ASSESSMENT OF LEARNER'S MASTERY AND NON-MASTERY OF ECONOMICS DIAGOSTICS IN DAMATURU EDUCATIONAL ZONE YOBE STATE NIGERIA

Kaku Zakka
Department of Education
University of Maiduguri, Borno State.

Paul Madaki Deborah
School of Post Graduate Studies
University of Jos, Plateau State

Rufina Stephen Hamafyelto
Department of Education
University of Maiduguri, Borno State

Abstract

The study investigated the academic performance of Senior Secondary School two (SS 2) students on economics diagnostic test in terms of mastery and non-mastery of the content. The study used survey design. The population of the study comprises of all the economics Senior Secondary School students two (SS II) of economics-student in Damaturu Educational zone in Yobe State (4920 students). The study sample 365 students. According research advisor (2006) if the researcher's population is between 4,500 to 7,000 the researcher can samples 365respondent's.In order to achieve the objective three objectives were set for the study. Three research questions guided the study and one hypothesis 40 multiple objectives questions and three essay questions were used as instrument for data collection. Preliminary validation was done by two experience teacher in the content area of secondary school economics and two experts in test construction. The trial testing was conducted for grammatical checking and compatibility bank marking while the test was trial tested for item analysis. The validity was 0.8, while reliability coefficient was 0.89. The maximum estimate of mastery and non-mastery was determine through Q matrix and simple percentage. The hypothesis was tested using Chi-square at 0.05 level of significance. The results showed that greater percentage of the respondents showed mastery of all the three concept on economic. Similarly, also there is no significant difference between male and female in the essay items in terms of mastery and non-mastery. Therefore, the study recommended that: the remaining concept that was not mastered teacher should employ appropriate methods for the students for mastery. Teachers should use assessment for learning in teaching and learning for mastery of economic concepts. Teacher should emphasis on the basic concept of graphs in economics

Keyword: Assessment, Mastery, Non-mastery, Diagnostics, Tests and Economics.

Introduction

Students performance in their individual classes depend largely on their competences. Competency is a function of mastery of contents of subject taught in the classroom. In classroom interaction, mastery is achieved when learning difficulties can be ascertained through diagnostic testing. Diagnostic testing helps to diagnose, identify and locate the specific weak leaning point of students Ofem, Idika and Ovat, (2017). It involves application of diagnostic test feedback and development process of a diagnostic test involves identification of specific skill and scrupulous analysis (Eleje*et al* , 2016).

Students in Yobe State are not natural competitive. This is a consequence of poor mastery and none- mastery which could have been enhanced if learning difficulties where diagnosedand remedied. Generally, there is poor mastery of the impact of diagnostics testing in improving the quality of teaching and learning our secondary schools in Yobe State.These can be attributed to lack of using diagnostic instrumentation and implementation among the teachers in our Secondary schools resulting in paucity of diagnostic test. How could the teachers teaching in Secondary School Yobe State understand the positive effect of diagnostic testing on students' academic performance and be able to utilized effective and efficient? Therefore, there is a great need for teachers in secondary school in Yobe State to use diagnostic testing as an intervention.

Educational Assessment occurs in two major contexts. The first is the classroom. Where assessment is used by the teachers and students mainly to assist learning, but also the group students' summative achievement over the longer term. Second is large-scale assessment used by policy makers and obtain information about whether individual students have met learning goals.

The sharp contrast that typically exist between classroom and large-scale assessment practices arises because assessment designers have not been able to fulfill the purpose of different assessment users with the same data and analyses. To guide instruction and monitor its effect, teachers needs information that is intimately connected with the work their students are doing and they interpret this evidence in light of everything else they know about their students and the conditions of instruction. The power of classroom assessment resides in this connection. Yet precisely because they are individualized and highly contextualized, neither the rationale nor the result of typical classroom assessment are early communicated beyond the classroom, large-scale, standardized the test do communicate effectively across time and place, but by so constraining the content and timeliness of the message that they often have little utility in the classroom. This contrast illustrates the more general point that one size of assessment does not fit all the purpose of an assessment determine priorities and the context of use imposes constraints on the design, thereby affecting the kind of information a particular assessment can provide about student's achievement.

Assessment, being an integral part of teaching and learning, has to respond to the Clarian call of the century; which is change. Assessment has been variously defined some considerate as synonymous with rating, appraisal, measurement and evaluation. It involves the gathering of information about an entity, concrete or abstract, which includes but not limited to individual's knowledge, instructional provide, instructional inputs, curriculum or

Assessment is the assemblage or collection of relevant information qualitative and quantitative which may provide the bases for makeup decisions. It is an interpretation of the results of measurement based on some internal standard on an attempt to ascertain the level and value or worth of progress made or changes in behavior observed

Educational assessment is the systematic process of documenting and using empirical data on the knowledge, skills, attitudes and beliefs to refine program and improve students' learning. It is the systematic collection interpretation and use of information about learning, which gives teacher better awareness of what learners, know and understanding, what their learning experiences enable them to do, and what their skills and personal capability are.

Popular academic literature has classified assessment into three main type namely; Assessment of learning (AOL), Assessment for learning (AFL) and Assessment as learning (AAL)

Assessment of learning (AOL): This is an assessment practice in which assessment information are gathered at the end of the teaching-learning process. It is basically carried out to ascertain the amount of learning that has taken place for some terminal decisions to be taken on the results. The results are used to rank the students` achievement levels against a standard, award grades and take such decisions as promotion, demotion repetition of class, withdrawal from class, course, program or school. It is summative in nature (Manitoba Education, 2006).

Assessment for learning (AFL): This a more recent concept, and is a process of seeking for interpreting assessment data for use by learners and their teachers as feedback to modify teaching strategies and learning experiences all to improve learning outcomes. It embeds assessment processes throughout the teaching –learning process to constantly adjust instructional strategy to bring about the desired learning outcomes.

Assessment for learning makes for active involvement of learner in the teaching-learning process. It is formative in nature, and sees assessment as an integral part of teaching, occurring throughout the learning process and preparing the learners for the ultimate summative assessment.

Assessment as learning(AaL), this is a form of assessment that is crucial in helping students become lifelong learners as it develops and supports students meta cognitive skills of assessing and making necessary adjustment. As students engage in peer assessment, they learn to make sense of information, relate it to prior knowledge, and use it for new learning (Carr, & Miller, 2016). Assessment as learning encourages students to develop a sense of ownership and efficiency when they use teacher–peer assessment feedback to make adjustments, improvement and changes to what they understand.

Assessment plays a major role on how student learn, then motivation to learn and how teachers teach. Assessment contributes to students' success. Classroom assessment is a systematic approach to formative evaluation used by teachers to determine how much and how well students are learning (Anikweze, 2014). Classroom assessment provides information regarding teaching and learning so that the desired change that is expected from the learner can be made possible (Classroom Assessment Technique, 2016).

Ifeako and Anekwe (2013) define assessment as a process by which information is obtained relative to some known objectives or goals, it involves gathering information so as to monitor progress and make educational decision. Scancan (2012) noted that learners assessment is a necessity since its main purpose is to motivate and direct learning provide feedback to the students on their academic performance, provide feedback on instruction and the curriculum and ensure that standards of progression are met. In other words learners assessment involves communication to teachers (feedback on teaching); students (feedback on learning); curriculum designers (feedback on curriculum) and schools administrators (feedback on the used of resources) (Marzano, 2012).

Diagnostic Test or Diagnostics study is a procedure on examination to identify an individual`s specific areas of weakness and strength in order determine a condition for a solution Diagnostics assessment is a form of prior-assessment that allows a teacher to determine students' individual strengths, weaknesses, knowledge and individual skills-prior to instruction (Scanlan, 2012).

Wagner T. (2014) Diagnostic test consist of identifying the nature of an illness or other problems through the examination of relevant symptoms. In education diagnostic test helps identify a student`s learning problems so teachers can provide instruction to remedy those problems (Joshua, 2017a).

Federal Government effort to improving Nigerian students' achievement through high-stakes testing have led to significant concerns about the fairness and effectiveness of standardized test. We attribute these concerns to the use of summative tests to assess academic progress without the benefits of an effective formative model of assessment and instruction; such as mastery and learning models emerge as a reaction to misuse of psychometric model of assessment for instruction purposes (K.b et al., 1981).

Mental processes can help to detect the point of error. Diagnostic test enable teachers to determine the solving ability of each learner in a given content area. This test are designed to help teachers identify learners status and learning deficiencies at specific stage of learning for appropriate remediation. The main objectives of diagnostics testing and assessment are to ensure that learning activities are desirable and most productive. This in turn helps teachers to objectively plan instruction, modify their lesson plans and implement differentiated instructions in order to carry all the students along (Oyekan, 2013).

Oladejo, Ojebisi, Isola and Olawale (2011) reported that mastery learning approach is an instructional method, where students are allowed unlimited opportunities to demonstrate mastery of the content taught. Mastery learning refers to a pedagogical approach that combines the qualities of group-based teaching and one-on-one individual tutoring to achieve better academic performance in a more realistic and cost-effective manner. Mastery learning approach involves breaking down, the concept matter to be taught into units of learning, each with its own.

The Manitoba Education (2006) advice teachers to employ assessment for learning as a form of teaching and learning. According to Manitoba Education (2006) assessment for learning enables teachers to gain insight into what the learners understand so that differential teaching and learning strategies can be appropriately planned to help the students make progress. Assessment for learning is an effective way of actively involving students in their learning. On the other hand, assessment as learning helps students to develop an awareness of how they learn so as to adjust and advance their learning. Furthermore, assessment of learning serves to confirm whether or not students have met

curriculum and provide evidence of achievements to students, teachers and their parents as

Diagnostic test is a test designed to provide information about student's areas of strength and weaknesses in a particular subject area. It reveals the student's objectives. The strategy allows students to study material unit after unit until they master it (Wrong & Kang 2012).

Objectives

1. To assess the academic performance of Secondary School Students in Damaturu Educational Zone in terms of mastery and non-mastery of multiple objectives choice sub-test item.
2. To evaluate the academic performance of economics students in Damaturu Educational Zone in term of mastery and non-mastery of skills and abilities covered by economics diagnostic test items.
3. To assess the academic performance of economics students in terms of mastery and non-mastery of the essay test items.

Research Questions

1. What is the academic performance of secondary school students in Damaturu Educational Zone in terms of mastery and non-mastery of multiple objective choice test items?
2. What is the academic performance of economics students in terms of mastery and non-mastery of the essay type test items?
3. What is the academic performance of economics students in Damaturu educational zone in terms of mastery and non-mastery skills and abilities of the economics diagnostic test essay items?

Hypothesis

There is no significance difference between male and female economics students in Damaturu Educational zone Yobe state in terms of mastery and non-mastery of the economic diagnostic test essay items.

Research Methodology

The design for this study was descriptive survey design. The population for the study comprises all the SS II economic students in Damaturu Educational Zone in Yobe State. (920 Students). The study sampled 365 students. According to research Advisor (2006) when the population is between 4,500 to 7,000, the researcher will sample 365 respondents, for the 2018/2019 academic session.

The instrument for the data collection were 60 multiple objectives questions with five options diagnostic test. Items (A-E) and three essay questions with two-one sub test item the instruments were validates by Economic teachers from secondary schools and revalidated by some experts in economic department university of Maiduguri and some experts in measurement and evaluation. The validity coefficient was 0.87, while the reliability coefficient index was 0.89.

The instrument was administered to the economic students and collected immediately, the researcher, and assistant researcher in the various sampled schools in

Damaturu Educational zone of Yobe State. The attribute profile was used to determine the level of mastery classification, non-mastery estimation method was used to determine the maximum likelihood through the Q matrix. The data was analyzed through descriptive

Results

Research Question One. The academic performance of Economics students in terms of mastery and non-mastery of the objective test of the economic diagnostic tests (EDT) were determined and result presented in tableone.

Table 1. Q matrix for mastery and non-mastery of objectives items based test for economics in Damaturu Educational Zone Yobe State.

Test	Mastery Frequency	%	Non-mastery frequency	percentages %
Theory of supply	274	75	91	25
Production of Possibility cover	292	80	73	20
Tools of economics analysis	214	16	51	14
Theory of demand	215	59	51	41

Table 1 shows that 74 out of 365 respondents represent 75% showed mastery to the sub-test of theory of supply Q matrix reduction of multiple objective choice test items. While 25 show non-mastery of the economic test of theory of supply that has 91 respondents. Similarly, 292 respondents out of 365 representing 80% showed mastery of the items on production possibility curves as against 73 respondents representing 20% which showed non-mastery on the economic subtest items on production possibility curve in Damaturu Educational zone of Yobe. It further shows that 314 respondents representing 84% indicate mastery on the subtest on tools of economic analysis while 51 respondents representing 14% of the respondent showed non-mastery of the test on tools of economic analysis in Damaturu Educational Zone of Yobe state. It also showed that 215 respondents representing 59% showed mastery of theory of demand, while 150 respondents representing 41% showed non-mastery of the test on theory of demands in economics

Research Question Two: What is the academic performance of economics' study in terms of mastery and non-mastery of the essay test items?

For the computation of mastery and non-mastery of the economics essay test items, the test items were categorized into ability measures (skills) and assigned one for the skills present is then divided by the number of abilities measured by the items.If the value is 0.5 and above it is rounded up as 1 and if it is less than 0.5 it is assigned zero (0) mark.The number of respondents that obtained 1 in counted for mastery and number of respondents that obtain zero (0) are regarded for non-mastery.

Table 2: What is the academic performance of economics' study in terms of mastery and non-mastery of the essay test items?

Item	Mastery Frequency	%	Non-mastery Frequency	%
Theory of demand	255	70	110	30
Tools of economic analysis	278	79	77	21
Production possibility curves	302	83	63	17

Table 2 shows that 255 respondents which represents 70% mastered items are theory of demand in economics of the essay question, while 110 respondents which represents 30% showed non-mastery of the question one of the essay item. Similarly, 288 respondents which represent 79% revealed mastery of essay items, while 77 respondents which represents 21% showed non-mastery of the essay item in economics.It also showed that essay items on tools of economics analysis 302 respondents which represent 83% showed mastery of the essay items production possibility curve while 63 respondents which represents 17% showed non-mastery of the essay item on production possibility curves in economic from the table two above, it clearly indicate that the respondent showed mastery of the essay items of the economic Diagnostic test administered to them.

Research Question three: What is the academic performance of Economic students in terms of mastery and non-mastery of skills covered by the Economic Diagnostic Test Items ?

The number of respondents that possessed the skills or abilities measured by each easy test items were determined by summing the scores (the number 1) in each abilities measure of each test. The percentage of the respondents that possessed each skill was determined and presented in the tables below:

Table 3: What is the academic performance of Economic students in terms of mastery and non-mastery of skills covered by the Economic Diagnostic Test Items ?

No. of Candidate	skills	mastery No.	%	Non-mastery No.	%
	Motor Ability	219	60	146	40
	Descriptive Ability	255	70	110	30
365	Explanatory Ability	262	72	103	28
	Applicability	299	82	66	18

	Comprehendible Ability	328	90	37	10

Table 3 show that 219 respondents which represent 60% possessed the required skill by test which is motor ability or ability to construct the demand curve and the graph; while 146 respondents which represent 40% indicate non-mastery. Similarly, 219 (60%), 255(70%), 262(72%), 299(82%), 328(90%) and 288(79%) all indicate that the respondents possessed the ability to describe, explain the graph and curve, apply, comprehend and interpret the theory of supply, theory of demand, tools for economic analysis and production possibility curve-respectively. On the other hand, 146(40%), 110(30%), 103(28%), 66(18%), 37(10%) and 77(21%) respectively does not possessed the skills to sketch, draw, describe, explain the graph and curve, apply, comprehend and interpret the theory of supply, theory of demand, tools for economic analysis and production possibility curve.

Table 4: Q matrix for item 2 essay with 6 skills using a threshold of 0.5.

No. of Candidate	Skills	Mastery No.	%	Non-mastery No.	%
365	Explanatory Ability	266	73	99	27
	Comprehensible Ability	292	80	73	20
	Interpretable Ability	270	74	95	26
	Descriptive Ability	255	70	110	30
	Computational Ability	189	52	176	48
	Interpretable Ability	295	81	70	19

Table 4 showed that 266(73%), 292(80%), 270(74%), 255(70%), 189(52%) and 295(81%) respectively possessed the ability to sketch, draw, explain, comprehend and interpret the tools for economic analysis in economics among the respondents in Damaturu Education Zone, Yobe state; while on the other hand 99(27%), 73(20%), 95(26%), 110(30%), 176(48%) and 70(19%) indicate that they had not the concept under consideration, therefore did not possessed the skills.

Table 5: Q matrix for item 3 essay with 6 attributes using a threshold of 0.5.

No. of Candidate	skills	mastery No.	%	Non-mastery No.	%
365	Explanatory Ability	226	60	139	38
	Interpretable Ability	277	76	88	24
	Descriptive Ability	189	52	176	48
	Motor Ability	197	54	168	46
	Sequential Ability	255	70	110	30
	Applicability	226	62	139	38

Table 5 indicate that 226(62%), 277(76%), 189(52%), 197(54%), 255(70%) and 226(62%) of the respondents were able to demonstrate, sketch and draw the production possibility

curve of test item respectively, while 139(38%), 88(24%), 176(48%), 168(46%), 110(30%) and 139(38%) indicate non-mastery of the concept.

Hypothesis 1: There is no difference between male and female economics students in terms of mastery and non-mastery of some Economics diagnostic test among students in Damaturu Educational Zone, Yobe State.

Table 6: chi-square test for mastery and non-mastery of economic diagnostic test between male and female.

	Value	dfAsymp.sig(2.side)	
Pearson chi-square	.424	1	.499
Likelihood Ratio	.422	1	.468
Linear by linear association	.419	1	.498

Table 6 showed that chi-square analysis of significant difference in terms of mastery and non-mastery of essay items in Economics Diagnostic Test among male and female students from secondary schools in Damaturu Educational Zone, Yobe State, Nigeria. From the result .424 chi-square result at degree of freedom equal to 1 And P value greater than 0.05($p>0.05$) indicating that the P value .499 is greater than the 0.05 level of significance. Therefore, the null hypotheses was retained, which stated that there is no significance difference between male and female economics students in terms of mastery and non-mastery of some Economics diagnostic test among students in Damaturu Educational Zone, Yobe State.

Discussion

The study revealed that most of respondents (84%) indicate mastery of the subtest on the tools of economic analysis. The result showed that greater percentage of the respondents in Damaturu Educational Zone, Yobe State showed that mastery of the four sub tests of the objective test items of Economics. The result also indicates that greater percentage of the respondents showed mastery of three economic items that constitute the essay test.

The result disagrees with the Examiner`s report (WAEC 2011-2018) that greater percentage of economics students finds it difficult to answer questions under tools of economics analysis and production possibility curve. The finding also disagrees with Idris Emigilationm and Ishiaku (2016) who found that students` gender did not influence their preconceived knowledge on economics ideas

Conclusion

The study concludes that a greater percentage of economics students in secondary schoolinDamaturu Educational Zone, Yobe State, Nigeria, showed mastery of the four sub

tests in both the multiple objective tests and essay items. The theory of demand, theory of supply, tools of economic analysis and production possibilities curve. It was concluded that there is no significant difference between male and female in terms of mastery and non-mastery of the economics diagnostic test items.

Recommendations

Based on the findings of this study the following recommendations were made:

i) The remaining concept that was not mastered by the learners, teachers should employe alternative method of teaching so that the learners should master them.
ii) Teachers should use assessment for learning in teaching and learning of economic concept.
iii) Teachers should emphasize on sketching of graphs to the learners.

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