# Benchmark Journals

•Journal Publications •Research Consultancy

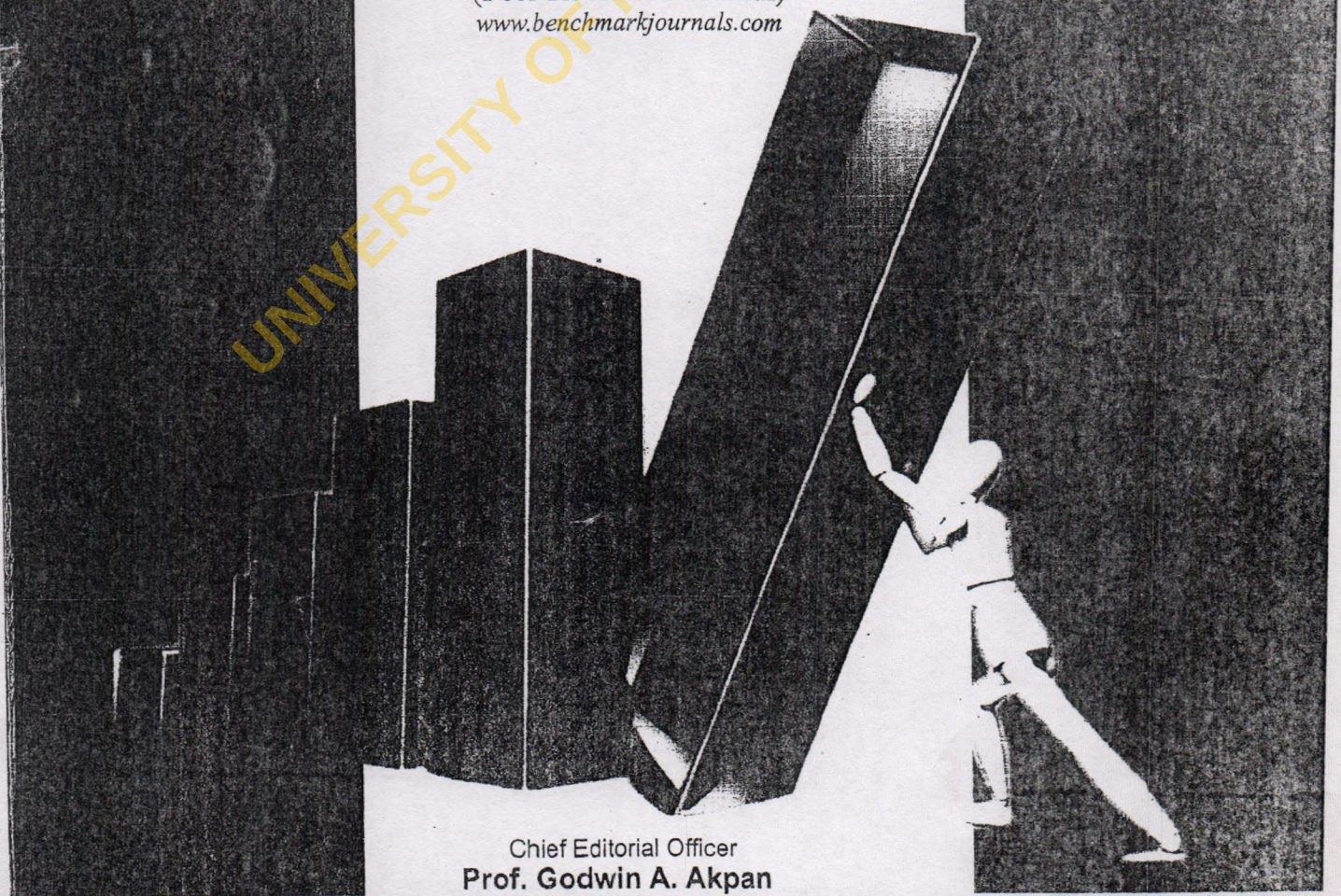
Department of Vocational Education
University of Uyo

Volume 5 Issue 1 Aug./Oct. 2016 ISSN: Online:2489-0170 Print:2489-4162

# INTERNATIONAL JOURNAL of EDUCATIONAL BENCHMARK (IJEB)

(Peer Reviewed Journal)
*www.benchmarkjournals.com*







* Nigeria *Ghana *South Africa *Kenya *Canada *India *UK *USA

Published by

Benchmark Journals

Department of Vocational Education,

University of Uyo, Nigeria

# International Journal of Educational Benchmark (IJEB)



Vol. 5, Issue 1, August/Oct, 2016

Uyo, Nigeria 2016

Tel:+234-7035316844, +234-8100603902

Email:editor@benchmarkjournals.com

support@benchmarkjournals.com

Web: http://www. benchmarkjournals.com

International Journal of Educational Benchmark

ISSN: ONLINE: 2489-0170. PRINT: 2489-4162
Volume 5, Issue 1, August/Oct, 2016

## TABLE OF CONTENTS

Benchmark Journals
INTERNATIONAL JOURNAL OF EDUCATIONAL BENCHMARK (IJEB),
eISSN: 2489-0170 pISSN:2489-4162 University of Uyo

# Interactional Analysis of Mathematics Instructional Objectives in Some Selected Secondary Schools in Oke-Ogun, Oyo State

**Fehintola, J. O. Ph D.**
Dept. of Guidance and Counselling
University of Ibadan, Ibadan,Nigeria
e-mail: jof677@yahoo.com



## Abstract

*This study investigated the relative effectiveness of interaction analysis on inter rater scores of the trained observers on students readiness to mathematics instructional objectives in some selected secondary schools in Oke-ogun area, Oyo state, Nigeria. The sample used for the study consisted of senior secondary school students II and teachers' of mathematics in selected secondary schools. Seven hundred and Seventy-five students' and eighteen mathematics teachers' scores observed under mathematics instructional objectives for senior secondary school class II students were used based on receiving, responding, valuing, organization and characterization by a Value or Value Complex for the students and mastery of learning for the mathematics teachers and level of interaction during teaching-learning process for both the teachers and the students by two raters for eight weeks were used for the study. To examine the extent to which the inter rater scores influence the result of the exercise, Scott Reliability formular was used. Results showed that the reliability coefficient are r = 0.86, 0.65 and 0.73 for learners' readiness, teachers' mastery of subject area and teacher-student interaction respectively. These results showed that the two raters' scores are relatively close. It is recommended that students should take their lesson seriously and stake holders responsible for recruitment of teachers should recruited qualified and competent teachers. The mathematics teachers should try their best to carry students along during teaching-learning exercise and students should pay rapt attention to what the teacher teaches. The mathematics teachers should be granted in-service training that would quip them with new pedagogy in teaching-learning and classroom management processes.*

***Keywords: Interactional Analysis, Students' Readiness, Scotts' Reliability, Instructional Objectives.***

## Introduction

Education is the best legacy that a good parent could give to his child and most governments today accept in principle that the provision of education is a basic human right as embodied in Article 26 of the Declaration of Human Rights (Osim, Chike and Isaac, 2012). Education is the process of facilitating learning, or the acquisition of knowledge,

skills, values, beliefs, and habits. It is an instrument and backbone of national development in any country. It is the most potent tool for economic, social, technological and political development in any given nation. The world evolves through teaching and learning, which takes place mostly within the four walls of a school. Through education, peace, good international relations, better prospects for economic developments and improvement of human resources are possible (Omohan and Maliki, 2007).

In educational institutions, success is measured by academic performance, or how well a student meets standards set out by government, the institution and the teachers. Since the inception of Western education in Nigeria, it has been hit with various degrees of problems and most of these problems are hardly lost on the various governments, be it during colonial or post-independence era. It has also resulted in the setting up of various commissions such as Ashby Commission of 1960 and the Curriculum Conference of 1969 to examine Nigeria's educational problems and make recommendations. These problems pertained to the quantity and quality of teachers, educational facilities, curriculum planning and development (Fehintola, 2014a) which has led to poor academic performance among the students. Mac-Farlane (2002), defines academic performance as the ability of students to cope with their studies as well as how various tasks assigned to them by their instructors are accomplished. It has to do with the ability of the student to study and remember facts and to be able to express such knowledge gained either verbally or in writing.

Several studies, such as that of Fehintola (2014), has found that some groups or types of students are treated differently by teachers in classrooms, and that these inequitable patterns of teacher–student interaction in classrooms result in differential learning outcomes for students. There have been many studies, for example, that have found gender imbalances in teachers' interaction patterns in the classroom. Dibu_Ojerinde and Jegede (1999) review of the research found that consistent sex-related differences exist in the classroom in teachers' interaction patterns. Boys, for example, typically have been found to receive more praise and criticism in the classroom than girls. They also found that teachers have more behavioural, procedural, and academic interactions with boys than girls. Boys have also been found to ask more questions in the classroom, and teachers have been found to ask boys more questions.

Other studies have looked at both sex-and ethnic-related differences in the classroom. Hart examined the relationship between teacher–students interaction and mathematics achievement by race and sex. She found the following differences: (1) white and black male students had more classroom interactions than students from other groups; (2) a disparity in the type of interaction between white and black students; and (3) boys were involved in more public interactions with teachers than girls. In other words, it appears that patterns of teacher–student interaction may not only be influenced by the sex of the student, but also by the ethnicity of the student.

Osim, Chike and Isaac (2012) observed student behaviour differences between resilient (i.e., successful) and non-resilient (i.e., less successful) elementary school students from low socioeconomic backgrounds. They found resilient students spent significantly more time interacting with teachers for instructional purposes, whereas non-resilient students spent more time interacting with other students for social or personal purposes. Resilient students were also observed watching or listening significantly more often than non-resilient students, whereas the latter were observed more often not attending to task. The percentage of time that resilient students were observed on task (85%) was much higher than that of non-resilient students (61%). The magnitude of these differences was both statistically and educationally significant and illustrates the instructional inequities that exist within classrooms.

In this study the researcher based the observation on the following variables on the parts of the students' readiness to learn mathematics from their day to day activities, teacher's mastery of subject matter and classroom interaction between the teachers and the student. Receiving refers to the student's willingness to attend to particular phenomena or stimuli (classroom activities, textbook, music, etc.). From a teaching standpoint, it is concerned with getting, holding, and directing the student's attention. Learning outcomes in this area range from the simple awareness that a thing exists to selective attention on the part of the learner. Receiving represents the lowest level of learning outcomes in the affective domain.

Responding refers to active participation on the part of the student. At this level student is not only attends to a particular phenomenon but also reacts to it in some way. Learning outcomes in this area may emphasize acquiescence in responding (reads assigned

material), willingness to respond (voluntarily reads beyond assignment), or satisfaction in responding (reads for pleasure or enjoyment). The higher levels of this category include those instructional objectives that are commonly classified under interest; that is, those that stress the seeking out and enjoyment of particular activities.

Valuing is concerned with the worth or value a student attaches to a particular object, phenomenon, or behavior. This ranges in degree from the more simple acceptance of a value (desires to improve group skills) to the more complex level of commitment (assumes responsibility for the effective functioning of the group). Valuing is based on the internalization of a set of specified values. but clues to these values are expressed in the student's overt behavior. Learning outcomes in this area are concerned with behavior that is consistent and stable enough to make the value clearly identifiable. Instructional objectives that are commonly classified under attitudes and appreciation would fall into this category.

Organization is concerned with bringing together different values, resolving conflicts between them, and beginning the building of an internally consistent value system. Thus the emphasis is on comparing, relating, and synthesizing values. Learning outcomes may be concerned with the conceptualization of a value (recognizes the responsibility of each individual for improving human relations) or with the organization of a value system (develops a vocational plan that satisfies his need for both economic security and social service). Instructional objectives relating to the development of a philosophy of life would fall into this category.

On classroom interaction between the teachers and the learners, here the researcher is of opinion that that during teaching-learning period the learners should be able to ask questions and make clarification and the teachers should be able to attend to the students adequately. Because in teaching-learning process the art of asking questions is an ancient part of good teaching and one of the rudimentary skills all teachers should be able to master. Socrates believed that knowledge and awareness were an intrinsic part of each learner. Thus, in exercising the craft of good pedagogy a skilled educator must reach into learners' hidden levels of knowing and awareness in order to help them reach new levels of thinking through

thoughtfully developed questions. Questions should be about exercising mental agility and recall, and getting students and children to think in new and complex ways.

Questions should not be just about getting that one correct answer. Therefore, encouraging children to think, to learn, to remember, to make inferences and connections through questions is a very ancient form of education one that needs to be perpetuated, understood, and practiced. This study is quiet different to others in the sense that it used the observational technique to observe the teachers teaching method and level of mastery of subject area, the students level of seriousness to mathematics instructional objectives and the interactional level between the learners and the teachers.

**Statement of the Problem:**

The hue and cry about the students' academic performance in Secondary School Certificate Examination is becoming alarming most especially in mathematics. The degree of failure is giving the general public a serious concern. The expected quality has not been attained. There is a persistent decline in the academic performance of Secondary School Students in spite of government huge expenditure on education. However, instead of looking into the general causes of decline every now and then, and most of the time castigate the school related factors, it is better for researchers to look into learners' readiness to receive from their teachers. Because majority of the teachers are of the opinion that the students are not serious and that they are not ready to learn. That majority of them are coming to school with the mind that my parents wanted me to be educated and so I come to school. Majority of these students do not know that their future depends on level of education they receive. So, there is a need to ascertain the learners' readiness to mathematics instructional objectives. It is against this background that the researcher embark on observational technique based on nine different variables observed during the teaching periods for eight weeks.

**Purpose of the Study**

The main purpose of this study is to determine the extent to which students' readiness to mathematics instructional objectives relate to students academic performance in secondary schools in Oke-ogun, Oyo state, Nigeria. Since the level of their readiness will go a long way to determine their understanding and performance in mathematics. The study therefore

intends to use its findings to make useful recommendations for the accomplishment of secondary school goal. Specifically the study sought to:

1. Determine the level of readiness of the learners to the mathematics instructional objectives.
2. Determine the mastery level of the mathematics teachers.
3. Determine the interaction between the teachers and the learners during teaching-learning process.

**Methodology**:

The study adopted descriptive research design of survey type. The researcher was interested in knowing whether there would be relationships between the ratings of the two raters based on the learners' level of seriousness, teachers' mastery and the level of interaction between the learners and the teachers. The population of the study consisted of all the mathematics teachers and SSS2 students in seventy-five secondary schools in Oke-Ogun area of Oyo state. The population of the teachers in the surveyed local government was 75 and the students' population about 12,543. A sample of 18 mathematics teachers and 755 senior secondary school students in the senior secondary schools were chosen. The average age of the participated teachers was 34.23 years and with standard deviation of 2.96 years and mean age of the students is 18.25 with standard deviation of 1.74 years respectively. The school and the participated teachers and students were selected using simple random sampling. Data pertaining to teachers and students were collected during teaching-learning process in the classroom by the researcher and the trained doctoral students of the researcher for the period of eight weeks. Data were collected on the basis of the subgroups involved in the study. Observational technique on students' readiness to mathematics instructional objective were based on students' attentiveness, note taking, problem solving, ability to solve the problems correctly and whether the learners listen to instruction from teachers or not. On teachers' mastery level of the area of specialization, the teachers were observed for the ways new topics are being introduced, the kind of motivation given to students, the quality and quantity of questions asked and solved by teachers in the classroom and whether the teachers made mistakes and if mistakes is made are the teachers able to detect it and correct themselves in the course of delivery of the lessons. Finally, in measuring the classroom interaction between

learners and the teachers, the following variables were observed, the quantity and quality of the questions asked by the teachers vis-a vis the learners, the response given by the learners vis-avis the teachers to the students question and the level of classroom management on the parts of the teachers. All these variables were observed whether present or not during teaching-learning process and if present it attracts one mark if absent it attracts zero and the total for the three subgroups from the two raters were subjected to interactive analysis. The study covers a period of eight weeks from August, 2015- February, 2016. Data obtained from the study were statistically treated using Scott Reliability formular.

**Results**

***Research Question 1:*** *Is there any significant relationship between the ratings of the raters on the level of readiness of the learners to mathematics instructional objectives?*

**Equation (1) Using Scott formula**

$$\Pi = P_0 - P_e / 100 - P_e$$

$$P_{0 = (100-13.680) = 86.32}$$

$$P_{e = 2.540}$$

$$\Pi = [(86.32 - 2.540)]/ [100 - 2.540]$$

$$= 83.78/97.46$$

$$= 0.86$$

Equation 1 presents a summary of the results between the ratings of the respondents on the level of readiness of the learners to mathematics instructional objectives. The inter-rater reliability of the respondents using Scott's method showed that r = 0.86. This shows that the scores of the respondents were much close.

***Research Question 2:*** *Is there any significant relationship between the ratings of the raters on the level of mastery of subject area by the mathematics teachers observed during teaching-learning activities?*

**Equation (2) Using Scott formular**

$$\Pi = P_0 - P_e / 100 - P_e$$

$$P_0 = (100 - 32.72) = 67.28$$

$$P_e = 6.03$$

$$\Pi = [(67.28 - 6.03)] / [100 - 6.03]$$

$$= 61.25/93.97$$

$$= 0.65$$

Equation 2 presents a summary of the results between the ratings of the raters on the level of mastery of subject area by the mathematics teachers observed during teaching-learning activities. The inter-rater reliability of the two raters using Scotts method showed that r = 0.65. This shows that the scores of the raters were much closed.

***Research Question 3:*** *Is there any significant relationship between the ratings of the raters on the level of interaction of the learners and mathematics teachers during teaching-learning process?*

**Equation (3) Using Scott formular**

$$\Pi = P_0 - P_e / 100 - P_e$$

$$P_0 = (100 - 25.27) = 74.73$$

$$P_e = 5.72$$

$$\Pi = [(74.73 - 5.72)] / [100 - 5.72]$$

$$= 69.01/94.28$$

$$= 0.73$$

Equation 3 presents a summary of the ratings of the raters on the level of interaction of the learners and mathematics teachers during teaching-learning process. The inter-rater

reliability of the two raters using Scotts method showed that r = 0.73. This shows that the scores of the raters were much closed

**Discussion**

The first research question showed that the scores of the two raters were much closed; this is an indication that the two raters agree that the students were not serious despite the fact that the raters were objectives and the rating is done independently. This is an indication that students were not ready for mathematics instructional objectives as expected. During the study period the students were seen playing, jesting, writing and coping notes from their fellow students on another subject, without minding the teacher that is teaching them mathematics despite the level of classroom management put in place by the mathematics teachers. Most especially, the male students were not serious at all and it seems as if they are being forced to come to school. At the close of school daily, the researcher saw some of these male students riding motorcycle round the town for business purpose.

Based on the research question two, the researcher observed that the mathematics teachers observed were not good enough in the mastery of the subject matter. Because some of them did made mistakes during delivering their lesson period, worst still when it was pointed out to them after lesson some of these teachers find it degrading to go back to class to inform their students of the mistakes. Meaning that the students will continue to go about with wrong information and which if not corrected could lead to failure of the students.

The third research question was on interaction between the students and the teachers, the researcher observed that majority of the teachers observed lack classroom management. This may be due to the facts that the teachers are not bothered about the students again since the students themselves are not serious. During the observed period you hardly see any students asking question neither did the teacher asking question from the students. The level of interaction between the teachers and the students is zero. This could be adduced to the reason why the students were doing other things while the lecture is going on.

The results of the three research questions in this study showed that the two scores given to the students and teachers independently by the two raters correlated significantly with each other. Some past studies equally established the fact that there was significant correlation

between two observers that observed classroom activities during teaching-learning process of university lecturer (Tinsley & Weiss, 2000). Also, FSilverstein (1966) in his study discovered that when two or more trained observers were used to observe classroom behaviour as part of a research project they collected data that result to high interrater reliability. Furthermore, the result of this study corroborate the study of Fehintola (2014), who discovered after using two trained raters in teaching practice exercise obtained high and significant reliability coefficient. The result of this study is contrary to the findings of Gorman & Rentsch (2009) that confirmed that there is no significant relationship in the grade awarded by both WAEC and NECO in their public examination if the two examining bodies were seen as two observers or raters.

**Conclusion:**

The results of this study showed a considerable concordance between the scores awarded by different raters to students and teachers in the teaching-learning process in selected secondary schools in Oke-ogun, Oyo state, Nigeria. This tends lend support to the value and efficacy of the procedure followed in arriving at the performance in mathematics at internal and external examination. This in no doubt will encourage the teachers and students to put their best effort in the teaching-learning process. The reliability coefficients of 0.86, 0.65 and 0.73 obtained from the result showed valid and reliable scores of the process. In all, it revealed that students did not take their study serious, teachers are not making adequate preparation before going to class and not prepared to ask questions from the students as diagnostic evaluation and teachers are not making the lesson lively.



**Recommendations:**

Based on findings the following recommendations were made:

1. For educational practice this study suggests that teachers need to be monitored or inspected during teaching-learning processes for effective delivery of their lessons.
2. Students should be told about the importance of mathematics in furthering their education and for their daily activities.
3. The stake holders responsible for recruitment of teachers should make sure that trained teachers are recruited and supervisors that will supervise the teachers during

teaching-learning process should be provided and these supervisors must be equipped and trained with the pedagogy to rate both teachers and students alike.

4. The school counsellor should be saddled with the responsibility of given career talk to the students to make them serious.

## References

Dibu-Ojerinde, O.O. & Jegede, P. O. (1999) Estimating Essay Scoring Reliability Essay Scoring Reliability by combining Experimental Design and Scores' Re-sampling. Ife *Journal of Behavioural Research, 1*(1), 41-48.

Fehintola, J.O. (2014). Teachers characteristics as Correlates of Students' Academic performance among Secondary School Students in Saki West Local government Area of Oyo State. *Journal of Educational and Social Research*, Vol.4 No. 6.

Fehintola, J.O. (2014). Interrater Reliability of University of Ibadan Teaching Practice Scores. *Journal of Educational Research and Reviews Vol.2*. No. 6.

Herb Walberg, A.(1991).The impact of training on rater variability. *International Education Journal, 2*(1) 68-84

Herb Walberg, A.(1995). *Using classroom artifacts to measure instructional practices in middle school mathematics:* A two-state field test. Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing.

Mac-Farlane, B. (2002). Dealing with Dave'sDilemmas: Exploring the Ethics of Pedagogic Practice. *Teaching in Higher Education, 7*(2), 167-178.

Omohan, M.E.& Maliki, A.E. (2007). Counseling and Population Control in Nigeria. *Journal of Human Ecology 22* (2) pp101 –105.

Osim, R.O., Chika, C.U. & Isaac, O.U. (2012) Class Size Pressure. An Impediment to Teachers Work Quality. Global Advanced Research *Journal of Educational Research and ReviewVol.* 1(5) 42-59

Silverstein, A. B.(1966). A note on interjudge reliability. *Psychological Reports, Vol.19.*

Tinsley, H.E.A. & Weiss, D.J. (2000). Interrater Reliability and Agreement of Subjective Jugdements: *Journal of Counselling Psychology* Vol. 22(4).45-58