OPEN ACCESS

Original Research Article

Differential Item Functioning in Basic Education Certificate Examination of 2022 Mathematics Multiple Choice Test in Ondo State

Fegha Evelyn ILOGHO, PhD[1]*
[1]Department of Guidance and Counselling, Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria

*Corresponding Author
Fegha Evelyn ILOGHO, PhD
Department of Guidance and Counselling, Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria

Abstract: Valid test items are crucial for ensuring that assessments are trustworthy, fair, and useful for their intended purposes. Differential item functioning (DIF) is essential for ensuring that assessment are fair, valid and reliable for all groups, which is critical for making informed decisions and promoting equity. Hence, this study investigated differential item functioning (DIF) in the 2022 Basic Education Certificate Examination (BECE) Mathematics Multiple choice test in Ondo State., Nigeria. The population for the study comprises all junior secondary school 3 (JSS3) students of Ondo State who sat for the 2022 BECE. A sample of 600 scores of 2022 JSS3 mathematics students who sat for the mathematics multiple choice of BECE were selected using purposive sampling technique. The research design employed was *expost facto* research. The instrument used for the study was 2022 mathematics multiple choice items questions containing 60 items drawn from the JSS 3 Syllabus of BECE in Ondo State. Two research questions and two hypotheses guided the study. The Raju Area Index (RAI) was used to identify items that exhibit DIF while chi-square goodness fit was used to test the hypotheses at 0.05 level of significance. The findings revealed that 43 items (71.67%) of the BECE of 2022 mathematics multiple choice items test showed DIF while 17 (28.33 %) revealed no DIF and BECE of 2022 test items significantly function differentially based on location of schools t= 6.682, p >0.005). Thirty one items (31) were in favour of urban and 12 items in favour of rural testees. But do not significantly function differentially based on gender (t= - 0.794, p< 0.001) Based on the findings it was recommended that test developers should take appropriate steps to minimize DIF and ensure that test items are fair and unbiased.
Keywords: BECE, Examination, Differential Item Functioning, Location, Gender.

INTRODUCTION

Examination is an instrument that brings out the inbuilt ability in learners. It elicits responses from learners to place them appropriately on the ability scale. The periodic testing and measurement of students after acquisition of experience is known as examination (Olusola, 2006). According to Orji (2013), examination is a means by which students' knowledge and understanding are assessed and the basics for awarding a certificate.

The success of an education system depends upon the effectiveness of its examination system as it is a fundamental component of teaching learning process. Examinations are considered the basis for promotion to higher classes, a source of motivation for learners for better study, a basis for prediction about students' future education and job aptitudes. Education according to Ukwuije (2012) serves as a source for the assessment of students' achievement level and assist the teachers to evaluate the

effectiveness of their teaching and learning methods for future improvement. He stressed further that examination is the most practical and useful way to determine the extent to which the students have achieved the instructional objectives in particular course of study as planned.

As cited by Efe in Olusola (2006), the periodic testing and measurement of students after acquisition of experience is known as examination. It is the pivotal point around which the whole system of education resolves and the success or failure of the system of examination is indeed an indicator of the success or failure of that particular education system. Examination may be administered formally or informally. An example of formal examination is the examination administered by the classroom teachers for periodic assessment, promotions and examinations conducted by Examination Bodies for certification while informal examination is the one administered by parent to the child. Similarly, standard examinations are scored in consistent manner while non-standard examinations are usually flexible in scope and format.

Mathematics is essential for the foundation and success of every genuine scientific discipline. Without proficiency in Mathematics, no scientific field can thrive. Mathematics is a universally applicable discipline that not only impacts the fields of Sciences, Engineering, and Technology, Mathematics is essential for the foundation and success of every genuine scientific discipline. Without proficiency in Mathematics, no scientific field can thrive. Mathematics is a universally applicable discipline that not only impacts the fields of Sciences, Engineering, and Technology, but also plays a significant role in the advancement of Social Sciences and Liberal Arts the persistent and widespread poor academic performance in Mathematics among secondary school students is a significant concern. The extremely poor performance of secondary school pupils in Mathematics in external examinations, such as the Basic education certificate examination in Ondo State, Nigeria, in recent decades, has posed a significant challenge to the growth of secondary school education. There is need to investigate why the poor performance, could it be that there is differential functioning of the items?

Despite the crucial role mathematics played in the society, academic achievement of students tends to reveal much difference using socio-demorgraphic characteristics of the learner .as a result of this mathematics test scores fail to produce the right learning outcomes. That means there seems to be items bias and unfairness in the test items which can be un-meeting some of the principles of Item Responses theory (IRT)

The IRT is an approach used to determine the relationship between an observable variable which refers to as the examinee ability or trait and the possibility of the examinee to respond correctly to any test item (Karl,2020) the IRT has three assumptions which include; unidemensionality of the test, local independence and item charascteritics curve.IRT believes that a single ability is sufficient to explain or account for examinees performance. This is what refered to as unidementionality in IRT is. This implies that item on a test measures one and only one knowledge and ability. The second assumption which is local independence assumes that when abilities influencing test performance are held constant and the, then examinees responses to any test items are equally held constant, then their responses to the items are independent of one another. The third is the item charasteristics curve or Item Response Function (IRF) or Item Characteristics Function (ICF) is a mathematical function that relates the probability of success on an item to the ability measured by the item set or test that contains it. This is the basic building block of the IRT theory, all other constructs of the theory depend upon the curve (Baker, 2021). The consideration of this study is on on the third principle (ICC or IRF or ICF). There are two properties of item charasteristics cure that are used to describe it; the first is the difficulty of the item which describes where the item functions along the ability scale. For instance an easy item functions among the low ability examinees and hard item functions among the high-ability examinees, thus difficulty is a location index (Baker, 2021 & Oloda, 2021). The second is discrimination property which explain how well an item can differentiate between examinees having abilities below the item location and those having abilities above the item location (Kyung, 2013 in Aina 2024)

Differential Item Functioning (DIF) is one of the modern models under IRT used to determine if an item is biased or not. DIF is considered as important cases of ability measurement and test Nfairness. it could be described as as differential performance between two groups on each item after the two groups might have been matched with respect to the ability that the item is expected to measure.DIF is an item charasteritics which provides important information about major sub-groups such gender and location of the test-takers. According to Braimun, 2022 & Gao, 2021) DIF or item bias happens when testees with the same ability level but with separate groups have a different probability of a correct response. Many researches carried out have revealed cases of DIF in mathematics multiple choice items in NECO, WAEC and UTME among test-takers having the same latent traits (Adeosun *et al.*, 2017). Statistical test theory has stipulated the quality of a test or an

item plays a crucial role in the outcome of a test (Owabuoye, 2024).

Gender differential in DIF have been carried out by various researchers globally. Gender based differences are due to the individual perception own abilities and the sex role (Arigbabu &Mji, 2004)

Research Problem

The research problem is present implicitly but not sharply formulated. You hint that persistent poor performance in BECE mathematics might not be solely due to students' ability but could be exacerbated by item bias—items behaving differently for groups matched on ability. That is the core problem and it is a legitimate one. However, it needs to be articulated in the terms suggested by your template: why is this question urgent now (for example, increased reliance on BECE for selection and accountability, heightened equity concerns), what benefits resolving it could bring to society (fairer allocation of educational opportunities, more legitimate certification), and what contribution it makes to the field (filling an empirical gap on DIF in BECE mathematics in Ondo State). At present, the text jumps rather quickly from poor performance to a brief mention of DIF and IRT, without a clearly demarcated "research problem" paragraph that crystallises these issues for the reader.

Research Focus

This study aims to examine the presence and pattern of differential item functioning in the 2022 BECE mathematics multiple-choice test by gender and school location among JSS3 students in Ondo State.

Research Questions
1. How many items of mathematics multiple choice BECE examination question for 2022 function differently between male and female students?
2. How many items of mathematics multiple choice BECE examination question for 2022 function differently between urban and rural schools?

Research Hypotheses
1. There is no significant difference in the 2022 BECE Mathematics multiple choice objective items between male and female

2. There is no significant difference in the 2022 BECE Mathematics multiple choice objective items between rural and urban schools

METHODOLOGY

The design adopted for this research work is *expost facto.* The population of the study comprised all the public junior secondary school class three students for both urban and rural who sat for the 2022 BECE mathematics examination in Ondo State. The sample size of 600 was selected through multi-stage sampling procedure.

Instrument and Procedures

The instrument for data collection was the 60 items mathematics multiple choice objective items of BECE 2022 of Ondo State ministry of education. The Optical Mark Recorder (OMR) sheets of the 600 students scored was obtained from the examination standard unit of the ministry of education Ondo State. The demorgraphic variables such as location of schools and gender was also extracted from the OMR sheets.

Data Analysis

In answering the research questions Raju Area Index (RAI) was adopted to investigate if there was item differential functioning among the items of 2022 BECE mathematics multiple choice items. The criterion for decision is 0.30. an item with an area index of 0.30 and above is said to possess differential item functioning. While an area index of less than 0.30 indicates no differential item function. The hypotheses were tested using Chi-square fit of goodness. If the calculated chi-square is less than 0.005 the null hypothesis will be accepted (indicate not significant) but if it is greater than 0.005, then the null hypothesis will be rejected and it indicate significance.

RESULTS
Research Question 1

How many items of mathematics multiple choice BECE examination question for 2022 function differently between male and female students?

Table 1: DIF with respect to male and female

| | | | AREA INDEX FOR MALE AND FEMALE 2022 BECE | | | | |
	Male x1	Female x2	Male y1	Female y2	Area Index	Decision	Remarks
1	2.84	1.39	-0.42	-0.44	2.38	D	Male
2	0.14	0.81	-2.86	-2.84	0.03	D	Female
3	2.84	1.35	-0.42	-0.44	2.91	D	Male
4	0.876	0.81	-2.86	-2.84	-3.14	ND	
5	0.703	4.80	0.37	0 .378	1.87	D	Male
6	1.65	0.27	-3.85	-1.96	1.814	D	Male

	Male x1	Female x2	Male y1	Female y2	Area Index	Decision	Remarks
					AREA INDEX FOR MALE AND FEMALE 2022 BECE		
7	0.74	-1.86	0.69	-2.03	0.21	ND	
8	0.23	1.19	-3.97	-2.85	1.07	D	Male
9	0.50	0.22	-0.85	-1.61	0.60	D	Female
10	0.15	0.33	-1.33	-0.26	1.05	D	Female
11	0.11	0.12	-5.48	-6.29	0.79	D	Female
12	0.14	0.31	-5.49	-1.09	4.3	D	Male
13	0.33	0.15	0.09	0.58	3.17	D	Female
14	0.18	0.30	-5.40	-2.73	2.55	D	Male
15	0.25	0.27	0.29	0.54	0.20	ND	
16	0.24	0.20	-3.08	-2.10	5.43	D	Male
17	0.18	0.31	-0.25	-1.50	2.45	D	Male
18	0.18	0.09	-6.75	-5.99	4.16	D	Female
19	0.80	0.79	-1.83	-185	0.02	ND	
20	0.28	0.24	-2.37	-1.24	7.27	D	Male
21	0.81	0.89	-132	-1.14	0.14	ND	
22	0.22	0.24	-6.70	-3.30	2.40	D	Male
23	0.88	0.81	-2.86	-2.84	0.03	ND	
24	0.27	0.17	-1.63	1.62	5.61	D	Male
25	022	1.70	-7.12	0.01	7.10	D	Female
26	0.24	64.99	1.02	0.38	0.64	D	Male
27	0.87	0.81	-2.24	-1.46	-1.40	D	Male
28	2.25	1.39	-0.38	-0.44	0.80	D	Male
29	0.09	0.15	-8.12	-2.05	4.81	D	Male
30	0.22	0.21	4.37	6.24	18.12	D	Male
31	2.84	1.39	-0.42	-0.44	2.38	DIF	Male
32	0.14	0.81	-2.86	-2.84	0.03	DIF	Female
33	2.84	1.35	-0.42	-0.44	2.91	DIF	Male
34	0.876	0.81	-2.86	-2.84	-3.14	ND	
35	0.703	4.80	0.37	0 .378	1.87	DIF	Make
36	1.65	0.27	-3.85	-1.96	1.814	DIF	Make
37	0.50	0.22	-0.85	-1.61	0.60	D	Female
38	0.15	0.33	-1.33	- 0.26	1.05	D	Female
39	0.11	0.12	-5.48	-6.29	0.79	D	Female
40	0.14	0.31	-5.49	-1.09	4.30	D	Male
41	0.33	0.15	0.09	0.58	3.17	D	Female
42	0.18	0.30	-5.40	-2.73	2.55	D	Male
43	0.25	0.27	0.29	0.54	0.20	ND	
44	0.24	0.20	-3.08	-2.10	5.43	D	Male
45	0.18	0.31	-0.25	-1.50	2.45	D	Male
46	0.18	0.09	-6.75	-5.99	4.16	D	Female
47	0.80	0.79	-1.83	-185	0.02	ND	
48	0.28	0.24	-2.37	-1.24	7.27	D	Male
49	0.81	0.89	-132	-1.14	0.14	ND	
50	0.22	0.24	-6.70	-3.30	2.40	D	Male
51	0.88	0.81	-2.86	-2.84	0.03	ND	
52	0.27	0.17	-1.63	1.62	5.61	D	Male
53	0.22	1.70	-7.12	0.01	7.10	D	Female
54	0.24	64.99	1.02	0.38	0.64	D	Male
55	0.87	0.81	-2.24	-1.46	-1.40	D	Male
56	2.25	1.39	-0.38	-0.44	0.80	D	Male
57	0.09	0.15	-8.12	-2.05	4.81	D	Male
58	0.23	1.19	- 3.97	-2.85	1.07	D	Male
59	0.22	0.21	4.37	6.24	18.12	D	Male
60	0.74	-1.86	0.69	-2.03	0.21	ND	Male

Table 1 revealed that 42 items () of the BECE of 2022 mathematics multiple choice items test showed DIF while 18 (%) revealed no DIF. Thirty four items were in favour of of male and 26 items in favour of females testees.

Research Question 2

How many items of mathematics multiple choice BECE examination question for 2022 function differently between rural and urban school?

Table 2

Items	Male x1	Female x2	Male y1	Female y2	Area Index	Decision	Remarks
		AREA INDEX FOR MALE AND FEMALE 2022 BECE					
1	2.84	1.39	-0.42	-0.44	2.38	D	Urban
2	0.14	0.81	-2.86	-2.84	0.03	ND	
3	2.84	1.35	-0.42	-0.44	2.91	D	Urban
4	0.876	0.81	-2.86	-2.84	-3.14	ND	Urban
5	0.703	4.80	0.37	0.38	1.87	D	Urban
6	1.65	0.27	-3.85	-1.96	1.814	D	
7	0.74	-1.86	0.69	-2.03	0.21	ND	Urban
8	0.23	1.19	-3.97	-2.85	1.07	D	Rural
9	0.50	0.22	-0.85	-1.61	0.60	D	
10	0.15	0.33	-1.33	-0.26	1.05	ND	Rural
11	0.11	0.12	-5.48	-6.29	0.79	D	Urban
12	0.14	0.31	-5.49	-1.09	4.3	D	Rural
13	0.33	0.15	0.09	0.58	3.17	D	Urban
14	0.18	0.30	-5.40	-2.73	2.55	D	
15	0.25	0.27	0.29	0.54	0.20	ND	Rural
16	0.24	0.20	-3.08	-2.10	5.43	D	Urban
17	0.18	0.31	-0.25	-1.50	2.45	D	Urban
18	0.18	0.09	-6.75	-5.99	4.16	D	
19	0.80	0.79	-1.83	-185	0.02	ND	Urban
20	0.28	0.24	-2.37	-1.24	7.27	D	
21	0.81	0.89	-132	-1.14	0.14	ND	Urban
22	0.22	0.24	-6.70	-3.30	2.40	D	
23	0.88	0.81	-2.86	-2.84	0.03	ND	Urban
24	0.27	0.17	-1.63	1.62	5.61	D	Rural
25	0.22	1.70	-7.12	0.01	7.10	D	Urban
26	0.24	64.99	1.02	0.38	0.64	D	
27	0.87	0.81	-2.24	-1.46	-1.40	ND	Urban
28	2.25	1.39	-0.38	-0.44	0.80	D	Urban
29	0.09	0.15	-8.12	-2.05	4.81	D	Urban
30	0.22	0.21	4.37	6.24	18.12	D	
31	0.80	0.79	-1.83	-185	0.02	ND	Urban
32	2.84	1.39	-0.42	-0.44	2.38	DIF	
33	0.14	0.81	-2.86	-2.84	0.03	ND	Urban
34	2.84	1.35	-0.42	-0.44	2.91	DIF	
35	0.876	0.81	-2.86	-2.84	-3.14	ND	Urban
36	0.703	4.80	0.37	0.378	1.87	DIF	Urban
37	1.65	0.27	-3.85	-1.96	1.814	DIF	Rural
38	0.50	0.22	-0.85	-1.61	0.60	D	
39	0.15	0.33	-1.33	- 0.26	1.05	ND	Urban
40	0.11	0.12	-5.48	-6.29	0.79	D	Urban
41	0.14	0.31	-5.49	-1.09	4.30	D	Rural
42	0.33	0.15	0.09	0.58	3.17	D	Urban
43	0.18	0.30	-5.40	-2.73	2.55	D	
44	0.25	0.27	0.29	0.54	0.20	ND	Rural
45	0.24	0.20	-3.08	-2.10	5.43	D	Urban
46	0.18	0.31	-0.25	-1.50	2.45	D	Rural
47	0.18	0.09	-6.75	-5.99	4.16	D	
48	0.80	0.79	-1.83	-185	0.02	ND	Urban

AREA INDEX FOR MALE AND FEMALE 2022 BECE						
Items	Male x1	Female x2	Male y1	Female y2	Area Index	Decision	Remarks
49	0.28	0.24	-2.37	-1.24	7.27	D	
50	0.81	0.89	-132	-1.14	0.14	ND	Rural
51	0.22	0.24	-6.70	-3.30	2.40	D	
52	0.88	0.81	-2.86	-2.84	0.03	ND	Urban
53	0.27	0.17	-1.63	1.62	5.61	D	Rural
54	0.22	1.70	-7.12	0.01	7.10	D	Urban
55	0.24	64.99	1.02	0.38	0.64	D	Rural
56	0.87	0.81	-2.24	-1.46	-1.40	D	Urban
57	2.25	1.39	-0.38	-0.44	0.80	D	Rural
58	0.09	0.15	-8.12	-2.05	4.81	D	Urban
59	0.23	1.19	- 3.97	-2.85	1.07	D	Urban
60	0.22	0.21	4.37	6.24	18.12	D	

Table 2 revealed that 43 items (71.67%) of the BECE of 2022 mathematics multiple choice items test showed DIF while 17 (28.33 %) revealed no DIF. Thirty one items (31) were in favour of urban and 12 items in favour of rural testees.

Research Hypothesis One:
There is no significant difference in the 2022 BECE Mathematics multiple choice objective items between male and female.

Table 3: Summary of T-test of 2022 DIF by gender

Variables	Mean	SD	N	DF	t-cal	t-tab	P
Male	8.26	3.37	300				
				598	-0.794	1.96	
Female	8.51	3.67	300				

Table 9 showed that the mean scores for male and female students were 8.26 and 8.51 respectively while their SD were 3.37 and 3.67 respectively. The t-calculated indicates -0.794 which is less than the t-critical value of 1.96, hence the hypothesis is not rejected. This implies there is no significant difference in the DIF of male and female students responses in BECE 2022.

Research Hypothesis Two:
There is no significant difference in the 2022 BECE Mathematics multiple choice objective items between rural and urban schools

Table 4: Summary of T-test of 2022 DIF by location

Variables	Mean	SD	N	DF	t-cal	t-tab	P
urban	7.42	3.12	300				
				598	6.682*	1.96	0.000
Rural	9.37	3.67	300				

Table 4 showed that the mean scores for urban and rural students were 7.42 and 9.37 respectively while their SD were 3.12 and 3.67 respectively. The t-calculated indicates 6.682 which is greater than the t-critical value of 1.96, hence the hypothesis is rejected. This implies there is a significant difference in the DIF of rural and urban student's responses in BECE 2022.

DISCUSSION OF FINDINGS
Research question one revealed that 42 items (70%) of the BECE of 2022 mathematics multiple choice mathematics items test showed function differentially based on gender while 18 (30 %) revealed no DIF. Thirty four items were in favour of male and 26 items in favour of females testees. The result is in line Chkumah & Orheruata(2019) who in

Reseach question 2 revealed that 43 items (71.67%) of the BECE of 2022 mathematics multiple choice items test showed DIF while 17 (28.33%) revealed no DIF. Thirty one items (31) were in favour of urban and 12 items in favour of rural testees. This implies that there is location differential in the performance of testees in mathematics. The results emphasise the need to improve location bias in mathematics test items.

Hypothesis one showed that the items of BECE 2022 multiple choice mathematics items do not ssignificantly diffenrentiate between male and female examinees. This findings is in agreement with Ivwighren and Adeosun (2017) on the assessment of differential item functioning in WASSCE mathematics Examination in Delta State. The result of the study

showed that items administered by WAEC in mathematics multiple choice test do not function differentially by gender. This findings contradicted Chukumah & Orheruata (2019) and Aina (2024) who found that Primary school leaving certificate examination mathematics multiple choice examination test exhibited significant gender differential item functioning and the result of the study carried out by Aina (2024) revealed gender significant differential items functioning in JSSCE Promotion Economics Multiple choice items.

Hypothesis Two revealed the exhibiton of location DIF items of 2022 BECE Mathematics multiple choice items. This implies that the BECE mathematics multiple choice items in 2022 functioned differently for examinees in different locations. The urban students performed better than rural students maybe as a result of having educational resources which are not much available in the rural schools. This findings agree with Oloba (2021) who found that 23(46%) of 2015 Ondo State JSS 11 Promotion examination multiple choice mathematics items functioned differently based on school location. Also, the findings is in line with Osadebe and Oghomema (2018) who found that social studies multiple choice test functioned differently for students in urban and rural areas. However this findins in disagree with the findings of Chukumah and Orheruata (2019) who found that 2015 PSLCE Mathematics multiple items with no significant location differential item functioning (DIF) and the result of Aina (2024) study.

CONCLUSION/ IMPLICATION

Based on the findings of this study, it was concluded that 2022 BECE Items of mathematics multiple choice items have the presence of DIF. Again, the items significantly functioned differently based on location of schools for the examinees. The implications of the result is that i the test items were not fair based on location of schools. The students in the urban schools are more likely to understand the questions and perform better in the items.

RECOMMENDATIONS

The following recommendations were made based on the findings of the study:
1. Test developers should take appropriate steps in constructing tests in order to minimize DIF and ensure that test items are fair and unbiased.
2. Ministry of Education and government should take measures to ensure that all students despite their locations have equal access to quality and affordable education.
3. Traning of psychometricians, stakeholders and teachers in any test development to detect and address DIF.

REFERENCES

- Aina, B.B (2024) Test item analysis and differential item founctioning of Joint Senior secondary school Economics promotion examination in Ondo State, Nigeria. Unplished PhD Thesis, Adekunle Ajasin University, Akungba-Akoko, Ondo State, NigeriaA)
- Baker, O. (2021) Items properties; implication for external examination in Nigeria. *Journal of Social Science Education*. 4(3Z), 81-96
- Chukumah, K and Orheruata M.U (2019) Differential item functioning in Primary school leaving certificate examination of 2015 mathematics multiple choice test in Delta State. *Journal of Educational Research and Development* (AJERD) 7(1), 120-126
- Ilogho, F.E (2022) Predictive validity of continuous assessment scores on end of semester examination scores of undergraduate education students. International journal of Educational Research and Review 3(.2)021-024.
- Ivwighren, T& Adeosun F.K (2017). Assessment of differential ite functioning in West African seniorschool certificate examination (WASSCE) Mathematics examination in ADelta State. *Journal of Educational Evaluation and Counselling Psycholog*y. 1(1)31-41.
- Karl, V.R (2020) Measurement and Evaluation. *Akwa-ibom University Journal of Education* .2(1)66-79.
- Oloda, F.S.S (2021) Location differential item functioning of test items of 2015 joint senior secondary 11 mathematics promotion examination in Ondo State Nigeria. 8(2), 492-502
- Osadebe P.U and Ogbomome, D (2018) Assessment of gender, location and socvioeconomic status on students performance in senior secondary school certificate examination in mathematics. *European journal of education studies* 11(8) 98-115
- Owabumoye, O.S (2024). Applicability of probability models on evaluating test-anxiety and attitude towards mathematics learning in secondary schools in Ondo State, Nigeria Unplished PhD Thesis, Adekunle Ajasin University, Akungba-Akoko, Ondo State, NigeriaA)
- Oyebola, A. (2021) Psychometric analysis in civic education achievement test using classical test theory. *Journal of Research Development*, 3(1), 17-28.