



ANALYSES OF PSYCHOMETRIC PROPERTIES OF 2021 SENIOR SECONDARY SCHOOL ENGLISH LANGUAGE MOCK EXAMINATION IN GOMBE STATE, NIGERIA

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ABSTRACT

This study was attempted to analysed the Psychometric properties of 2021 English Language Mock Examination in Gombe state, Nigeria. The main purpose was to determine its quality in doing so, four research objectives and corresponding research questions were formulated and answered. The study adopted an ex post - Facto type of research design and employed two forms of populations one as unit of observation (candidates' responses) and other as unit of analysis. Data was collected by the used of an application letter to the Ministry of Education Gombe state seeking for permission to collect the necessary data, upon granted the approval the 2021 English Language items and students response scores was collected and converted the scores as 1 for correct response and 0 for wrong response which later transferred to excel for further analyses and For the content validity data was collected from ten (10) subject matter experts (SME's) selected randomly based on qualification, years of experience (10 year and above) and external examination marker to indicate each item as essential or non-essential. The Data analysis was conventionally carried out using classical test theory with the aid of Excel. Validity was determined by the used of content validity ratio CVR based on the expert ratings using Lawshe formula. For reliability estimation, Kuder Richardson KR20 reliability was used to determine the internal consistency of the items. The Findings revealed that the 2021 English Language in Gombe state items were too easy, failed to discriminates between examinees and has low content validity index of 0.03, with acceptable reliability of 0.84 correlation coefficient. Recommendations were made on the importance of item analyses of mock items before its administering, removal of too easy and too difficult items, provision of proper invigilation to strength the examination

Keywords: Mock examination, English Language, Psychometric properties of test

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INTRODUCTION

The goal of any form of assessment is to construct test that will not confuse students rather than tests that will yield score accurately and reflect the extent to which a student obtained a satisfactory knowledge of the content. Towards the end of senior secondary education precisely in SSIII first term and to other states at the end of SSII (third term) students at this level were expose to an examination that neither developed by their individual teachers nor the standard examination bodies which is called mock examination, it's a new dawn for senior secondary students as they are expose to an examination form that is not made by their respective teachers and the examination named mock examination.

The standard of these Mock examinations are unknown as there is no evidence recorded this makes the examination unparalleled with the external examinations that are developed in a standard form by experts which its psychometric properties have been known. It was observed that good performance in the Mock examination and poor performance of students in external examination is always recorded in English Language many reasons may attributed to it one may be the items in the Mock examination are too easy that favours every examinee and also, fails to discriminates between higher and lower achievers among the examinees.

English Language is a compulsory subject which must be passed at credit level for students to be able to pursue their academic careers. According to the Federal Republic of Nigeria (2013), core subjects are basic subjects that enable a student to offer Arts or science in higher education. Also without a solid foundation in English Language, students may not be able to make a head way in art related courses. Adesoji (2008) asserted that abilities in English Language do influence knowledge of students in other subjects in the curriculum. English Language considered the core subjects to be passed by students at senior secondary examination and a prerequisite for a courses at tertiary institutions these courses also help in accelerating social, economic and technological progress of any Society. It has been asserted that English language is a prerequisite for further studies into tertiary education in fact for any course of study, be it science, arts or commercial, a candidate must pass it with credit before securing admission into any Nigerian tertiary institution of learning. Thus, all this depends on the effective teaching and learning of these important subject in schools.

To realize the objectives of teaching and learning of these subject at any level of the educational system in the society, there is need to monitor and maintain the quality of the educational processes and products. One major way of monitoring the quality and standards of the teaching and learning of this subject in schools is through the assessment of learning outcome of the students.

In spite of the periodic reforms in the Nigerian educational system and the combined efforts of successive governments at empowering and improving senior secondary Education in Gombe state, students truly pass the mock examinations with good grades and fail the external examination. This is why the study wants to analyse the psychometric properties of the 2021 mock examination in relations to its difficulty index, discrimination power, validity and its reliability.

Test item difficulty is all about is the examination question too easy or too hard? when an item is one that every testee either gets wrong or correct, it decreases an examination reliability. If everyone gets a particular answer correct, there is less way to tell who really understand the content material with deep knowledge. Conversely, if everyone gets a particular answer in correct then there is no way to differentiate those who have learned the material deeply. The difficulty level of a test item is an index of how easy or difficulty the test is from the point of view of the students, the index is a ratio of the average score of a sample of subject on the test to these maximum possible score on the test (Kaplan & Saccuzzo. 2005).

Item discrimination shows how an item discriminates between the brilliant and the dull students. A test with poor question will give a false impression of the learning situation usually a discriminating index of 0.4 and above are acceptable item which discriminate negatively are bad, this may be because of its vagueness and extreme difficulty. Sabri (2013) submitted that discriminatory index depicts the power of an item in discriminating between high and low performing Testees.

Validity of a test is the degree to which a test measures what it claims or purports to be measure (Ugodolunwa, 2008 & Anikweze, 2014). In conventional usage, validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration (Babbie, 2005). The validity of a test suggests the degree to which the test measure adequately and sufficiently a particular skills or behavior it sets out to measure.

Reliability of a test it means as the ability of a test to measure what it claims to measure consistently (Ugodolunwa, 2008). If a student gets similar score on a same test in different occasion this suggest that the test is reliable. Reliability refers to the consistency of a measure.

In view of these, there is need to empirically analyse the 2021 English Language and Mathematics Mock examination in Gombe state in order to achieve this, four (4) are research questions raised to guide the study:

1. What is the mean difficulty index of the items of 2021 English Language Mock Examination in Gombe state?
2. What is the mean discrimination index of the items of 2021 English Language Mock Examination in Gombe state?
3. What is the Content Validity Index (CVI) of the 2021 Gombe state English Language Mock Examination?
4. What is the KR20 reliability coefficient of the 2021 English Language Mock Examination in Gombe state?

Methodology

The study employed Ex post facto or causal – comparative research this type of design describes conditions that already exist and also determine reasons or causes for the existing conditions. In this design attempt were made in determined the cause, or reason for existing differences in behaviour or status of groups or individuals. (Gay, Mills and Airasians, 2009).

The population of study consisted the items in the tests and considered the unit of analyses and all students sat for the examination as unit of observation with a total number of 22238, a sample of 1119 were used as a sample for this study that is the 5 percent of the population, multistage cluster sampling technique was considered most suitable because of the stratification of the population with several stages to this design it is highly dependent on the characteristics of the population (Babbie, 1998). From each of the 3 senatorial zones, 2 LGAs each will be randomly selected to obtain a total of 6 LGAs out of eleven Local Government Area (11 LGAs) in the state then schools will be selected from the local Governments and finally the scripts were sorted out randomly the instrument for the study was part A of the 2021 English Language Mock Examination in Gombe state. The procedure for data collection was the researcher write a letter to the Ministry of Education Gombe state seeking for permission to collect the necessary information needed for this study, upon granted approval, the data were collected and it was analysed in two forms one is by item analyses based on classical tests theory, using Lawshe formular and the other is by conventional analyses using SPSS.

Results

Research Question 1: What is the mean difficulty index of the items of 2021 English Language Mock Examination in Gombe state?

Table1: The Mean Difficulty index of the items on 2021 English Language Mock Examination

N	Mean	Standard Deviation
60	.82	.050

The table above showed that the mean difficulty index of items on 2021 English Language Mock Examination in Gombe state is .82 The items are easy, this is in agreement with the findings of Olutola (2015) whose findings revealed that most of the items in their studies were either too easy or easy items and the findings of Ilhan (2017), Sharma (2020) contradicted the present findings who’s their findings showed acceptable indices.

Research Question 2: What is the mean discrimination index of the items of 2021 English Language Mock Examination in Gombe state?

Table 2: The Mean Discrimination index of the items on 2021 English Language Mock Examination

N	Mean	Standard Deviation
60	.29	.080

A high discriminating index indicates the item discriminate between examinees while low index showed no discrimination between examinees. The mean discrimination index of items on 2021 English Language Mock Examination in Gombe state is .29 which indicated low Discrimination power. The findings are in support with the findings of Hussain (2011) and andalai (2071) which their findings revealed low discrimination power. and in disagreement with findings of Alkurusi (2011) with moderate discrimination power

Research Question 3: What is the Content Validity Index (CVI) of the 2021 Gombe state English Language Mock Examination?

Table 3: CVRs and CVI of 2021 English Language Mock Examination

Item No	CVR	Item No	CVR	Item No	CVR
1	-0.2	21	0.4	41	0.2
2	-0.2	22	0.4	42	0.4
3	-0.6	23	-0.4	43	0.8
4	0	24	0	44	0.6
5	0	25	0.2	45	0
6	-0.2	26	0	56	0.2
7	0.6	27	-0.4	47	0.2
8	0.6	28	0	48	0.6
9	0.4	29	-0.2	49	0.2
10	-0.4	30	-0.6	50	0.2
11	0.2	31	0	51	-0.2
12	0	32	0	52	0
13	-0.2	33	-0.2	53	0.2
14	0.4	34	0	54	0
15	0.2	35	0	55	-0.2
16	-0.4	36	-0.4	56	-0.2
17	0.4	37	-0.8	57	0
18	0.6	38	-0.6	58	0.4
19	0	39	-0.6	59	0.4
20	0.4	40	-0.6	60	0.2
Content Validity Index (CVI)					0.03

Table3 revealed that the Content Validity Index (CVI) of the 2021 Gombe state English Language Mock Examination is 0.03. from the analyses it showed that CVR for each item ranges from -.08 to 0.8 and the CVI of 0.03 which showed Poor content validity. This finding is in agreement with the findings of Atsu (2015) whose findings revealed construct Validity and it contradicted the findings of Odukoya, Uorusi and Olagun (2017), Ndalai,Beattie, and MacDermdm (2017).

In an attempt to answer the research Question, the content validity survey collected from the ten (10) experts were subjected to Lawshe (1975) formula, using the Excel spread sheet. According to Lawshe (1975), the

formula for calculating is $CVR = ne - \frac{\frac{N}{2}}{2}$

where:

CVR = content validity ratio

ne = number of panel members indicating an item is essential

N = the number of panel members. CVI is the average (mean) score of all the items' CVRs. The results are presented in the table above. From the analysis, it can be observed that, CVR for each item on the 2021 Gombe state English Language Mock Examination ranges from -0.8 to 0.8 and the CVI of 0.03 for the whole examination. According to Lawshe (1975), the CVR values ranges between -1 (perfect disagreement) to +1 (perfect agreement). The accepted CVR value for 5, 6 and 7 panelists are 1 and that of 10 panelists is .875 and for 40 panelists is .650 respectively. Thus, the CVR in the table above were for 10 panelists meaning that, only item 43 (with 0.8 CVR) proved acceptable.

After determining the CVRs, CVI is then determined. It is the mean of the CVRs. The formula for determine it is $CVI = \frac{\sum CVR}{N_{cvr}}$. For this test, the CVI was found to be 0.03 and as suggested by Lawshe (1975), the CVI value of 0.08 and above with three or more experts is considered evidence of good content validity index. By implication, the 2021 Gombe state so this finding is in agreement with the findings of Atsu (2015) whose findings revealed construct Validity and it contradicted the findings of Odukoya, Uorusi and Olagun (2017), Ndalai,Beattie, and MacDermdm (2017).

Research Question 4: What is the KR20 reliability coefficient of the 2021 English Language Mock Examination in Gombe state?

Table 4: Scale Analysis of the 2021 English Language Mock Examination

KR20 Coefficient	N of Items
0.84	60

Table 4 showed that the the KR20 reliability coefficient of the 2021 English Language Mock Examination in Gombe state is 0.84. within the acceptable region which indicated that is reliable. This is in agreement with the findings of Ndung'u (2015) and Hasan (2011) who's their findings showed positive correlation but in disagreement with findings of Atsu (2011) which his findings indicated low reliability.

Conclusion

Conclusively, it is clear that majority of the items in 2021 senior secondary school English Language Mock examination in Gombe state are easy and have poor discrimination power, it was also revealed that the items have low validity and low reliability, all these accounted to the high passes recorded on yearly basis.

Recommendation

1. The Mock examination developers should be encouraged to attend training on test development and analysis to enhances their competency
2. Adequate and sincere supervision of the mock examination should be implemented.
3. The Gombe state Government and any other agencies should make sure that item analyses are always conducted for the mock examination to determining their quality before administering them.
4. A similar research should be conducted using other statistical techniques.
5. If the research results are not adequately enough then there is a need to broaden the scope of investigations by including private candidates.

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