

EMPIRICAL ANALYSIS OF ITEM DIFFICULTY AND DISCRIMINATION INDICES OF NATIONAL BUSINESS AND TECHNICAL EXAMINATION BOARD (NABTEB) ECONOMICS ESSAY TEST ITEMS FROM 2013-2015

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ABSTRACT

The purpose of the study was to find out the difficulty and discrimination indices of Economics essay test items constructed by NABTEB from 2013-2015. Two research questions guided the study. Descriptive survey research design was adopted for this study which was carried out in Anambra State. The population of the study comprised all the Economics essay test items set by NABTEB (May/June) from 2013-2015 and also 582 Senior Secondary 3 (S.S.3) students offering Economics in state government technical colleges in Anambra State in 2017/2018. A sample of 307 S.S.3 students was obtained for the study through simple random sampling. The research instrument was made up of all Economics essay tests administered by NABTEB (May/June) in 2013, 2014 and 2015. The data obtained were analysed by computing difficulty indices (p) and discrimination indices (d). Results showed that seven out of 12 items each in 2013 and 2014 and eight out of 12 items in 2015 NABTEB Economics essay test items fell within acceptable ranges of difficulty indices. The results also showed that seven out of 12 items each in 2013 and 2014 and five out of 12 items in 2015 NABTEB Economics essay test items fell within acceptable ranges of discrimination indices. In conclusion therefore, one would say that the Economics essay test items set by NABTEB fall short of being described as good items. The researcher recommended that NABTEB should improve and maintain high quality NABTEB Economics test items so as to increase the students' enrolment in NABTEB examinations, especially in Economics.

KEYWORDS: Item Difficulty Index, Item Discrimination Index and Economics Essay Test Items

INTRODUCTION

National Business and Technical Examination Board (NABTEB) is one of the examination bodies authorised by the Nigerian government to conduct the Senior School Certificate Examination (SSCE), General Certificate Examination (GCE) and other examinations. Prior to its establishment, these examinations used to be conducted by the West African Examination Council (WAEC). The need for its establishment arose from a number of criticisms against the WAEC. Prominent among the criticisms, according to Onwuka (2015) were leakage of examination questions, delay in releasing of results, overload of work as a result of too many examinations conducted by WAEC and so on. NABTEB was established in 1993 with its headquarters at Benin, Edo State to conduct Senior School Certificate Examination (SSCE) in both federal and state technical schools. It conducts its

examinations twice in a year May/June and Nov/Dec every year. An examining body is judged by the qualities of the test item it sets.

Test could be in objective or essay form. Objective tests can be defined as tests composed of items which could be questions or statements, specifically designed to attract just one correct answer (Nkwocha, 2015). On the other hand, essay test consists of a list of questions which the student is required to answer in his/her own word, organised the way he/she wants. Essay test provides a basis for evaluating the ability to organize, integrate, and evaluate knowledge and skill (Osegbo & Ifeakor, 2008). The usefulness of essay tests for achieving objectives of testing depends on its quality and properties. A good essay test item has to meet appropriate difficulty and discrimination indices before it will be accepted.

Difficulty index of an item is the proportion of the subjects that got that item right (Okoye, 2015). It actually tells us how easy the item was for the students in that particular group. The higher the difficulty index the easier the question and the lower the difficulty index the more difficult the question. To Zafar (2008), difficulty index equals to 'Easiness index'. Discrimination index of an item is the difference between the proportion of students who passed an item in the upper group and the proportion of those who passed it in the lower group (Osegbo & Ifeakor, 2008). According to Okoye (2015), a good test should be able to discriminate the brilliant students from the dull ones. An examination body needs to set test items that can discriminate very well.

Economics became a secondary school subject in Nigeria in 1966 and it was first examined in 1967. Economics was introduced as a secondary school subject for the students to appreciate and learn more about the economic system of the country. In spite of the importance and popularity of Economics among Nigerian students, performance at senior secondary school level had been poor (Osadebe, 2014). It has been observed that there is always poor performance of students in NABTEB examinations especially in Economics in Anambra State. The NABTEB Chief Examiner's Report (2015) noted that students' performance in Economics generally was slightly poorer than those of previous years and the candidates did not perform as well in certain topics as in previous years. Students' poor performance in Economics in NABTEB has also led to public lack of confidence in the examination body thereby decreasing the number of students' enrolment in NABTEB examinations, especially in Economics (Abanobi, 2013).

The NABTEB Chief Examiner's report (2015) also lamented on the poor enrolment of students in the examinations conducted by NABTEB. Abanobi (2013) stated also that in some Nigerian technical colleges, the students prefer to register for WAEC examinations instead of NABTEB examinations simply because WAEC examinations in the eyes of the public, are considered to be more valid than NABTEB examinations. Going further, Abanobi stated that there is students' poor performance in some NABTEB examinations especially in Economics but, the question is, how do the Economics

essay test items constructed by NABTEB satisfy psychometric properties of a test in terms of difficulty and discrimination indices.

Previously, people did research work only on the item analysis of multiple-choice test items in order to ascertain the qualities of the examinations conducted by examination bodies in Nigeria. For instance, psychometric properties of mathematics tests in public Examinations in Nigeria were assessed by Moyinoluwa (2015), psychometric properties of NABTEB Economics multiple-choice test items from 2005 to 2011 were also assessed by Abanobi (2013). For a long time now, all examination bodies in Nigeria have been using both objectives test items and essay test items in all their school subjects' examination, and using item analysis of only objective test items will not provide the overall qualities of examinations conducted by these examination bodies. There is therefore need to analyse the difficulty and discrimination indices of NABTEB essay test items in Economics.

Research Question

The following research questions guided this study;

1. How are the difficulty indices of NABTEB Economics essay items set in 2013 to 2015 distributed?
2. How are the discrimination indices of NABTEB Economics essay items set in 2013 to 2015 distributed?

METHOD

Descriptive survey design was adopted for the study and this study was carried out in Anambra State. The population of the study comprised all the Economics essay test items set by NABTEB (May/June) from 2013-2015 and also 582 Senior Secondary 3 (SS3) students offering Economics in the 2017/2018 academic year in state government technical colleges in Anambra State. Senior Secondary 3 (SS3) Economics students were used in this study because the students were preparing for their external examinations which NABTEB was one of them. The sample of the study comprised 307 S.S. 3 Economics students from State government technical colleges in Anambra State. Of all the 11 state government technical colleges in Anambra State, five technical schools were obtained through simple random sampling. The instruments for data collection were Economics essay tests administered by NABTEB in 2013, 2014 and 2015 May/June Examinations. The Economics essay test items for each year contained two parts- Part 1, calculation questions with two items and Part 2, non-calculation questions with ten items in 2013, 2014 and 2015. The data obtained were analysed by computing difficulty indices (p) and discrimination indices (d).

RESULTS

Research Question 1: How are the difficulty indices of NABTEB Economics essay test items set in 2013 to 2015 distributed?

Table 1: Distribution of Difficulty Indices of NABTEB Economics Essay Test Items in 2013, 2014 and 2015.

Year	Difficulty Indices		
	Difficult 0.00 – 0.29	Good 0.30- 0.70	Easy 0.71-1.00
2013	5	7	0
2014	5	7	0
2015	4	8	0

Difficulty Index (p) is interpreted thus: $0.30 \geq p \leq 0.70 = \text{Good}$. $P < 0.29 = \text{Difficult}$ and $p > 0.71 = \text{Easy}$.

Results in a Table 1 show that in 2013 and 2014, 5 items each were difficult, 7 items each were good and there was no easy item. For 2015, 4 items were difficult, 8 items were good and no item was easy. Therefore in 2013 and 2014, seven (7) items each out of 12 were acceptable, while in 2015, six (6) items were acceptable.

Research Question 2:

How are the discrimination indices of NABTEB Economics essay test items set in 2013 to 2015 distributed?

Table 2: Distribution of Discrimination Indices of NABTEB Economics Essay Test Items in 2013, 2014 and 2015.

Year	Discrimination Indices					
	Negative	Very poor 0.00-0.10	Poor 0.11-0.29	Good 0.30-0.59	Very good 0.60-0.89	Excellent 0.90 – 1.00
2013	0	2	3	7	0	0
2014	1	3	1	7	0	0
2015	1	1	5	5	0	0

Discrimination Indices (d) is interpreted thus: $d \geq 0.30$ = Acceptable, $0.0 \leq d < 0.30$ = Not Acceptable.

Results in a Table 2 show that in 2013, no item discriminated negatively, 2 items discriminated very poorly, 3 items were poor, 7 items were good, and no item had very good or excellent discrimination. In 2014, 1 item discriminated negatively, 3 items discriminated very poorly, 1 item was poor, 7 items were good, and no item had very good or excellent discrimination. In 2015, 1 item discriminated negatively, 1 item discriminated very poorly, 5 items were poor, 5 items were good, and no item had very good or excellent discrimination. In general, therefore, in 2013 and 2014 seven out of the 12 items were acceptable while in 2015 only five out of 12 items had acceptable discrimination indices.

Summary of Findings

From the data analysed, the following findings were made.

- 1) In each of 2013, and 2014, seven out of the 12 items and in 2015, eight out of 12 items had acceptable difficulty indices.
- 2) In each of 2013, and 2014 seven out of the 12 items and in 2015 five out of 12 items had acceptable discrimination indices.

DISCUSSION

Difficulty indices of NABTEB economics essay test items. The results of the study revealed that few numbers of the economics essay test items administered by NABTEB from 2013 to 2015 had acceptable range of difficulty indices. This means that the test items constructed by NABTEB for the above years fairly satisfied the appropriate difficulty indices requirements for test construction. The above results contradict the findings of Bandele and Adewale (2015) who found that WAEC and NABTEB have the highest level of items with appropriate difficulty indices than NECO. The above contradiction may be as a result of differences in test format used in the present study and that of Bandele and Adewale.

Discrimination indices of NABTEB essay test items. The results of the study revealed that many of the Economics essay test items administered by NABTEB from 2013 to 2015 discriminated poorly among the examinees. This means that the test items constructed by NABTEB for the above years poorly satisfied the appropriate discrimination indices requirements for test construction. Based on the findings of this study many of NABTEB Economics essay test items did not meet the acceptable discrimination index and the items were considered not to be good items.

CONCLUSION

Based on the result of the study, it was found that a few number of the NABTEB Economics essay test items had appropriate difficulty index i.e within range of 0.30-0.70 and also NABTEB Economics essay test items discriminated very poorly. In conclusion therefore, one would say that the Economics essay test items set by NABTEB fall short of being described as good items.

RECOMMENDATIONS

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

- 1) NABTEB should ensure that they construct good Economics essay test items for their examinations. A test is good when the item fell within the acceptable range of difficulty and discrimination indices.
- 2) NABTEB should mount regular training on item writing to improve their knowledge in test construction.

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