COMPARATIVE ANALYSIS OF LEVELS OF THINKING REQUIRED IN WASSCE MULTIPLE CHOICE ECONOMICS ITEMS AND STUDENTS' PERFORMANCE IN KATSINA STATE

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Abstract

This study was based on comparative analysis of levels of thinking required in WASSCE multiple-choice Economics items from 2020 and 2021. In this study, the researcher asked two questions and a hypothesis. The study adopted survey research design. The population of the study is one hundred (100) Economics multiple choice items of 2020-2021. Sample size of the study is also one hundred (100) Economics multiple choice items. Purposive sampling technique was used. The data collected were analyzed using frequencies and percentages as well as Chi-square test at 0.05. level of significance. Findings of the study revealed that, there was no significant difference in the levels of thinking required by WASSCE multiple choice Economic items in 2020 and 2021 (X^2= 0.9529; p-value >0.05. It was therefore concluded that low performance of students is not traceable to WAEC concentrating examination questions on the higher levels of thinking in the subject. Based on the findings, it was recommended that; government should include critical thinking skills into teacher education programmes to improve the quality of teacher training and enhance teaching of critical thinking in schools and items should be adequately spread across all the domains by WAEC.

Keywords: Levels of Thinking, Multiple Choice Items, Economics, Performance

Introduction

Education can be generally seen as a process of acquiring relevant skills and expertise. It plays a major role to bring about a desirable change in an individual and society at large. It is carried out in formal, semi-formal and informal settings. Education is a sacred ingredient of development; a potent means of an enduring life and is the bedrock of economic development of any nation (Olutola, Galadanchi & Olatoye, 2023). According to Pauley and Buseri (2019), education is a socializing agent that equips all its beneficiaries with the necessary tools such as knowledge, skills, attitudes, cultural values, language and social skill to enable the individual conform to the desires and demands of the society. Education is one of the most important aspects that affect a nation's vision; therefore, success in education is key for the future of every nation.

Education can also be seen an instrument for National Development. This is because it is the instrument used in developing the citizens who in turn contributes to the development of the nation. Educational systems are set up specifically to develop individuals with essential competencies and skills, to enable them become enlightened and progressive citizens who also form the robust national workforce of the country (Cobbinah, Daramola, Owolabi & Olutola, 2017).

The quality of a nation's education determines the quality of the products of its educational system, pace and level of overall social, political, technological and economic development. `This explains why every

nation invests into the education of its citizens. However, the hallmark of an educational system depends on the quality of its assessment practices (Akinbobola & Afolabi, 2010). Testing has been seen worldwide as a best way to determine the success or failure of the teaching and learning process in the school setting (Olutola, Ogunjimi, Daramola & Sheu, 2017). The focus of this study will be in Economics as it is one of the core social science subjects which help to build an individual with essential competences and skill needed for national development.

The study of economics helps one to be a logical and critical thinker. It equips one with knowledge, comprehension, analytical, application, synthesis and evaluation skills especially in relation to economic issues in the society. This indicates the relevance of the Bloom taxonomy of Educational objectives in the study of Economics as well as other subjects or areas of learning.

A new group of cognitive psychologists, led by Anderson (2001), a former student of Bloom, updated the taxonomy from knowledge, comprehension, application analysis, synthesis, evaluation to remembering, understanding, applying, analyzing, evaluating and creating reflecting relevance to 21st century work. In addition, under the Bloom's revised taxonomy of educational objectives the following verbs are used for the purpose of clarity:

1. Remembering: entails retrieval, recalling or recognizing relevant knowledge from the long-term memory. Verbs that can be used here are; define, describe, label, list, quote, identify, reproduce, retrieve, match, outline, recall, state, show, tabulate, etc.

2. Understanding: comprises of demonstrating comprehension through one or more forms of explanations. Appropriate learning outcome verbs here are: arrange, associate, categorize, clarify, discuss, distinguish, explain, outline, restate, summarize, transform, rearrange, interpolate, estimate, differentiate, represent, reorder, generalize, give examples of, predict, infer, illustrate, rephrase, etc.

3. Applying: involves the use of information or skill in a new situation. Appropriate verbs for this level are: apply, calculate, carry out, classify, complete, compute, demonstrate, dramatize, examine, organize, solve, manipulate, experiment, etc.

4. Analyzing: has to do with breaking materials into constituent parts and determining how the parts relate to one another and /or to an overall structure or purpose. Appropriate learning outcome verbs include: analyze, breakdown, compare, connect, contrast, detect, discriminate, relate, separate, integrate, order, structure, deconstruct, etc.

5. Evaluating: entails making judgments based on criteria and standards. Appropriate learning outcome verbs are: appraise, argue, conclude, evaluate, grade, criticize, critique, justify, rank, rate, recommend, review, score, select, standardize, support, test, validate, etc.

6. Creating: involves putting elements together to form a new coherent or functional whole; reorganize elements into a new pattern or structure. Appropriate learning outcome verbs for this level are: compose, combine, perform, plan, rewrite, specify, synthesize, prepare, formulate, constitute, develop, hypothesize, modify, revise, write, etc.

Bloom's Revised Taxonomy of Cognitive Objective is useful in curriculum planning that incorporates low to high level of thinking activities (Limbach & Waugh, 2009). In the update, there is a change from nouns to verbs to describe the different levels of taxonomy and the two top levels were interchanged. These levels can be incorporated into any subject of choice and in this study will be applied to Economics.

Economics is a social science subject taught at senior secondary school level in Nigeria that occupies a relevant place of pride in the secondary school system. Although there is much emphasis on Mathematics

and English Language as the core subjects, Economics and other related subjects have also gained a lot of popularity especially among school leavers seeking admission to higher institutions of learning in the country where there are few spaces for many candidates. Generally, tertiary institutions require a credit in Mathematics and English Language as a foremost pre-requite for gaining admission and three (3) other subjects which could be Economics, Commerce, Accounting, Government and Geography, for students seeking admission into faculties of social sciences or management sciences.

Statement of Problem

In an ideal situation, it is expected that students should excel in their academic performance and such performance should be consistent over time as teachers take students through their academic journey. But the contrary is the case as it is observed over time by researchers that there is rather an inconsistent trend in academic performance of senior secondary school students and Economics as a subject is not left out of this trend. According to statistics of WAEC, 49.98% of the candidates who sat for its examination in the year 2018 passed. They said this percent was able to obtain credits and above in a minimum of five subjects including English and Mathematics. They further said that when compared to what was obtained in 2016 and 2017, it showed a decline in students' performance generally (Punch, 2018).

The general decline in students' performance in Economics is a matter of concern to the researcher hence the study on Comparative Analysis of Levels of Thinking required by WASSCE is carried out to find out if failure of students in the subject is attributed to the way WAEC sets its questions or other factors as proposed by other researchers.

Purpose of the Study

The purpose of the study is a comparative analysis of the levels of thinking required in WASSCE multiple choice Economics items and students' performance in Katsina zonal education quality assurance in Nigeria.

Research Questions

The following research questions were asked to guide the study:

1. What are the levels of thinking required in the 2020 WASSCE multiple-choice Economics items in Nigeria?

2. What are the levels of thinking required in the 2021 WASSCE multiple-choice Economics items in Nigeria?

Hypothesis

This hypothesis was formulated and tested at 0.05 level of significance:

$H0_1$: There is no significant difference in the levels of thinking required by 2020 and 2021 WASSCE multiple choice Economics items in Nigeria.

Methodology

This study made use of survey research design. This research design is commonly used in social sciences particularly when the data depends on survey research. A survey research determines and reports things the way they are. It involves collecting numeric data to test hypotheses or answer questions about the present status of the subject of study.

The population of the study consists of all hundred (100) multiple-choice items of WASSCE Economics written by Senior Secondary School students from 2020-2021 in Nigeria. Each year comprises of fifty

(50) multiple-choice items and this makes up 100 multiple choice items for the period of two (2) years under review.

The sample of the study is one hundred (100) WAEC Economics multiple-choice items. This makes the sample of the study to be same as the population of the study for a comprehensive coverage.

Instruments used for data collection is multiple-choice items of WAEC 2020-2021 Senior Secondary School Certificate Examination (SSCE) in Economics. These question papers were analyzed to find out the levels of thinking required of WAEC according to cognitive domain of Bloom's revised Taxonomy of Educational objectives for this study.

The researcher collected a letter of introduction from the School of Postgraduate Studies, Federal University Dustin-Ma to enable her to get the question papers from WAEC for the analysis of the work. The data analyzed are all the one hundred Multiple Choice Items from 2020 to 2021. Frequencies and percentages was used to answer research questions and Chi-Square was used to test the hypotheses.

Results

Research Question One: What are the levels of thinking required in the 2020 WASSCE multiple-choice Economics items in Nigeria?

Table 1a: Frequency and percentage of levels of thinking required in the 2020 WASSCE Economics multiple- choice items in Nigeria.

Levels of Thinking	Frequency	Percentage (%)
Remembering	21	42
Understanding	19	38
Applying	6	12
Analyzing	2	4
Evaluating	1	2
Creating	1	2
Total	**50**	**100**

Table 1b: Summary of levels of thinking required by 2020 WASSCE Economics multiple choice items in Nigeria

Order of Thinking	Frequency	Percentage (%)
Lower order	46	92
Higher order	4	8
Total	**50**	**100**

Figure 1: Pie chart showing percentage of levels of thinking required in 2020 WASSCE Economics multiple-choice items in Nigeria.

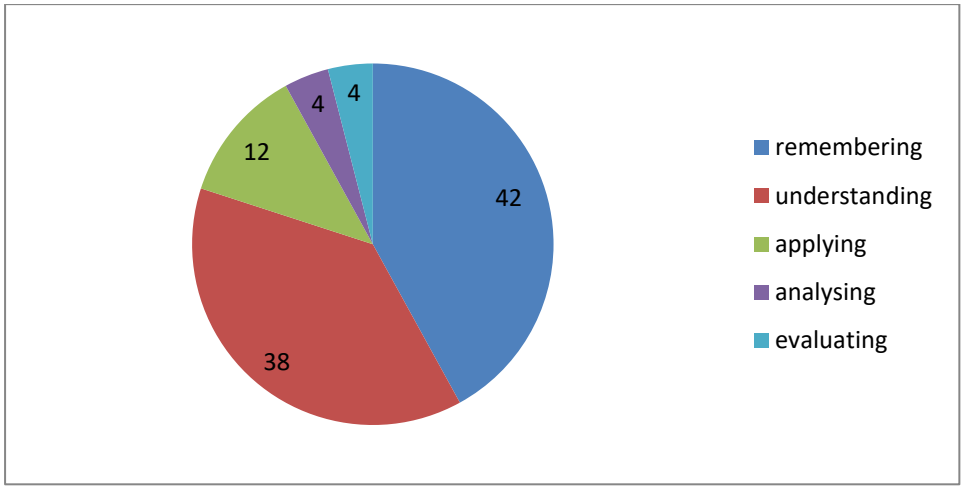

Table 1a and figure 1 shows the frequency and percentage of thinking levels required of Economics 2020 WASSCE Multiple Choice Items. From Table 1a, 21 (42%) of the 2020 Economics WASSCE Multiple Choice Items required students to think at Remembering level, 19 (38%) required students to think at Understanding level, 6 (12%) required them to think at Applying level, 2 (4%) required them to think at Analyzing level, 2 (4%) required them to think at Evaluating level. No question required students to think at creating level.

Table 1b shows that 46 (92%) of 2020 Economics WASSCE multiple choice items required student to think at lower order, while 4 (8%) required students to think at higher order.

Research Question Two: What are the levels of thinking required in the 2021 WASSCE multiple- choice Economics items in Nigeria?

Table 2: Frequency and percentage of levels of thinking required in the 2021 WASSCE Economics multiple- choice items in Nigeria.

Level of thinking	Frequency	Percentage (%)
Remembering	22	44
Understanding	15	30
Applying	8	16
Analyzing	2	4
Evaluating	2	4
Creating	1	2
Total	**50**	**100**

Table 2b: Summary of levels of thinking required by 2021 WASSCE Economics multiple choice items in Nigeria

Order of Thinking	Frequency	Percentage (%)
Lower order	45	90
Higher	5	10
Total	**50**	**100**

Figure 2: Pie chart showing percentage of levels of thinking required in 2021 WASSCE Economics multiple-choice items in Nigeria.

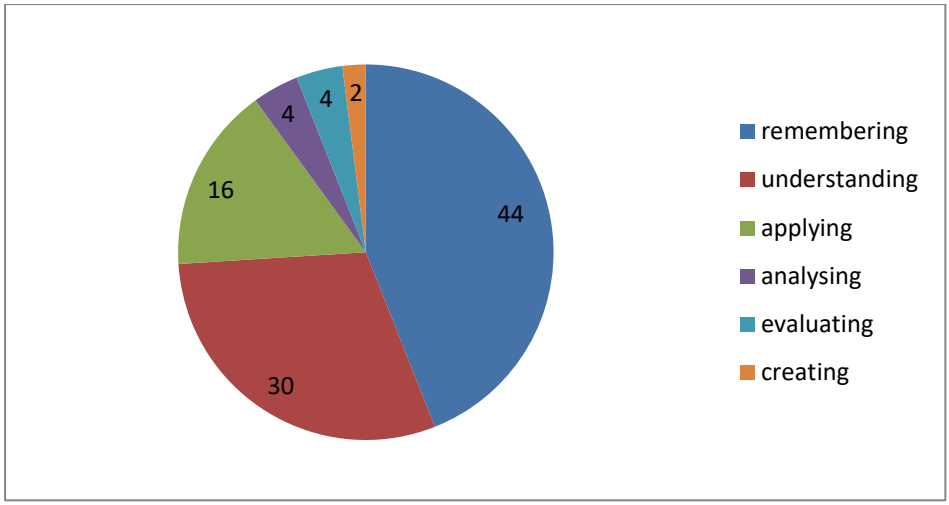

Table 2a and figure 2 shows the frequency and percentage of thinking levels required of 2021 WASSCE Economics Multiple Choice Items. From table 2a, 22 (44%) of the 2021 Economics WASSCE Multiple Choice Items required students to think at remembering level, 15 (30%) required students to think at understanding level, 8 (16%) required students to think at applying levels, 2 (4%) required students to think at evaluating levels. 1(2%) required students to think at a creating level.

Table 2b shows that 45 (90%) of the 2021 Economics WASSCE multiple choice items required students to think at a lower order, while 5 (10%) required students to think at a higher order.

Hypothesis Testing

$H0_1$: There is no significant difference in the levels of thinking required by 2020 and 2021 WASSCE Economics Multiple-choice items in Nigeria.

Table 3: Chi-square Analysis of Thinking Levels of 2020 and 2021 Economics WASSCE Multiple Choice items in Nigeria.

Level of Thinking	2020	2021	Total	Df	X^{cal}	X^{tab}	P-value	Decision
Remembering	21	22	43					
Understanding	19	15	34					
Applying	6	8	14	5	1.11289	9.488	0.9529	NS
Analyzing	2	2	4					
Evaluating	1	2	3					
Creating	1	1	2					
Total	**50**	**50**	**100**					

The result in table 3 shows Chi-square calculated value of 1.11289 and p-value of 0.9529.Since 0.9529 p-value is greater than 0.05 alpha level (0.9529>0.05), the null hypothesis is therefore retained. It implies that there is no significant difference in the thinking levels required by 2020-2021 Economics multiple-choice items in Nigeria.

Discussion of Findings

Findings of research questions one and two` revealed that the level of thinking required in 2020, and that of 2021 Economics WASSCE multiple choice items varied. Also, it was observed that, the items required

students to demonstrate both lower and higher levels of thinking skills. Analysis of 2020 Economics multiple choice items showed unequal numbers of items for both the lower level and the higher level of thinking, the lower levels had 46 (92%) items while the higher order had 4 (8 %) items. This is in line with the study of Seher (2017) which emphasized the assessment levels of students' learning according to the cognitive domain of Blooms' Taxonomy.

Findings of research question two also revealed that the level of thinking required in 2021 Economics WASSCE multiple choice items varied. Also, it was observed that, the items required students to demonstrate both lower and higher levels of thinking skills. Analysis of 2021 showed unequal numbers of items for both the lower level and the higher level of thinking, the lower levels had 45 (90%) items while the higher order had 5 (10%) items. This finding is supported by Cobbinah, Daramola, Owolabi and Olutola (2017) in their Mathematics items levels of thinking analysis in 2014 which also demonstrated that more items were asked at the lower thinking levels than the higher thinking levels. Heri et al (2018) also opine that teachers' lack high thinking level skill hence cannot effectively guide students to it. They all believe that unless students can be brought to the higher levels of thinking which are analyzing, evaluating and creating, it is unlikely that transfer of knowledge will take place. Though, encouraging critical thinking necessitates that more items that require higher level of thinking should be included in test.

Conclusion

The research was designed to analyze the levels of thinking required by WASSCE in their examinations to evaluate students' learning according to cognitive domain of Bloom's Taxonomy. According to findings from this research, it was understood that WASSCE questions were more on the lower levels of thinking that is remembering, understanding, applying, than the higher levels of thinking outlined in the taxonomy which are analyzing, evaluating and creating. The results revealed that there was more focus on lower levels of thinking while asking questions. There was less implementation on higher level of thinking when compared with the lower levels.

Based on the findings of the study, it was concluded that: There was no significant difference in the levels of thinking required by 2020 and 2021 WASSCE Economics Multiple-choice items in Nigeria

Recommendations

The following recommendations were made:

1. Curriculum experts should do their best to include higher levels thinking skills into school curriculums at all levels.
2. Teachers should deliberately include higher levels thinking skills in their daily lesson plan and class activities to acquaint students with the skills.
3. Government should do its best to include critical thinking skills into teacher education programmes to improve the quality of teacher training and enhance teaching of critical thinking in schools.

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