# IMPACT OF CONTINUOUS ASSESMENT ON MATHEMATICS PERFORMANCE OF JUNIOR SECONDARY SCHOOL STUDENTS, IN POLICE SECONDARY SCHOOL, MINNA, NIGER STATE.

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**UZOWULU, Christian Elochukwu**
**2014/1/53350BE**

**DEPARTMENT OF SCIENCE EDUCATION**
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**FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA NIGER STATE**

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## ABSTRACT

This study was carried out to determine the impact of continuous assessment on academic performance of junior secondary school students in Police Secondary School Minna, Niger State. The study goes a long way to also test to see the gender difference in mathematics performance of the junior students of the school. The research design was an experimental design in which the students were divided into two groups namely; $E_1$ and $E_2$. In $E_1$ group the treatment administered was two sets of C.A during the period of study (term). Also, $E_2$ group was administered four sets of tests in same manner under same conditions. It would be noted that before the treatment a pre test was carried out, after which the treatment (post test) was implemented. The school used in this research has a population of one thousand junior secondary students, a sample size of 120 students using a simple random sampling which completes 12% of the entire population selected for this study recommended by Smith and Scott (2013) that at least 10% of the entire populace should be used for a sample space. The instrument used to administer the treatment was the 'Teacher Made Test' (TMT).Four hypotheses were raised and tested in this study, where the independent t-test and PPMC (Pearson Product Moment Correlation) served as tools for analyzing and testing the stated hypothesis. The researcher in the course of the study was able to discover these findings among others; The experimental group exposed to four sets of Continuous Assessment performed significantly better than those exposed to two sets of Continuous Assessment. The experimental group ($E_1$) exposed to two sets of C.A had little or no significant differences in the performance of the male and female students. Thus it is recommended that; Students performed better in Mathematics when they are exposed to series of C.A's (i.e. 4) before the final examination. Mathematics teachers should therefore strive to see that students are exposed to many C.A's before the final examination. This will go in a long way to increase their performance. The results of this study shows that few C.A is gender friendly. With many C.A's, male students performed better than female students. Therefore, the teachers should encourage both sex (male and female) to participate equally in the learning and assessment process in Mathematics.

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# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background to the study

Examinations and assessment are an integral component of our educational structure. They are conducted both formally and informally, at practically all levels of education and serve a variety of different functions. In the narrow sense, examinations and assessments may be thought of as having predominantly educational purposes. They may be used in order to:-

i. Assess students' attainment at the end of a course or study programme.
ii. Evaluate diagnostically students' academic achievement, progress and/or learning difficulties.
iii. Evaluate students' aptitude, possibly for the purpose of assigning them to different courses or teaching set.
iv. Evaluate the effectiveness of an educational programme or curriculum. (HS Akareem, 2016)

Most of the examinations and assessments regularly conducted by teachers and schools on an 'internal' basis tend to fulfill one or more of these educational functions. Other examinations for example, those conducted 'externally' by the recognized examining boards and certain professional associations, likewise have a primary educational purpose: to assess the attainment of a student at the end of a course of study. The primary assignment of any school is to ensure effective teaching and learning of which assessment and examination a form of evaluation, plays a significant role especially in decision making about school programme

(Ijaya,2002). Assessment in education in general is essential and is an ongoing process. It is the basis for all educational activities. Assessment information is a vital tool in the hands of

the professional teacher. It directs guides and protects both the teacher and the learner at every stage of academics (Okwudire, 2005).

Continuous Assessment process is an important component of the National Policy on Education (FME, 2004). This system of assessment and evaluation is an innovation in the Nigerian educational system which has its genesis from the first national curriculum conference held in Ibadan in 1969. The outcome of that historic conference were published, a high powered committee consisting of educationist, university academics, civil servants, industrialist and intellectuals from various works of life was set up to study the report in depth and present recommendations based on its formulation into a new National Policy on Education (FME, 1977).

In 1977, an implementation task force was set up to prepare a blue print for the implementation of the new policy. Input into the Federal Task came from various state task forces set up for the purpose. The Federal Government White Paper on the implementation task force came out in 1979 and constitutes the basis of what is now the new National Policy on Education (FME, 1998). One of the distinct features of the new National Policy on Education is its emphasis on Continuous Assessment.

According to an extract from the National Policy on Education (FME, 1998), "Educational assessment and evaluation will be liberalized by basing them in whole or in parts on Continuous Assessment of the progress of the individual." The clearest statement as to how the desired 'liberalization' was to be achieved was stated in the National Policy on Education and the type of education that will bring about self realization, better human relationship, national consciousness and technological progress in Nigeria (FME, 1998).

The new National Policy on Education in Nigeria has directed that Continuous Assessment should be used at all educational levels for the evaluation of student achievement. This

means that every teacher from primary school to university should understand and practice it. Before the implementation of Continuous Assessment, the summative system of assessment was used where students will be assessed at the end of the term without including any other form of assessment, and this form of assessment is used to evaluate students' performance for placement and promotions to upper class. Mock examination was conducted prior to WAEC examinations. This result was often used to determine those students that qualify to write the final examination (WAEC) and also to secure provisional admission into higher institution before the release of WAEC result (Ango, 1997). Carew (1985), stated that irrespective of how well a student's performance is during his/her years of schooling, if his/her performance in the summative type of examination is not good, he/she is considered incapable of advancing further in education.

Academic performance, according to Musa (2000), refers to the quality of results produced by students as reflected in the quality of their examination scores. If more C.A is given, it means more motivation on the part of the students and it is hoped that the achievement will increase. Continuous Assessment is often used to motivate students to learn. According to Beard and Seniour (1980), motivation is understood by the teacher as "the urge to work independently either applying oneself to his work, interest in one's task or course he has chosen, the desire for a good qualification and good employment, determination to pass examination or a defined goal which one has set for himself and sustenance of enthusiasm".

This study therefore, intends to find out if students given more number of Continuous Assessment per term will perform better in the final examination than those who are not given. The study also investigates whether there is any difference in the achievements of male and female students exposed to Continuous Assessment. And finally, the study

intends to finds out if there is any relationship between Continuous Assessment scores and final examination scores of Junior Secondary School students.

**1.2 Statement of the Problem**

Science educators have advocated the need for Continuous Assessment as an integral part of science evaluation programme (Hambury, 1995). However, there is no empirical data to support the impact of the Continuous Assessment system in promoting learning and to show whether or not the performance of students will increase on exposure to more C.A. As C.A has potency to motivate learners to learn. Vroom (1984) defined achievement as a product of motivation and ability. According to him; behavior is not only just influenced by ability but also by how much the individual wants to do certain events and by how much they expect they will do it. So when students are being examined they are motivated to work hard. Therefore, the problem of this study is to find out if exposure of students to many Continuous Assessments has significant impact on the final examination. More assessment means more motivation and thus better performance, but sometimes human behavior may change. Many assessments may mean more stress on the part of the student.

In some studies it is shown that there are gender-related differences in learning (Jegede, 1989 Mari, 1991 and Ajagun, 1998). This research uses the two gender and gave them same teaching and assessment techniques, so adequate step is taken to remove any gender difference in the administration of the treatments. This research work also tries to find out if gender has any impacts in the administration of Continuous Assessment to students.

What is not known conclusively is the consistency of Continuous Assessment scores to examination scores. Onihunwa (2018), in his study, asserts that some Continuous Assessment scores are not consistent with examination scores since they show little or no

significant correlations. Ihiegbulem(1994), however, found out that a substantially high and significant degree of positive relationship exists between Continuous Assessment and examination scores. One of the purposes of this study therefore, is to determine whether there exists a relationship between Continuous Assessment and examination scores. There is the problem of correlating Continuous Assessment with actual examination scores for instance; it is not uncommon to find a student having very high score in continuous assessment and extremely low score in the final examination (Hassan, 1987). It is hoped that the results from this study will clarify all the stated problems.

### 1.3 Research Questions

In view of the above, the following research questions were formulated to guide the conduct of the study.

i. What is the impact of frequent administration of Continuous Assessment on academic performance of Junior Secondary students?
ii. To what extent do male and female students exposed to two sets of Continuous Assessment differ in performance in the first experimental group?
iii. To what extent do male and female students exposed to four sets of Continuous Assessment differ in performance in the second experimental group.
iv. Is there any relationship between Continuous Assessment and final examination scores of Junior Secondary students exposed to two sets of Continuous Assessment in the first experimental group?
v. Is there any relationship between Continuous Assessment and final examination scores of Junior Secondary school students exposed to four sets of Continuous Assessment in the second experimental group?

## 1.4 Null Hypothesis

The null hypotheses formulated for the study are:

$H_{O1}$: There is no significant difference between the mean academic achievement scores of male and female students exposed to two sets of Continuous Assessments in Mathematics (that is the first experimental group $E_1$).

$H_{O2}$: There is no significant difference between the mean academic achievement scores of male and female students exposed to four sets of Continuous Assessments in Mathematics (that is the second experimental group $E_2$).

$H_{O3}$: There is no significant relationship between the mean Continuous Assessment scores of Junior Secondary students exposed to two sets of Continuous Assessment in Mathematics (that is the first experimental group $E_1$).

$H_{O4}$: There is no significant relationship between the mean Continuous Assessment scores and final examination scores of Junior Secondary students exposed to four sets of Continuous Assessment in Mathematics (that is the second experimental group $E_2$).

## 1.5 Objectives of the Study

In view of the above, the study is geared towards achieving the following objectives:

i. To determine the impact Continuous Assessment has on final examination scores of Junior Secondary Students in police secondary school.

ii. To find out if male and female students exposed to Continuous Assessment differ significantly in academic performance.

iii. To investigate if there is any relationship between Continuous Assessment scores and final examination scores of Junior Secondary Students.

## 1.6 Significance of the Study

The main aim of an academic research is to add to the existing knowledge due to the fact that problems are identified and solutions are provided, hence improvement is always expected. The result of this research therefore, is expected to provide an insight on the sustainability, applicability and impact of Continuous Assessment on Junior Secondary School students in police secondary school. Continuous Assessment is administered at every level of education from primary schools to university; however, there is no empirical data to support its impact in enhancing performance. This research is of significance to the teachers of junior secondary mathematics in Police Secondary School Minna, as it will provide empirical data that would show the number of Continuous Assessment that could be administered in a term to give optimum performance by students. It will also provide teachers with skills and techniques in organization and administration of Continuous Assessment. There are sampled C.A questions which would serve as a guide for further questions.

Teachers always seek for a Continuous Assessment score that correlate very high with final examination so that the performance of the students in the final examination can be predicted. This will enable them to identify C.A mean score that would provide a more reliable feedback that could be used to predict students' grades in the final examination. The teacher would also be better positioned to provide parents with a very reliable feedback of the students' performance in school. The C.A that correlates more is the most reliable and will predict the final performance of the students and when passed to parents it gives more reliable feedback. To curriculum planners this research will help to determine the number of C.A to be inserted when designing the curriculum.

Undoubtedly, the study findings will help lecturers, policy makers and educationist to decide on the impact of the Continuous Assessment process furthermore, it is hoped that the result of this study will make an enormous contribution to the existing literature in the area of Continuous Assessment.

## 1.7 Scope of the Study

The study is limited to junior secondary school students in Police Secondary School Minna, Niger state.

Police secondary School Minna, Niger state, was used in this research as a case study.

The findings of this study are generalisable only in this secondary school.

# CHAPTER TWO

## 2.0 REVIEW OF RELATED LITERATURE

### 2.1 Introduction

The concern of this study is to investigate the impact/role Continuous Assessment plays in enhancing academic performance among Junior Secondary Mathematics students. In this chapter, literature related to the study is reviewed. Specifically, this chapter is presented under the following subheadings:

i. The concept of 'assessment' in education.
ii. Philosophy, principles and practice of Continuous Assessment in Nigeria.
iii. Continuous Assessment and performance.
iv. Characteristic features of Continuous Assessment.
v. Methods and techniques used in the administration of Continuous Assessment.
vi. Summative system of assessment or evaluation.
vii. Teachers' role in the administration of Continuous Assessment.
viii. Gender related difference in performance in science.
ix. Continuous Assessment worldwide.
x. Review of related studies on Continuous Assessment and academic performance.
xi. Summary of literature reviewed.

## 2.2 The Concept of Assessment in Education

Understanding the concept of Continuous Assessment makes implementation easier. To some, it means a summative 'mark' or score added to the final examination to certify students; some believe it to be a diagnostic and formative evaluation of student's learning (Ango, 1997). According to IJATE (2019), assessment is the process of gathering information for the purpose of making decisions about education policy, curriculum programmes and about individual students learning. It refers to the process of gathering relevant information. F.M.E. (1985) pointed out that Continuous Assessment is the mechanism whereby final grading of students in the cognitive, affective and psychomotor domains of behavior systematically take account of all performance during a given period of schooling, such an assessment involves the use of a great variety of modes of evaluation for the purpose of guiding and improving the learning performances of students.

Assessment is however a means to an end, not an end in itself. It serves several purposes particularly in decision making whether at primary, secondary or tertiary level (Ijaya, 2002). Assessment refers to systematic collection of data and gives information about individual, (Okwudire, 2005). Continuous Assessment is classroom strategy implemented by teachers to ascertain knowledge, understanding and skills attained by pupils. Teachers administer assessment in a number of ways over time to allow them to observe multiple tasks and to collect information about what pupils know, understand and can do. These assessments are curriculum based tasks previously taught in class. (Lewis, 1997).

Yoloye (1984), described Continuous Assessment as a method of evaluating the progress and performances in educational institution. Yoloye's view aims at getting the truest possible picture of each student's ability and at the same time help each student to develop his or her abilities to the fullest. It is a method whereby the final grading of students considers in a systematic way their whole performances during a given period of schooling. The view expressed by Yoloye, shows that Continuous Assessment is progressive in terms of evaluating the resultant changes in the behaviors of the learner based on his or her academic performance, character development and manipulative skills. This method of assessment is in contrast with the former method of assessment, which is narrow because it only assesses the intellectual progress of the students.

Bajah (1984), views Continuous Assessment as the continuous updating of judgment about performance in relation to specific criteria, which allows at any time a cumulative judgments to be made about performance of these same criteria. This view indicates that certain basic criteria must be present before any assessment can be effectively carried out.

Ezenwa and Okoye (1981), defined Continuous Assessment as a systematic and objective process of determining the extent of a student's performance in all the expected changes in his behaviors from the day he started a course of study in a continuous and progressive manner to the end of such a course of study and a judicious accumulation of all pieces of information derived for this purpose with a view of using it to guide and shape the student in his learning from time to time and serve as a basis of important decisions about the students. In impact, Continuous Assessment is seen as a systematic and objective method of determining the extent of a student's performance in all the expected changes of his/herbehaviors throughout the course of study.

Denga (1983) stated that Continuous Assessment means total evaluation of the pupils on the basis of their curriculum and non-curriculum activities, which is in and outside the school. Denga's view means students are evaluated on the basis of planned and unplanned activities within and out of the school system. This provides the true assessment of the pupils' academic and non-academic performances. Examination is not always the true test of one's ability. This is more so in a situation where the examiners are subjective in their judgments or when the students' are faced with one problem or the other during the time of examination. The only remedy to such situation is to have various assessments covering the three essential domains; that is cognitive, affective and psychomotor.

Hassan (1994), reported that Continuous Assessment is a systematic collection of marks or grades over a period of time and its aggregation into a final grade. Hassan's view gives the classroom teacher the scope to make use of variety of assessment techniques appropriate to the subject being offered by the students. Such procedures include practical, projects and fieldwork. All these have their place in the scheme of Continuous Assessment as grades and marks will be awarded on the basis of performance in each of the methods used for determining the student's performance.

Turton (1983), stated that Continuous Assessment is not only the recording and compilation of data, but assessment of the progress of the students which is immediately linked to the instruction they have been given in an attempt to change the behavior of the student. It includes an in-built mechanism and innovations such as the instructional methods needed by the teacher for his own improvement of teaching. Turton's view enhances learning by the students since assessment involves the use of a variety of modes of evaluation and improving the learning and performance of the students.

Andrew (2000), viewed Continuous Assessment as a means of indicating the progress or maturation of the student but it is also used especially for detecting problems. It is therefore, in the interest of the teacher to administer some form of assessment on a continuous basis on his students to evenly cover the material he is teaching.

## 2.3 Philosophy, Principles and Practice of Continuous Assessment

In the new National Policy on Education, (1998), it was stated that; "educational assessment and evaluation will be liberalized by basing them on Continuous Assessment of the progress of the individual". The above statement is amplified in subsequent sections dealing with primary school education, secondary school and also in the administration and planning of education. The policy stated that Primary School Leaving Certificates should be based on Continuous Assessment results. Selection into secondary schools was to be based on Continuous Assessment and examination results of students. The Senior Secondary School Certificate Examination was to be based on National Examination. In Teacher's Schools, Continuous Assessment based on a variety of techniques was to be used. The tertiary level and other institutions of higher learning were to introduce Continuous Assessment into their final grading. To ensure the maintenance of common standards, Continuous Assessment would be coordinated by schools, the Universities the Ministry of Education and the West African Examination Council (WAEC). These organizations were expected to meet and work out a common scheme.

Ipaye (1982), advised that to carry out the scheme planned by the Federal Government impactfuly in the National Policy on Education, the daily performance of students should

be regularly graded and summarized and reflected in the term summaries. Ipaye made the following recommendations:

a The end of term scores was to be added to the term summaries to give a record of academic performance of the term.

b The combined scores were to be used on academic and behavioralperformance that is (cognitive, affective and psychomotor) domains, this will form the Continuous Assessment for the student for the term and this process should continue.

c The overall summary for the year was to be calculated from the term scores, the work for each term contributed to the entire year's work. The cumbersome nature of work involved in the process of Continuous Assessment demanded a combined effort of teachers', principals, heads of departments, guidance councilors and ministries of education.

Ipaye did not state where the materials for the assessment were to be obtained and how to train teachers to handle the work.

Yoloye, et al (1980), in their recommendations stated that teachers were expected to shoulder the major responsibilities for Continuous Assessment since teachers' were closer to the students' and as a result they stood a better chance of assessing the overall development of students' in and outside the classroom. His work is related to this study in the sense that he recommended that teachers role in the assessment of students', which has led to record keeping of Continuous Assessment and examination scores by the teachers'. Their works also fail to recommend the training of teachers and the optimum number of Continuous Assessment instruments that should be given. F.M.E. (1985), pointed out that the rationale for advocating Continuous Assessment is as follows:

a Assessment is an integral part of the teaching - learning process. It is therefore reasonable that the teacher should be involved in the final assessment of the pupils he/she has taught. The teacher is denied the final assessment of the students if a single examination is set by an external body.

b The Continuous Assessment system enables the teachers' to assess their instructional methods from time to time in order to improve their performance. The data from Continuous Assessment provides a feedback to the teachers on the impact of their instructional strategies.

## 2.4 Continuous Assessment and Academic Performance

In the Nigerian educational system, two sets of assessments are used to evaluate the level of student's performances. These are the Continuous Assessment (periodic course assessment) and the final examination assessment. This replaced the one short system of assessment, which was observed to have several shortcomings (Michael and Odenu, 1994). Some of the shortcomings are lack of diagnostic and guidance oriented properties, creation of emotional problems, low context coverage and high rate of examination irregularities. According to Danjuma (2004), Continuous Assessment in the educational system serves several purposes, which include the following:

a To provide more valid and reliable assessment of the student overall ability.

b To enable teachers' to be more flexible and innovative in their teaching.

c To provide basic guidance for students.

d To reduce examination malpractice.

The Continuous Assessment policy requires that students' be assessed through both Continuous Assessment and terminal assessment to evaluate the progress and growth of students. The practice is further given a boost in the Schools of Education Evaluation System by the requirements of the National Commission for Schools of Education.

Odile and Ajuar (1995), asserted that Continuous Assessment takes account of all the child's performances in tests, assignments, projects and other educational activities during a given period of term, year or during the entire period of an educational level. Teachers' often take crucial decision on the promotion of students to the next class, identification of students who need remedial help and for grading and certification of students. Therefore, Continuous Assessment directly affects students' performance that was why the FederalMinistry of Education, Science and Technology trailing the same pathway of this exercise of Continuous Assessment and encouraging its practice observed that assessing the teaching/teaming process is an integral part of the curriculum in which the teacher must be fully involved. He further observed that it is an all embracing exercise, which the learner should undergo throughout his schooling period.

Continuous Assessment is therefore, a way of obtaining the most value assessment of the capabilities of a student. This is because it is an aggregate of all the performance of a student from the beginning of the course to the end of it, which determines the final performance.

## 2.5 Characteristic Features of Continuous Assessment

Based on the concept of Continuous Assessment, it has many characteristics such as:

**SYSTEMATIC:** Continuous Assessment is said to be systematic in the sense that it requires an operational plan, which indicates what measurements are to be made of the

student's performance or at what time interval, or times during the school year, the measurements are to be made and the results recorded, the nature of the instrument and tools to be used for the measurement. Ughamadu (1994), stressed that the systematic nature of Continuous Assessment is that its operations requires the working out in advance, a definite programme of the assessment. Thus, an operational plan that indicates or specifies what measurements are to be made, of the students performance, the time interval when such measurements are to be made, the results recorded and the specific nature of instrument or strategies to be adopted for the measurement are usually decided in advance. This research is aimed at finding out the systematic nature of Continuous Assessment whether frequent administration of Continuous Assessment per term will yield better performances or not.

Ipaye (1982), stressed that Continuous Assessment is systematic only when the varieties and types of the assessment to be used are specified in advance for the students to know, the students should be, aware of how frequent the Continuous Assessment should be whether on weekly basis or monthly at the end of the term, he also stressed that students should know who is to be involved in the Continuous Assessment administration especially the teacher. Ipaye's view of the systematic nature of Continuous Assessment is in line with this research. Turton (1983) opined that Continuous Assessment should be planned and be periodic. This indicates that whatever is going to be used in the measurement of the students' performances such as test - items and instruments should be well planned and the assessment should be made at intervals. This makes Continuous Assessment systematic.

**COMPREHENSIVE:** This has to do with a variety of instruments or assessment procedures used in ascertaining the performance of students. Bloom (1986) and Ughamadu (1994), stated these instruments to include tests, assignments, questionnaires, interviews, socio-metric technique checklist and inventory used in Continuous Assessment system.

Therefore, Continuous Assessment is comprehensive because it does not only measure outcome of the instruction in terms of performance, it also measures other aspects like the affective and psychomotor domains.

**CUMMULATIVE:** This occurs when the results of Continuous Assessment are recorded in a progressive manner showing trends and growth pattern over time, each data added on to the previous one and subsequent ones in a given ratio. The fate of the students' lie with the teachers that assess them and are responsible for keeping up to date records of the students performances. Hassan (1994), stressed that scores are added from the first term through the second to the third term and are considered for grading with the final examination scores for either promotion to the next class or for graduation. Danjuma (2004), pointed out that two sets of assessments are used to evaluate the level of students' performances. These are the Continuous Assessment (periodic course assessment) marks, which is cumulative and the final examination marks. When two, three or four tests are given in a term, the scores should be added up to make the final Continuous Assessment, thus making the Continuous Assessment score to be cumulative.

**GUIDANCE ORIENTED:** Guidance oriented Continuous Assessment stressed that areas of students strength and weakness should be communicated to the students to enable them make adjustments. Aliyu and Ngadda (2000), examined that periodic assessments are very impactive measures of academic performances. Turton (1993),

opined that guidance oriented Continuous Assessment shows greater validity of the process of Continuous Assessment because of the involvement of the classroom teacher in the assessment procedure. Guidance oriented Continuous Assessment indicates that information obtained is used to guide the students further development. In other words, information obtained from planned and frequent administration of the variety of tests in a Continuous Assessment practice can be very useful in guiding the students in the right part of learning not only in the cognitive but also in the affective and psychomotor areas.

**DIAGNOSTIC:** Another characteristic of Continuous Assessment is the diagnostic function. Ohuchi (1988), states that there are many uses for which assessment data scores may be put in our present system of education. Assessment for placement and/or certification is highly appreciated in Continuous Assessment, which serves as feedback to both teachers and students. It offers the opportunity of taking corrective actions whenever any undesirable trends are observed.

**PROGNOSTIC:** This aspect of Continuous Assessment looks into the future and predicts how well the student will perform on similar tasks or even completely different task in future (Nwaze, 1998).

**FORMATIVE:** Ezenwe (1992), observed that the objective of formative assessment is to enable the students to monitor his progress and with a view to identify his learning problems and correct them.

**SUMMATIVE:** This type of assessment is given at the end of the term, semester or years. It is mostly concerned with decision-making at the end of the term, semester or end of the year and such decision takes into account the results of the formative assessment. Turton (1983), added five practical characteristics to school based Continuous Assessment and these include:

**Simplicity:** This aspect stressed that Continuous Assessment should be simple in both design and operation. It stressed that any new idea to be introduced into the institutional setting has to be simple at the onset, the refinement could be later.

**Comprehensibility:** In this aspect Continuous Assessment data or scores should be in form of what can be easily comprehended by all concerned one of the aims of the system is to communicate present information to the students. Comprehensibility is achieved through the adoption of a system of grading based on ranking students in order to merit within a particular year or group for each subject.

**Security:** The security of Continuous Assessment is expressed in two areas namely; the physical security aspect and the security against forgery and misuse. Records of students had to be physically secured against natural hazards such as fire, rain and theft.

**Validity:** This includes the content and face validity (that is, internal and external) within the institution and Continuous Assessment ensures internal consistency of results. Externally, it is affected by the system of moderation

**Integrity:** In this aspect, integrity is promoted within the system through making reasonable demands on the teachers in terms of training and materials. Well design forms of data recording and ensuring an equitable distribution of the extra work, which Continuous Assessment entails are equally important.

## 2.6 Methods and Techniques Used In the Administration of Continuous Assessment

Continuous Assessment is mainly teacher-oriented, that is why in some countries Continuous Assessment is referred to as "teacher assessment F. M. E., (1985). Detailed guidelines on how teachers should conduct Continuous Assessment are outlined; no

single assessment tools may be adequate to measure all changes in behavior or the objectives of a lesson. The objectives of a lesson have been categorized into three broad areas called domains. These are the cognitive domains, the affective domain and the psychomotor domain. The cognitive domain is concerned with knowledge and its use. The affective domain deals with emotional responses such as interest, appreciations, attitudes, feelings and values that one may attempt to teach through the lessons. The psychomotor domain is concerned with physical, motor and manipulative skills (NTI, 2006).

**TEST:** The major and the most useful instrument for the assessment of cognitive behavior, which are tests, are written down questions to be answered by students. According to Nitko (1994), testing and examining are the most formal assessment methods. Learning experience is represented by qualitative marks. It could come in the multiple choice or essay form, which students are expected to answer, it is their responses to the questions that give the measure of the level of performance or performance. Measurement is the process of assigning the marks.

**ROJECTS:** This is another instrument used for measuring performance. Projects can be used for the measurement of performance in the cognitive affective and psychomotor domains according to Barclay and Breheny (2001); "project work involves collection and analysis of data, engaging in open-ended experiments. Identifying and endeavoring to solve problems in fields of learning and investigation underlying concepts and principles." Some projects may span over a month, a term, a semester or a year.

**ASSIGNMENTS:** These are specific tasks meant to be completed within a short time. They are usually meant to reinforce a previous lesson or to prepare for a forthcoming one. According to Ango (1997), assignments provide students the opportunity to practice

an independence work. The objective of assignment must be stated, and then assignment will follow the same procedure as for other written works.

**OBSERVATION:** This is a very important procedure for psychomotor and affective domains. The teacher can learn a lot about the child's interest, attitude and ability to accomplish a particular task through observation. It is a technique of gathering information; the teacher will be better disposed to include such information in the students' report. F. M. E (1985) pointed out that the technique has the advantage of giving a record of actual behavior of the child, which would be free from teacher's bias interpretation.

**CHECK LIST:** Check list consist essentially of the listing of steps, activities, behaviors or statement associated with a given behavior traits that observer records when incidents occur. With check list, a teacher can determine whether or not a particular behavior trait or characteristics are present or absent. Checklist can be utilized with high impact in assessing affective and psychomotor behavior. A checklist consist of list of things or statements, which pupils are expected to respond to by marking/ticking those that apply under the stated situation and leave unmarked those that do not apply. Example, reading checklist rate pupils using always; sometimes, never. Example, love story books - spends time with books, narrates stories from books. Checklist may also outline a particular procedure for carrying out a particular operation (NTI, 2006).

**INTERVIEW:** This technique provides for direct observation, the student is confronted by the observer, councilor or teacher and this confrontation could result in students being more cautious in the way they answer questions than they will normally be. According to Nwaeze (1998), interviews may be either structured or unstructured. In the structured interview, the interview schedule, which contains set of questions to be asked in specific

order are used. The answers are written down or recorded while in the unstructured interview, the order and the exact form of the questions are not specified but the general idea of what is expected is known by the interviewer. The interviewer encourages the interviewee to expand on his answers by asking leading questions.

**QUESTIONNAIRES:** Questioning people orally in a formal situation make them anxious. They may be worried about why they are being questioned, what they are expected to say and how their responses will be interpreted. While these are completely absent when you use questionnaire. The threat often inadvently associated with interviews is not there. Questionnaires are instruments that present information to a respondent in writing or through the use of pictures and then require a written response, a tick, a circle, a word, a sentence or several sentences. (NTI, 2006). According to Emmanuel (1993), questionnaires can be structure or open-ended. In the structured questionnaire, the respondent is required to select one or more responses from alternatives. The open-ended format gives the respondent freedom to answer in his own words. Teachers can get information relating to students' attitude, interest, studying habits and personal characteristics with the use of questionnaire. A questionnaire may be made up of statements in the affirmative, which can be agreed or disagreed with. A questionnaire may also be made up of incomplete statements that the student is expected to complete. Questionnaires can serve a number of useful purposes in the classroom, if carefully designed.

**RATING SCALE:** This is another type of question one may find in a questionnaire. This type requires the student to say how much he agrees with a statement, for example; my classroom is the neatest in the school.

…… …….. …….

Disagree Not sure Agree

The student will put a mark in the space, which tallies with the way he feels.

This type of questions rate, so the instrument is rating scale.(Nwaeze, 1998).

**SOCIOMETRICS:** The sociometric technique is a device for assessing some aspects of non-cognitive behavior of students. It is used to assess the pattern of social relationship in group of students. The teacher who has knowledge of social relationship of his class, students can use it in arranging group work or projects. Ango (1997), however pointed out that it is important to note that in the sociometric technique, any information one get is only true for that occasion and for that, basis of choice is put to the members of the class, the pattern of the sociogram or sociometric table may change completely. Even the same basis of choice could result in a completely different pattern at another time. The pattern of social relationship in a class is never constant for all the time or for all reasons.

**ANECDOCTAL RECORDS:** This is another simple technique for assessing affective behavior of the student. According to the F. M. E (1985), anecdotal records involve recording by the teacher of anecdotal events in the life of the child, this is an informal duty and is premeditated. Whenever the child does anything striking, the teacher makes an objective report of it. This report is made without any judgment or explanation. According to NTI (2006), the reports accumulated over the years and when occasion warrant, the report can be read and an assessment of the child's character is made. Also,

spontaneous, unexpected or unique observations about the whole class in a day's activities that worked well or poorly, pupil's behavior under certain situations, could be recorded for future inferences to improve teaching. This will sharpen and focus the teacher's attention to what is happening around in class, so important events are not overlooked. Thus, any person reading through students anecdotal records can make an assessment of the typical behavior of the student.

## 2.7 Summative System of Assessment

Based on the nature of the summative system of assessment in Nigeria Ipaye (1982), saw this assessment as an end of course procedure; to him examinations were bigger tests, more formal and anxiety provoking. He maintained that many students feared examinations, especially end of session examinations Ipaye, believed that some students even had a feeling that if they failed a particular examination, it might mean to them the end of their careers. He concluded that once a student has failed an end of course examination, he was out of the system. Ipaye failed to suggest a remedy or its alternative. His work is related to the present research in the sense that he has noted the importance of students' performances in examination.

Emmanuel (1993), stated that tests were less threatening and therefore less likely to push students to serious examination malpractice. Dodo (1985), stated that in the objective test, the items included short answer questions, sentence completion, true or false items, multiple choice and matching items. He added that in objective test all candidates were expected to give the same correct answer and many items could be completed within a short time. He concluded in the objective test that such tests were easy to mark but usually difficult to set, since it should cover the entire syllabus taught to students. Dodo

only mentioned the advantages and disadvantages of the objective tests on the side of the teacher but he failed to mention any on the side of the students and so he did not give solution to the problem.

Cliff and Imrie (1981), writing on the summative system of examination stated that, examinations were used to control entry into institutions or to predict success or failure and to classify students. To them, examination should arouse anxiety and stress on how to approach a particular question. They viewed summative system of assessment as examinations taken at the end of course to determine those students who could proceed to institutions and those who are to remain dropouts. Their work has succeeded in criticizing the summative system of assessment for using examinations to determine fate of students but has failed to mention the right way to follow. Their work is related to the present study in the sense that, weakness in the summative system, which has been clearly pointed out demands an alternative system where Continuous Assessment scores can be related to examination scores. While commenting on one short system of assessment, Ikejiani (1971), submits that it is responsible for the undue importance that is attached to paper qualification in the society. He writes that the cult of certificate has impeded education in our country, we have imprisoned the minds of our youths instead of releasing them to invent, discover, build and produce. Our education has been barren, so that very soon, we shall face the problem of having "educated" people but not qualified to do the work needed for the welfare of the nation. Still on the summative system of assessment, Olaitan and Agusiobo (1978), pointed out that the system is largely responsible for the disproportionate number of school dropouts. To this end, they commend that the society, the industry and the students themselves have frowned against failure of the school to provide them with tools with which they would compete

favorably in the competitive world of work. These observations among others against the single final examination used in assessing learning over a period of time leads to the introduction of Continuous Assessment. As a result of the importance attached to this method, it runs through the veins and marrows of the National Policy on Education.

## 2.8 Teachers Role in Administration of Continuous Assessment

The classroom teacher, Form Master, Year Group Master, Game Master, Examination Officer are the main implementers of Continuous Assessment systems in schools. This is because they are always with the students whether teaching, counseling or rebuking. They know more about personalities of students and their academic performance; they can from their interactions with students give the most reliable information about students in terms of academic and non-academic capabilities. The quality of Continuous Assessment and instructions depends upon the above categories of teachers' vis-à-vis the success of the Continuous Assessment system (Abbas 2000). The teachers should possess the skills of planning and construction of performance and aptitude tests to evaluate teaming. It is their duty to teach, assess and record the Continuous Assessment scores in all the Continuous Assessment. Yoloye (1984), emphasized that the teacher should possess "skills in record keeping and preparation of report". The teachers do the computations and interpretations of student scores. The computation and weighing of student scores demand special skills, for teachers to provide good and reliable results therefore, the teachers need time to accurately compute the students' scores. This is why Enaohwa and Eferakaje (1989), reported that most teachers complain of the much time devoted to the computation of test scores, using different statistical tools with the aim of satisfying the requirements of Continuous Assessment. The need to guide students on

Continuous Assessment cannot be overemphasized; the students' need to know the significance of Continuous Assessment on their academic performance. The teachers must stress the importance of Continuous Assessment on the overall performance of students in all the subjects they offer. It seems also that some teachers do not understand the rational for Continuous Assessment in schools, thus teacher made test suffer from various vices including lack of validity and reliability and non-comparability of standards (NTI, 2006). The setting and grading of students Continuous Assessment score is very important because it is the only way to determine the level of students' academic performance. According to Abbas (2000); "The practice in most tertiary institutions is that the teacher is left to handle all matters concerning Continuous Assessment. The teacher is expected among others to take into consideration attendance at lecture (for which he is expected to keep a record), participation in lectures and tutorials, assignment and tests". Depending on institutions, specific points have been allocated to these focal areas in the final computation of Continuous Assessment scores. In the course of administering Continuous Assessment in the classroom, the teachers are able to identify some learning difficulties, which may affect the students score in the final examination. Using many variables such as punctuality, attendance at class, carrying out assignments, participation in class, the teacher assesses students affective and psychomotor domains. This is a bit difficult especially in tertiary institutions where teachers usually have to contend with high student-teacher ratio.

According to Mathew (1997); "It is only when teachers are able to assess students properly that they can make positive decisions that affect students". The foregoing has shown that Continuous Assessment means more work for both the teachers and the student. What determines the success of Continuous Assessment is the readiness of the

two to play the game according to the rule. The operation of Continuous Assessment in some higher institutions has been faced with some limitations and irregularities. There is the problem of correlating Continuous Assessment scores with actual examination scores. For instance, a student will have very high scores in Continuous Assessment and an extremely low score in the final examination.

Investigations carried out by Hassan (1987), shows that classroom teachers mostly lack the technical knowledge of how to design a valid assessment instruments. Olaitan and Oyedele (1994), pointed out that most of the students today are ready to satisfy any lecturer in cash or in kind in order to get the assessment they desire. A situation like this is a serious threat to the authenticity of assessments in our schools, finally teacher's integrity is fundamental in the implementation of Continuous Assessment impactful use of assessment instruments to report on each student objectively and the teacher requires utilizing the feedback to improve instructions.

### 2.9 Gender Related Difference in Performance in Science

The influence of gender on learning ability, performance and interest in science can never be overemphasized. Results of several researches conducted over the years revealed that there is relatively significant difference in students' performance in science subjects. Shemesh (1990), reported that there is narrow participation of girls in high school courses of science and technology as well as low number of women who had professional career in science and technology. Data collected by Shemesh also revealed that while boys are more oriented towards the so called "hard" subjects and sciences (Mathematics, Physics, etc), girls prefer the "soft" subjects such as human physiology, plant life, zoology, etc. Young and Frasher (1994) reported that gender differences in

science and performance occurs as a result of a number of social factors both at home and in school.

Adegive (2000), attributes differences in the learning ability of boys and girls to socialization process because girls are denied out of school and pre-school experiences in problem solving especially those involving activity and behaviors that inhibits the development of mathematics and science capability in girls. Nwosu (2001), in her study revealed that exposure to science process skill based learning involving activities for both girls and boys yield more impactful learning irrespective of gender and ability level. Report by Danladi (2003), also revealed no significant difference in performance between girls and boys on tasks involving process skill acquisition. Nwosu suggested that gender stereotyping has to be discouraged in homes; schools and societies to enable girls participate freely in the learning of science.

### 2.10 Continuous Assessment in Other Countries

The global influences affecting education and how we assess it will soon reach into most classes in the world. One consequence of these global influences, such as changes in the world economy, the information revolution, environmentalism and cross-national health threats, is the move away from the heavy use of traditional, more judgmental approaches to assessment towards alternative, more inclusive means of determining what learners know and can do. In the same spirit, South Africa has committed to not just reforming but transforming its educational system nation-wide. Its major policies outcome-based education and Continuous Assessment, offer relevance to teachers and learners worldwide.(National Education Ministry, 1996).

The mode of operation of Continuous Assessment differs from one country to another in terms of universality and control to the extent that within the same country the operation might not be uniform. This is due to the fact that different examination boards use different criteria of evaluation or certification, which brings about the problem of standardization. The different criteria of evaluation being used by various examination boards make some certificates superior to others. In Great Britain, particularly in England, there are two examination boards - the General Certificate Examination (G. C. E), and the Certificate of Secondary Education (C.S.E). The G. C. E is a National body, which is solely for external examination though it incorporates some Continuous Assessment marks. The C.S.E boards are established on regional basis and focused on assessment of students who are academically weak. However, recent report by Turton (1991), indicated that G. C. E and C. S. E have been scrapped because of mounting criticism and have been replaced by a single examination system called the General Certificate of Secondary Education (G. C. S. E).

In United States of America (USA), Ipaye (1982), has stated that only New York State has an external examination, which brings about multiplicity of standards. As a result, some institutions of higher learning and employers of labor usually resort to using standard test to select suitable candidates. However, the teachers are experts in standardized testing and so there is validity and reliability in the examination system. In Australia and Canada, it has been reported by Nwaeze (1998), that the state of Victoria in Australia has long incorporated the Continuous Assessment scores into the external examination system. There is free flow of information as regards methods of assessment and item generation. Some provinces in Canada have abolished public or external examination, which comes at the end of high school courses. Some examination boards

incorporate the Continuous Assessment marks into their final examination marks standardized tests are used to select students for high school and the teachers assessment have been found to be good.

In African countries that practice the system, the few known countries like Kenya, Botswana and Zambia have common examination systems. The West African Examination Council is responsible for conducting public examinations, while the Kenyan Examination Council has its own internal examinations at Nairobi brought to it by the subject panels or specialists with low premium attached to the Continuous Assessment system. Emmanuel (1993), reported that Kenya and Zambia among others are operating the Continuous Assessment system, but did not go further than that. The operation of the system is at infancy stage and not yet developed.

From the above review of Continuous Assessment in countries other than Nigeria, it is observed that teachers must have good knowledge of tests and measurement to be able to generate good items for internal or external examination.

This indispensable knowledge of item generation would forestall multiplicity of examination boards. This is because different examination boards would now use standard and similar criteria for assessing candidates.

## 2.11 Review of Related Studies on Continuous Assessment and Academic Performance

Most of the studies on Continuous Assessment are either correlation, comparative or predictive. However, some of the studies carried out on Continuous Assessment are as follows. Durotolu (1994), used Pearson Product Correlation Coefficient to determine the predictive strength of JAMB scores certificates and periodic assessment at the end of the term performance of students revealed that periodic assessment showed the highest predictive power of the variables considered. The findings suggest that periodic assessment techniques are very impactful measures of academic performance certificate worth and entrance examination results were not significantly related to end of term performance.

Jimoh and Durototu (1988), compared the entry qualification of NCE students with their performance in education courses using WASC/GCE, Grade II and pivotal as entry qualifications. The study revealed that the three categories of students showed no significant superiority or otherwise in education and teaching practice. Abdullahi (1983), examined the correlation between JAMB examination results and first university examination results. The study revealed that JAMB scores in Physics, Mathematics and Economics significantly correlated with university scores in the same subjects while JAMB scores in Biology and Geography showed no significant correlation with university scores.

Hassan and Adeyanju (1998), studied the predictive validity of performance in Continuous Assessment in Senior Secondary Schools Examination (SSCE) in 13 Secondary Schools. The study revealed that the majority of the Secondary Schools

showed no significance relationship between Continuous Assessment scores in English and Mathematics. However, there is significant relationship between gender of students and the predictive validity of interview tests scores for admission into Schools of Education. The results revealed that interview tests scores are predictive factors for NCE performance in Agricultural Science, Biology, English Language, Geography but Physics showed no significant relationship between interview tests scores and NCE performances. Aliyu and Ngadda (2000), studied the relationship between formative evaluation scores and summative evaluation scores using School of Education, Gashua as a case study.

The study further reveals that there is a strong positive correlation between formative evaluation and summative evaluation of the subjects considered, the results further confirms the assertion that formative evaluation scores are good predictors of end of term examination grades.

Emmanuel (1993), examined the roles Principals and Teachers play to influence the performance of the Continuous Assessment objectives. The study revealed that there is shortage of career guidance in Secondary Schools in Kaduna State. The study further revealed that it is the duty of teachers to assess and keep records of Continuous Assessment to avoid mutilation or lost. Olatunji and lyede(1994) made an attempt to appraise the practice of Continuous Assessment in Nigerian Schools since its inception. Suggestions were made on the various ways through which the scheme can be made to assume a better focus in the minds of schools functionaries, parents and employers of labour.

Iheigbulem (1994), determined the degree and significance of relationship (consistency) between Continuous Assessment and examination, cognitive scores of the group of students admitted into NCE (technical) programme. It also determined whether both groups differ significantly in degree of relationship between their own sets of scores. It was found out that a substantial and significant degree of relationship existed between Continuous Assessment and examination scores of each group. It was also found out that both groups did not differ significantly in degree of relationship between their two sets of scores.

Mathew (1994), pointed out that students progress is evaluated through both Continuous Assessment and terminal examinations in Schools, both assessment methods are supposed to be related for them to be used together. The relatedness was for the focus of his study in manual arts. The result shows that some Continuous Assessment scores are related to examination scores. It is the view that the benefit derived from the evaluation practice is many hence, it should be practiced properly.

Danjuma (2004), in his study, he examined the extent of reliability of Continuous Assessment as a predictor of students' performance in end of term examinations. The results revealed a significant relationship when the student scores from Continuous Assessment were correlated with their examination marks. Similarly, when Continuous Assessment scores of those with average of high scores were correlated with the examination scores, there was a significant relationship.

## 2.12 Implications of the Literature Review to the Present Study

The literature reviewed so far indicated that Continuous Assessment is practical in almost all the schools in Nigeria. This implies that the present study is in line with the practice in all schools. The studies from the literature show that the teacher is the main implementer of Continuous Assessment, which is also in line with this study. Almost all the literature gone through by the researcher is correlative, predictive or comparative while this research is experimental, which makes it unique and of considerable importance. Some of the researches carried out show positive correlation between examination scores but others show negative correlation. So this research also intends to find out whether more Continuous Assessments will affect final examination scores of Junior Secondary School students. The impact of gender is also to be investigated and finally the research, will investigate the relationship between Continuous Assessment and final examination scores of Junior Secondary School students.

# CHAPTER THREE

## 3.0 METHOD OF STUDY

### 3.1 INTRODUCTION

This study investigates the impact of Continuous Assessment on academic achievement on Junior Secondary School students in Police Secondary School Students Minna, Niger state.

In this chapter the research design, population, sampling procedure, research instrument and procedure for data analysis would be discussed. This chapter is organized around the following subheadings:

a Research Design

b Population of the Study

c Sample and Sampling Procedure

d Research Instrument

e Pilot Study

f Item Analysis and Item Difficulty Index

g Validation of the Instrument

h Reliability of the Instrument

i Data Collection Procedure and Administration of the Instrument

j Data Analysis Technique.

### 3.2 Research Design

In this study, the pre-test post-test quasi experimental control group was employed. Two groups were used for this study, i.e. the experimental groups which consist of two groups (students exposed to two sets of C.A's) $E_1$ and (students exposed to four sets of C.A's) $E_2$. This kind of design has been recommended by Rose and Smith (1971) and used by Amedu

(1998). The experimental groups were exposed to the treatment i.e. the first group was given two sets of C.A in a term while the second group was given four sets of C.A in a term due to the fact that in most institutions C.A is given mostly once or twice. For the second group which was given four C.A, it is meant to test and see if more C.A means better achievement in the final examination since C.A is now a norm across institutions, which is often combined with examination to reach a final score determining a pass or fail for students.

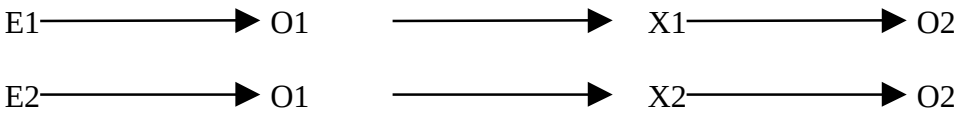
According to Eugene (2012), the educators clearly have two professional responsibilities, namely:

a To teach a course (develop students understanding).

b To examine students at the end of the course (assess students performance).

The subject to be used in this study is an organic General Mathematics. Due to the fact that the researcher teaches the subject, all extrinsic variable will be minimized. The students from experimental and control groups were divided into four equal groups and a pre-test of General Mathematics test was administered to the four groups before the commencement of the treatment to determine the equivalence of the four groups. The scores obtained from pre-test was analyzed using (ANOVA) statistic to actually find out if the four groups are equivalent. And it was found that there is no significant difference in the scores of the four groups after the pre-test. Details are found in the appendix three groups were chosen out of the four equivalent groups.

A post-test was administered at the end of the treatment which comprises the same Mathematics test (MT). The design of the study is represented thus:




*Adopted from Kerlinger(1973).*

Were

$E_1$ - 1st experimental group.

$E_2$ - 2nd experimental group.

$X_1$ - instruction with 2 Continuous Assessment.

$X_2$ - instruction with 4 Continuous Assessment.

$O_1$ - pre-test.

$O_2$ - post -test.

The advantages of this design are;

- It can be used to give indication of gain in understanding of selected test due to the application of the treatment.
- It helps to show whether the treatment given has an impact on the groups.
- The mean scores and average of the three groups can be calculated.

### 3.3 Population of the Study

The population of the study comprises all the juniors students at Police Secondary School Minna, Niger State. This comprises of one thousand (1,000) junior class students in total. In conducting a research it is desirable to study the entire population when,

i. The population of the study is small
ii. The researcher has a lot of time at his disposal

iii. The researcher has adequate human and material resources for the study

iv. The demand of the study is to make a complete count or record of the entire population.

Similarly the researcher may decide to study only a portion of the population when:

i. The population of the study is large

ii. Time available for the study is limited

iii. The researcher has inadequate human and material resources for the study

(Akuezeilo, 1993).

The school and the number of students are provided in the table below.

**Table 3.1 Population for the study**

| Location | Male | Female |
|---|---|---|
| Police Secondary School Minna, Niger State | 634 | 366 |
| Total | | 1000 |

*The table above shows the entire population of junior secondary school students in Police Secondary School Minna, Niger State, According to gender distribution.*

### 3.4 Sample and Sampling Procedure

A purposeful sampling technique was used for the purpose of the study. Due to time, resource and access, Simple random sampling was used to select the students that will participate in the study. 120 students were chosen from the school which represents 12% of the total population of the junior secondary students in the school. This sample size is in

accordance with that suggested by (Hazarika,2014) that at least 10% of the total population can be taken as sample size which is also in accordance with the sample ratio recommended by Smith, Scott (2013).

### 3.5 Instrumentation

A Mathematics Test (MT) consisting of 40 multiple choice items was administered to the samples as pre-test. The 1st seventeen items were adopted from New General Mathematics, a multiple choice questions for Junior-level General Mathematics. The remaining items were constructed by the researcher and validated by 5 specialists in the subject matter. The summary of the items in the instrument and the area each item tends to cover is shown in the following table of specification

**Table 3.2 Table of Specification**

| Level | Objective | Item Number | Number Of Questions | Percentage (%) |
|---|---|---|---|---|
| Knowledge | Fractions | Test I. A 1-10 | 8 | 11.11 |
| Comprehension | Indices | Test II. B 11-20 | 10 | 25.77 |
| Application | Multiples | Test III. C 21-35 | 6 | 16.66 |
| Analysis | L.C.M | Test II 1-5 | 4 | 14% |
| Synthesis | Factors | Test 1 | 6 | 16.23% |
| Evaluation | Decimals | Test III 2 | 6 | 16.23% |
| Total | | | 40 | 100% |

*The areas covered are the course content from the syllabus.*

### 3.6 Pilot Study

The instrument outlined above is pilot-tested, before the final administration to the samples: A sample of 40 junior students in Police Secondary School Minna, were used for the pilot study. The purpose of the pilot study as in Bichi (2002) is to:

a) Determine the reliability strength of the instruments before administration.

b) Assess the feasibility of the study before trial

c) Identify possible problems or difficulties that respondents may encounter with a view to eliminating them.

d) Diagnose possible mistakes students may commit in responding to test items with a view to eliminating them in the final treatment.

e) Determine the approximate time duration which the subject would need to answer the test items properly. The appropriateness of the instrument in terms of clarity of the items and the facility of the test items will also be determined.

### 3.7 Data Collection and Administration of the Treatment

The instrument used for the different sets of C.A's is the teacher made test (TMT). The instrument comprises of four different sets of 10 questions making a total of forty questions. The first experimental group ($E_1$) was exposed to two sets of C.A's while the second experiment group ($E_2$) was exposed to four (4) sets of C.A's. details of the questions, scores and marking scheme are found in appendix D - M.

### 3.8 Administration of the Treatment

To remove any possible impact and bias, the two experimental groups were taught with the same techniques/method and the same steps were followed. The experimental groups are two groups one of the groups $E_1$ was given C.A after five weeks making a total of 2 C.A

per term while the other experimental group $E_2$ was given (4) four C.A at 3 weeks interval. The results obtained from the various C.A's and the final examinations form the data for the research. The scores of the groups $E_1$, $E_2$, were collated and collected hence subjected to data analysis

### 3.9 Data Analysis Tools.

The analysis essentially involved statistical testing of the hypotheses stated in chapter one. The level of significance adopted is $P < 0.05$. This level of significance forms the basis for retaining or rejecting each null hypothesis.

An independent sample t-test statistic was used to test the second and third hypotheses and finally the Pearson product moments correlation coefficient (r) was used to test the $4^{th}$ hypotheses. Each of the hypotheses was restated as found necessary.

# CHAPTER FOUR

## 4.1 Introduction

In this chapter, data obtained from the instrument, Mathematics Test (MT) administered during the post-test was analysed and presented. The analysis essentially involved statistics testing of the hypotheses stated in chapter one. The level of significant adopted is $P \leq 0.05$ which forms the basis for retaining or rejecting each of the null hypotheses stated.

The statistics used for the first and second hypothesis was the t-test statistics while Pearson Product Moments Correlation Coefficient (r) was used to test the third and fourth hypotheses. Each of the null hypotheses is restated below.

## 4.2 Presentation of Results

These are summaries of the Analyses and the hypotheses which are restated for the purpose of the analysis.

$Ho_1$: There is no significant difference between the mean academic achievement scores of male and female students exposed to two sets of Continuous Assessments in Mathematics.

**Table 4.1 Comparison of mean scores of males and females exposed to two sets of C.A.**

| Variable | N | X | SD | SE | Df | t | P | Remark |
|---|---|---|---|---|---|---|---|---|
| Male | 15 | 23.600 | 5.207 | 1.3445 | 28 | 0.335 | 0.07 | Not Significant |
| Female | 15 | 24.2667 | 5.6879 | 1.4686 | | | | |

Significant at $P \leq 0.05$

The results from table 4.2 indicate that there was no significant difference in the academic achievement in Mathematics of male and female students exposed to two set of, C.A. The P value of 0.07 is higher than 0.05 which is the level of significance that was set for the experiment this shows that male and female do not differ significantly when exposed to few (two C.A's) Continuous Assessment. The t - statistics at df = 28, and 0.05 level of significance is 2.048. The calculated value 0.335 is less than the critical value which shows no significant differences in the academic achievement in Mathematics of male and female students as earlier stated.

$Ho_2$: There is no significant difference between the mean academic achievement scores of male and female students exposed to four sets of Continuous Assessments in Mathematics.

The null hypothesis was used to determine whether the mean academic achievement of male and female students exposed to four set of Continuous Assessment will differ significantly.

The scores of male and female students exposed to four set of Continuous Assessment was Analysed using t - test statistic to test this hypothesis and the result is shown in table 4.3.

**Table 4.2 Comparison of the mean scores of male and female students exposed to four set of Continuous Assessment**

| Sex | N | X | SD | SE | t | P | Remark |
|---|---|---|---|---|---|---|---|
| Male | 15 | 31.87 | 5.29 | 1.37 | 2.166 | 0.039 | Significant |
| Female | 15 | 26.47 | 8.08 | 2.09 | | | |

Significant at $P \leq 0.05$

The result from table 4.3 indicate that male and female students differ significantly in achievement in Mathematics when they are exposed to four Continuous Assessment this shows that males perform significantly better than females when exposed to many Continuous Assessment in a term. This is because the t -statistics at df = 28 and 0.05 level of significance is 2.048, t - calculated is 2.166. The null hypothesis is therefore rejected.

$H_3$: There is no significant relationship between the mean Continuous Assessment score of Junior Secondary School Students exposed to two sets of Continuous Assessment in Mathematics.

**Table 4.3 – Relationship between the mean C.A. and final examination scores of junior secondary school students exposed to two sets of Continuous Assessment in Mathematics.**

| Variable | r | df | P | Remarks |
|---|---|---|---|---|
| C.A | 0.081 | 28 | 0.670 | Not Significant |

Significant at $P \leq 0.05$

The results from table 4.4 shows that Pearson correlation coefficient (r) of 0.081 at 0.05 level of significance is less than the critical value of 0.323 which is an indication that there is no significant correlation between C.A and examination scores. The Null hypothesis is therefore retained.

$Ho_4$ - There is no significant relationship between Continuous Assessment scores and final examination scores of Junior Secondary School students exposed to four sets of Continuous Assessment.

**Table 4.4 - Relationship between C.A scores and final examination scores of junior secondary school students exposed to four set of C.A**

| Variable | Df | r | P | Remarks |
|---|---|---|---|---|
| C.A | 28 | -0.097 | 0.610 | Not Significant |

Not Significant at $P \leq 0.05$

The result from table 4.5 indicate that there is no significant correlation between C.A scores and final examination scores of junior secondary school students exposed to four set of C.A, this is because Pearson correlation coefficient r of 0.097 at 0.05 level of significance is less than the critical value of 0.323. This shows that the mean C.A scores of students expose to four set of C.A did not correlate significantly with their final examination scores.

## 4.3 Summary of Analysis and Results

The Findings from the analysis revealed the following:

i. The experimental group exposed to four sets of Continuous Assessment performed significantly better than those exposed to two sets of Continuous Assessment.

ii. The experimental group ($E_1$) exposed to two sets of C.A had little or no significant differences in the performance of the male and female students

iii. The male students performed better than the female students when exposed to four sets of C.A in the second group ($E_2$)

iv. There is no significant relationship between Continuous Assessment scores and final examination scores of Junior Secondary School students exposed to two sets of Continuous Assessment and those exposed to four sets of Continuous Assessment.

## 4.4 Discussion of the Results

This research work is aimed at determining the impact of Continuous Assessment on academic achievement of Junior Secondary School students in Police Secondary School in Minna, Niger State. Four hypotheses were stated and tested on the scores obtained from the instrument, Mathematics Test (MT). Data obtained from tables 4.1 to 4.4 were analysed in accordance with the stated hypothesis. The findings from the analysis is summarized as follows:

The study reveals that those exposed to two sets of C.A's has a mean of 24.0333 and finally the students exposed to four set of C.A has a mean of 29.300. The group of students exposed to four set C.A has the highest mean followed by those exposed to two set of C.A. So the results from analysis has shown that the more the number of C.A, the better the achievement. This might be due to the fact that exposures to C.A motivate the students to read harder as they have to spend time to prepare for each of the C.A's. As more C. A's force students to spend more time to read, those exposed to more C.A's are expected to perform better. This results is in line with the findings of Ango(1994) and Nweaze(1998), who reported that students tend to perform better when exposed to more drills.

The results from table 4.1 revealed no significant difference in the academic achievement of male and female students exposed to two sets of C.A's. This result supports the earlier findings by Danladi(2003) and contradicts the findings of Musa(2000). This might be due to the fact that male and female students do not differ significantly in performance when they are exposed to tasks that are moderately stressful. It seems that emotional stress from two C.A's are moderate and has little or no impact on the performance of female students. This is in line with the findings of Arbogast(1997), who suggested that female students due to their feminine nature can withstand only moderate stress. This report also contradicts the findings of Mari (1994), on gender and that of Shuaibu and Mari (1997), where a significant difference was observed between academic achievement of male and female.

The results presented in table 4.2 shows a significant difference in the academic achievement of male and female students exposed to four sets of C.A's which contradicts the result of the students exposed to two set of C.A's. The difference may be due to the high stress involved in preparing for so many C.A's, the more the number of C.A's the higher the stress the students are subjected to. As males are able to cope with stressful experiences more than females due to their superior physical and emotional stability over females, they are expected to perform better at high stressful conditions than females.

From the value of the mean scores, the male students have a mean score of 31.80 while the female students have a mean score of 26.47. Therefore, the male students with the highest mean perform better than the female students. This could be because the male students can withstand more stress and the rigorous drills involved in preparing for four sets of C.A's due to their masculine nature than the female students due to their feminine nature. The difference as revealed by results in the academic achievement of male and

female students may be attributed to cultural and social factors. Women are socialized in preparation of their roles as wives and mothers while men are socialized and oriented to take up masculine roles of high prestige and high skills as in (Bichi, 2002). Some of the female students are married with children, so they have other responsibilities at home unlike the male students that are mostly bachelors. The results presented in table 4.4 shows that there is no significant correlation between C.A. and final examination scores of junior secondary school students exposed to two set of C.A. This might be due to the fact that smaller portion of the syllabus is being considered in the administration of the C.A and this will make the preparation for the C.A to be less stressful which makes the performance in C.A to be better than the examinations which has wider coverage of the syllabus. Also the strictness in terms of invigilation and examination rules and regulation are more during examinations when compared to during C.A. Therefore, students tend to be involved in examination malpractice during the administration of Continuous Assessment as compare to final examination. This result is in line with the findings of Durotolu, (1994), whereby he conducted a research correlating C.A and examination scores and find out there is no positive correlation between examination scores and final examination scores.

In table 4.4 the results obtained shows that there is no significant correlation between C.A scores and final examination scores of junior secondary school students exposed to four sets of Continuous Assessment. The results obtained in table 4.4 might be due to the same reasons as those of table 4.3. This result contradicts the findings of Aliyu and Ngadda (2000), whose study reveals that there is a strong positive correlation between formative evaluation and summative evaluation of the subjects considered.

# CHAPTER FIVE

## 5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.1

The study deals with determining the impact of Continuous Assessment on academic achievement of Junior Secondary School students in Police Secondary School Students in Minna, Niger State. The data obtained was Analysed using independent t- test and Pearson Product Moment Correlation Coefficient statistics. In this chapter a summary of the results obtained is provided. The chapter also deals with the following specific areas.

- Summary
- Conclusions
- Recommendations

## 5.2 Summary

This study investigated the impact of Continuous Assessment on academic achievement of junior secondary school students in Police Secondary School inNinna, Niger State. The school serves the experimental group which is further divided into two groups $E_1$ and $E_2$. $E_1$ was given two sets of C.A's per term while $E_2$ was given 4 sets of C.A's per term. The concepts selected are in Mathematics. Four hypotheses were formulated and tested using t - test and Pearson Product Moment Correlation Coefficient a pre-test, post - test quasi experimental control group design was used for the purpose of data collection. A pre-test was first administered using General Mathematics test before the treatment was given and the results from the pre-test was subjected to t-test to determine the equivalence of the groups. Subsequently, there was an intensive (12) twelve weeks teaching session after which a post-test was given using the same instrument General

Mathematics Test. Teacher Made Test (TMT) was used for the series of C.A's. Data obtained from the post-test scores of the students in the two groups were Analysed at 0.05 level of significance.

Results of the data Analysed revealed that:

a. Continuous Assessment has significant impact on academic achievement of junior secondary school students. That is the more the C.A the better the achievement.
b. There is no significant difference in the achievement of males and females when exposed to fewer C.A's.
c. There is a significant difference in achievement of males and females when exposed to more C.A's.
d. There is no significant correlation between C.A scores and final examination scores of junior secondary school students.

## 5.3 Conclusions

1. Students tend to achieve Mathematics concepts better when exposed to series of C.A's.
2. Males do not differ significantly in achievement in Mathematics from females when exposed to few C.A's.
3. Males perform better than females in final examination when they are exposed to many C.A's. There is no significant correlation between C.A scores and final examination scores of junior secondary school students.

## 5.4 Recommendations

The results of this study have shown that:

1. Students performed better in Mathematics when they are exposed to series of C.A's (i.e. 4) before the final examination. Mathematics teachers should therefore strive to see that students are exposed to many C.A's before the final examination. This will go in a long way to increase their performance.
2. The results of this study shows that few C.A is gender friendly. With many C.A's, male students performed better than female students. Therefore, the teachers should encourage both sex (male and female) to participate equally in the learning and assessment process in Mathematics.
3. The result shows that C.A scores did not correlate with the final examination. Therefore, teachers should strive to make the C.A of standard and it should be conducted under examination rules and regulations. There should also be more strictness during invigilation of the C.A.
4. The schools should organize seminars on Continuous Assessment for both lecturers and students. This is to acquaint all the parties involved of their roles in its practice and the things expected from them.
5. Teachers – student's ratio should be reduced to a manageable size of say one lecturer to 40 students by either employing more lecturers or reducing admission into Schools of Education. This will help reduce the work load on lecturers and encourage them to give as many number of C.A's as possible.

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