in Basic Science. See Table 2:

TABLE 2: CORRELATION COEFFICIENTS OF RELATIONSHIP BETWEEN STUDENTS' CA AND JSSCE SCORES

		CA			Exams		
		2013	2014	2015	2013	2014	2015
CA	2013	1.000	0.0343	0.0731	**0.3732**	0.1342	0.2216
	2014	0.0343	1.000	0.3222	0.1434	**0.2693**	0.1100
	2015	0.0731	0.1724	1.000	1.1232	0.1792	**0.1064**
Exams	2013	**0.3732**	0.2161	0.2231	1.000	0.1637	0.3447
	2014	0.1847	**0.2693**	0.1436	0.0048	1.000	0.2231
	2015	0.2676	0.3092	**0.1064**	0.0480	0.1314	1.000

From the results in Table 2, the Pearson's (r) between CA scores in Basic Science and JSSC exam scores in Basic Science for 2013 is 0.3732; that of 2014 is 0.2693 while that of 2015 is 0.1064. 2013 has the highest computed (r) while 2015 has the lowest. The (r) values for the students in the years range between 0.1-0.4; hence they show low but positive relationships between their CA and examination scores (Nwana, 2008)

The coefficient of determination (r^2) for each of the computed 'r' values for the relationship between CA and JSSC exams are as follows:

2013 r = 0.3732; r^2 = 0.1393

2014 r = 0.2693; r^2 = 0.0725

2015 r = 0.1064; r^2 = 0.0113

The above figures for r^2 show that 13.93% of the variation

in JSSC Examination is explained by the students' scores in CA for 2013. 7.25% of the variation in JSSC examination is explained by the students' score in CA for 2014 while 1.13% of the variation in JSSC examination is explained by the students' scores in CA for 2015.

Finally, the predictive strength of CA scores on students' achievement in JSSC exams is determined by multiple regression (R) through the relationship between CA scores and JSSCE scores; thus:

TABLE 3: MULTIPLE REGRESSION RELATIONSHIP BETWEEN CA AND JSSCE SCORES (FOR 2013)

Multiple R	R-Square	Adjusted R-Square	Standard Error
0.04352	0.00189	0.00189	4.13077

The results in Table 3 reveal that the multiple R between CA scores and JSSCE scores is 0.04352 while the R-Square is 0.00189. This indicates that 0.19% of the variation in students' score in JSSCE is explained by their achievement in the CA scores. This is a case of a very weak but positive predictive strength of CA scores in students' JSSCE scores for 2013, indicating that CA is not a strong predictor of achievement in JSSCE for 2013.

TABLE 4: THE MULTIPLE REGRESSION RELATIONSHIP BETWEEN BASIC SCIENCE EXAMS AND CA SCORES FOR 2014

Multiple R	R-Square	Adjusted R-Square	Standard Error
0.03418	0.00117	0.00084	4.81541

From the results in Table 4, the multiple R between CA scores and JSSCE scores for 2014 is 0.03418 whereas the R-Square is 0.00117. This indicates a 0.12% variation of students' scores as being explained by their achievement in CA scores. This is a very weak but positive predictive strength of CA scores in JSSCE in Basic Science for 2014, indicating that CA is not a strong predictor of achievement in JSSCE for 2014

TABLE 5: MULTIPLE REGRESSION RELATIONSHIP BETWEEN JSSC EXAMS AND CA SCORES (2015)

Multiple R	R-Square	Adjusted R-Square	Standard Error
0.07276	0.00529	0.00330	4.07693

Based on the results in Table 5, the multiple R between CA scores and JSSCE in Basic Science is 0.07276 while the R-Square is 0.00529. This shows a variation of 0.53% of students' scores in JSSC examination is explained by their CA scores. The percentage represents a low, weak but positive predictive strength of CA scores on JSSCE scores for the year 2015. This shows that CA is not a strong predictor of achievement JSSCE in Basic Science.

TEST OF HYPOTHESIS

$H0_1$: The students' continuous assessment scores (CAS) in Basic Science subject does not significantly predict their achievement in JSSC examination in the same subject in Afikpo Education Zone between 2013 and 2015.

The stepwise regression method was applied to ascertain the significance of relationship between CA and JSSCE scores; as summarized in the Table 9.

TABLE 6: SIGNIFICANCE OF RELATIONSHIP BETWEEN CA AND JSSC SCORES FOR 2013 IN BASIC SCIENCE, 0.05 ALPHA LEVEL.

	Computed R	R-Square	Adjusted R-Square	Standard Error	Beta	t.cal	Significance of 't'
Achviet 2013	0.0435	0.00189	0.00189	4.1307	0.0435	0.972	0.3314
Constant						29.571	0.0000

According to the results in Table 6, the calculated't' values (0.972) is significant at p < 0.3314. Since 0.3314 is greater than 0.05 alpha level, the $H0_1$ for 2013 is not rejected. This means that there is no significant relationship between students' CA score and JSSC scores at P ≤ 0.05, for 2013.

TABLE 7: SIGNIFICANCE OF RELATIONSHIP BETWEEN CA AND JSSCE SCORES FOR 2014 AT 0.05 ALPHA 2014 LEVEL.

	Computed R	R-Square	Adjusted R-Square	Standard Error	Beta	t.cal	Significance of 't'
Achviet	0.03418	0.00117	0.00081	4.8154	0.0341	0.763	0.4457
Constant						21.235	0.0000

From the results in Table 7, the 't' calculated (0.763) is significant at 0.4457. Since 0.4457 is greater than 0.05 alpha level, the $H0_1$ is accepted for no significant relationship. This means that the relationship between students' CA and JSSC examination scores for 2014 is not significant at P ≤ 0.05 alpha level.

TABLE 8: SIGNIFICANCE OF RELATIONSHIP BETWEEN CA AND JSSCE ACHIEVEMENTS FOR 2015, AT 0.05 ALPHA LEVEL

	Computed R	R-Square	Adjusted R-Square	Standard Error	Beta	t.cal	Significance of 't'
Achviet 2015	0.07276	0.00529	0.00330	4.07693	0.0727	1.628	0.104
Constant						23.375	0.0000

The results in Table 8 show that the calculated 't' value (1.628) is significant at P < 0,1042. Since 0.1042 is greater than 0.05 alpha level, the $H0_1$ is not rejected. The researchers conclude that there is no significant relationship between students' CA and JSSCE scores for 2015 at P ≤ 0.05 alpha level.

DISCUSSION OF RESULTS

PREDICTIVE STRENGTH OF CA SCORES ON JSSCE ACHIEVEMENT IN BASIC SCIENCE FOR 2013, 2014 AND 2015

The research question one sought to find out the predictive strength of CA on JSSCE in Basic Science for 2013, 2014 and 2015. From the results in Table 2, the Pearson's (r) between CA scores and JSSCE scores in Basic Science for 2013 is 0.3732; that of 2014 is 0.2693 while that for 2015 is 0.1064. 2013 has the highest computed (r) while 2015 has the lowest. The (r) values for the students in the three years range between 0.10-0.40; hence they show low but positive relationships between their CA and exam scores (Nwana, 2008). The coefficient of determination (r^2) for each of the computed 'r' values for the relationship between CA and JSSCE are 0.1393, 0.0725 and 0.0113 accordingly. The above figures for r^2 show that 13.93% of the variation in JSSCE is explained by the students' scores in CA for 2013; 7.25% of the variation in JSSCE is explained by the students' scores in CA for 2014 while 1.13% of the variation in JSSCE is explained by the students' scores in CA for 2015. This is a case of decreasing variation and implies a decline in the objective application of CA in the schools as the years go by.

Finally, the predictive strength of CA scores on students' achievement in JSSCE was determined by multiple regression (R) for the relationship between CA scores and JSSCE scores. The results in Table 3 reveal that the multiple R between JSSCE scores and CA scores is 0.04352 while the R-Square is 0.00189. This indicates 0.19% of the variation in students score in JSSCE is being explained by their achievement in the CA scores. This is a case of a very weak but positive predictive strength of CA scores in students' JSSCE for 2013.

From the results in Table 4, the multiple R between JSSCE scores and CA scores for 2014 is 0.03418 whereas the R-Square is 0.00117. This indicates a 0.12% variation of students' JSSCE scores as being explained by their achievement in CA scores. This is a very weak but positive predictive strength of CA scores in JSSCE scores for 2014.

Based on the result in Table 5, the multiple R between JSSCE and CA scores is 0.07276 while the R-Square is 0.00529. This shows a variation of 0.53% of students' scores in JSSC exam as explained by their CA scores. The percentage represents a low, weak but positive predictive strength of CA scores on JSSCE scores for the year 2015. This shows that CA is not a strong predictor of achievement in JSSCE in Basic Science. This result agrees with the work of Okwelle and Wali (2002) that CA cannot be effectively used to predict future academic performances of students. Again, the weak predictive strength of CA could be linked to the subjectivity of teachers who generate the scores.

On the test of significant relationship, the results in Table 6 showed that the calculated 't' value (0.972) is significant at 0.3314. Since the significance of 't' 0.3314 is greater than 0.05 alpha level, $H0_1$ for 2013 is not rejected implying that there is no significant relationship between students' CA score and JSSCE scores for 2013. The results in Table 7 showed that the 't' calculated value for significance relationship between CA and JSSCE for 2014 is 0.763 while the significance of 't' is 0.4457. This means that t. cal is significant at 0.4457 alpha level. The later is greater than 0.05 alpha level, $H0_1$ is accepted for 2014; meaning that there is no significant relationship between CA and JSSCE scores. The results in Table 8 showed that the calculated 't' value for the significance of relationship between CA and JSSCE scores is 1.628 while the significance of 't' is 0.1042. Since the significance of 't' value (0.1042) is greater than 0.05 alpha level, $H0_1$ is not rejected for 2015. This means that there exists no significant relationship between the students' CA and JSSCE scores for 2015.

EDUCATIONAL IMPLICATIONS

One finding of this study was that CA was not a strong predictor of JSSCE in Basic science. The implication was that scores of CA from schools teachers would continue to be subjective to peoples' view. This is because there seemed to be a general bias on scores given by teachers to students possibly because of closeness of some students to the teacher or too much familiarity between teacher and some students. The persistent of this view would continue to make it impossible for CA to effectively predict students' achievement in JSSCE in Basic Science.

Recommendations

Based on the findings, the researcher made the following recommendations:

1. Teachers should improve on the objectivity of CA scores to increase its validity in determining results of other public examinations.
2. CAs should be based on the school curriculum and should cover all the domains of learning.
3. Standard of school should be improved so that no student would be affected by divergent factors since they use the same curriculum. This could be achieved through effective supervision of schools.

LIMITATIONS

1. Some office administrators refused to release data of candidates at JSSCE headquarter. This made accessing the records last longer.
2. Only Basic Science was considered in this study. Other subjects of the Junior Secondary Schools were not studied so as to ascertaining the continual place of CA in school assessment.

CONCLUSION

This study aimed at establishing the predictive strength of continuous assessment scores on Junior secondary schools certificate examination scores occasioned by the bias people have on CA and its subjectivity in assessing students' achievement in academic programmes. Finding showed that CA was not a strong predictor of students'

achievement in JSSCE in Afikpo Education Zone of Ebonyi State. Recommendations were made, which these researchers believe that when the recommendations are implemented, the bias and subjectivity on CA would be reduced if not completely eliminated thereby making CA capable of predicting students' final examinations (JSSCE inclusive) after all CA has been incorporated in the education policy.

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