

## Assessment of Question Quality in Education Courses at Colleges of Education in Gombe State, Nigeria

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### ABSTRACT

The study conducted an appraisal on the quality of questions in education courses among the colleges of education in Gombe State. Six colleges of education were involved in the study, 1 federal, 2, state owned and 3 privately owned. The study population focused on the core education courses as prescribed by the National Commission for Colleges of Education (NCCE) for the general education program. Question quality assessment framework" (Q-OAF) was used to collect data. The inter-rater reliability of the ratings was assessed using the Intra-class Correlation Coefficient (ICC) with a two-way random effects model. The ICC was calculated using the one-way analysis of variance (ANOVA) model implemented in statistical software. The study revealed in many questions a lack of clarity and conciseness, potentially leading to confusion and misinterpretation among students. Questions are not consistently aligned with specific learning objectives and course content, suggesting a lack of clarity regarding what students should focus on. Questions do not effectively encourage students to integrate knowledge from various sources or synthesize information. Questions do not sufficiently emphasize clear communication skills or require well-structured arguments. The study made the following recommendations. In order to improve clarity and conciseness of examination questions. Lecturers are to use clear and concise language, avoiding jargon and complex sentence structures. They are to ensure that the questions are unambiguous and easy to understand. For improved focus and specificity in question design, educators must establish explicit connections between questions and specific learning objectives and course materials.

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### INTRODUCTION

The education sector forms the bedrock of any society, shaping the intellectual and moral fabric of future generations. As such, the quality of education delivered is of paramount importance (UNESCO, 2020). In Gombe State, Nigeria, Colleges of Education play a pivotal role in preparing teachers for the nation's educational system (Lars et al., 2024). However, concerns have arisen regarding the quality of questions used in education courses at these institutions

(Schwartz, 2023). The quality of questions posed in academic settings has emerged as a crucial factor in fostering profound learning experiences and critical thinking skills (Walsh, 2005). In the context of Colleges of Education in Gombe State, Nigeria, there is a growing concern regarding the quality of questions employed in education courses.

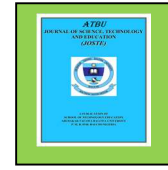
Scholarly research has underscored the significance of well-constructed questions in the educational milieu. Cohen (2018) contends that

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meticulously designed questions not only gauge students' understanding but also serve as catalysts for the stimulation of critical thinking and problem-solving abilities. Conversely, questions that lack clarity or focus solely on factual recall, as highlighted by Brualdi (1998), engender surface-level learning, impede critical thinking, and perpetuate rote memorization. These issues are particularly pertinent in the Nigerian educational landscape, as evidenced by Oghuvbu's (2008) exploration of teachers' questioning behaviour, revealing a prevalence of closed-ended questions that limit student engagement and critical thinking.

The urgency of this study is underscored by the current situation in Gombe State, Nigeria. Research has shown that the questions used in education courses in Gombe State, Nigeria often lack clarity, fail to assess higher-order thinking skills, and predominantly focus on factual recall rather than application or analysis. Furthermore, many questions exhibit low validity, being too broad and subject to multiple interpretations. Consequently, students may develop a surface-level understanding of the subject matter, hindering their ability to think critically and solve complex problems. The implications of these inadequacies are far-reaching, impacting not only students' academic success but also the quality of future educators produced by these institutions.

To address these concerns and lay the groundwork for substantial improvements, a comprehensive assessment of question quality is imperative. This research endeavours to scrutinize the existing question banks in Gombe State's Colleges of Education, examining their clarity, cognitive complexity, alignment with learning objectives, and variety of question types. Adepoju's recent findings (2022) accentuate the gravity of the issue, revealing questions prone to multiple interpretations and, consequently, low

validity. This not only compromises the depth of students' understanding but also introduces the risk of plausible alternative responses, potentially leading to misguided evaluation by instructors.

The following research objectives were formulated to guide the comprehensive assessment, analysis, and recommendations for improving the quality of questions in education courses at Colleges of Education in Gombe State, Nigeria:

### Research Objectives

1. To assess the quality of questions used in education courses at colleges of education in Gombe State.
2. To identify weaknesses in question
3. To provide recommendations for improving the quality of questions and aligning them with learning outcomes.

### Research Questions

1. What is the prevailing quality of questions used in education courses at Colleges of Education in Gombe State?
2. In what ways do questions in education courses demonstrate weaknesses in terms of validity, reliability, and effectiveness?
3. How can the quality of questions be improved to better align with the desired learning outcomes and educational objectives in Colleges of Education in Gombe State?

### METHODOLOGY

The study was conducted in Gombe State, located between latitudes 9° 30' N and 12° 30' and Longitudes 8° 45' E and 11° 45' E. The State has a land area of 20,265 km<sup>2</sup> and a 2020 projected population of about 3.3 million people (NPC, 2006). There are presently six Colleges of Education in Gombe State, 1 federal, 2, state owned and 3 privately owned.

**Table 1:** List of Colleges of Education in Gombe State

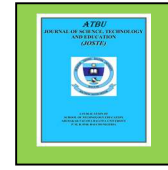
Name	Ownership Status
Abubakar Garba Zagada- Zagada College of Education, Bajoga	Private
Federal College of Education (Technical), Gombe State COE and legal studies, NAFADA	Federal
Gombe State College of Education, Billiri	State
JIBWIS College of Education Gombe	State
	Private

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Mus'ab Bn Umair College of Education Bajoga  
Source: NCCE (2024)

Private

In the context of the Colleges of Education in Gombe State, the study population focused on the core education courses prescribed by the National Commission for Colleges of Education (NCCE) for the General Education program. The analysis will centre on the structure and content of the General Education curriculum, particularly the courses listed for Junior Secondary Education. The focus of analysis of the study is the core Education Courses for the NCE programmes of the Colleges of Education in Gombe State as prescribed by the NCCE.

In the context of the Colleges of Education in Gombe State, the study population focused on the core education courses prescribed by the National Commission for Colleges of Education (NCCE) for the General Education programme. The analysis centred on the structure and content of the General Education curriculum. The General Education programme consists of several core courses, each with its own credit value and status. The courses are structured across different academic years and semesters. Here is a summary of the courses:

**Table 2:** General Education Year One, First Semester

Course Code	Course Title	Credit Units	Semester
EDU 111	History of Education in Nigeria	1	First
EDU 112	Educational Psychology (Child Development)	2	First
EDU 113	Principles and Methods of Teaching at Junior Secondary Level	2	First
EDU 121	Sociology of Education	1	Second
EDU 122	Introduction to Teacher Education	1	Second
EDU 123	Philosophy of Education	1	Second
EDU 124	Theory and Practice of Child Friendly Schools	2	Second
EDU 125	Educational Psychology II (Human Learning)	2	Second

**Table 3:** General Education Year Two

Course Code	Course Title	Credit Units	Semester
EDU 211	Practicum in Classroom Management and Organisation	1	First
EDU 212	Educational Technology: Theory and Practice	2	First
EDU 213	Micro-Teaching: Theory	1	First
EDU 214	Introduction to Research Methods	1	First
EDU 221	Curriculum Studies I	1	Second
EDU 222	Measurement and Evaluation	2	Second
EDU 223	Micro-Teaching Practicum	1	Second
EDU 224	Educational Administration, Planning and Supervision	2	Second
EDU 225	Introduction to Special Education	1	Second

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**Table 4:** General Education Year Three

Course Code	Course Title	Credit Units	Semester
EDU 311	Teaching Practice	6	First
EDU 321	Curriculum Studies II	1	Second
EDU 322	Adolescent Psychology	1	Second
EDU 323	Research Project	2	Second
EDU 324	Introduction to Theory and Practice of Guidance and Counselling	1	Second

The sampling for this study involved randomly selecting one privately owned, one federally owned and 1 State owned Colleges of Education (COEs) in Gombe State. In each of the selected COEs, one 1-unit and one 2-unit course per semester for each of the 3 years were randomly selected. Only core education courses that involved end of semester examinations were

selected. Courses that did not involve end of semester examination such as Teaching Practices and Research Project were excluded.

**Courses Sampled**

In all, the following ten courses were selected for analysis:

**Table 5:** Sampled Education Courses of Colleges of Education

Course Code	Course Title	Credit Units	Semester
EDU 111	History of Education in Nigeria	1	First
EDU 112	Educational Psychology (Child Development)	2	First
EDU 121	Sociology of Education	1	Second
EDU 125	Educational Psychology II (Human Learning)	2	Second
EDU 212	Educational Technology: Theory and Practice	2	First
EDU 213	Micro-Teaching: Theory	1	First
EDU 221	Curriculum Studies I	1	Second
EDU 222	Measurement and Evaluation	2	Second
EDU 321	Curriculum Studies II	1	Second
EDU 322	Adolescent Psychology	1	Second

The following three Colleges of Education in Gombe State were purposively

selected to represent the oldest College of Education by ownership status

**Table 6:** Sampled Colleges of Education in Gombe State

Name	Ownership Status
Federal College of Education (Technical), Gombe State College of Education, Billiri	Federal State
JIBWIS College of Education Gombe	Private

The researchers developed a framework for assessing the quality of questions in educational contexts, titled the "Question

Quality Assessment Framework" (Q-QAF). This framework was created through a systematic process that involved several key steps.

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Firstly, a comprehensive literature review was conducted to identify existing criteria and best practices for evaluating question quality. This review synthesized findings from educational research, assessment literature, and pedagogical insights.

Based on the findings of the literature review, the following criteria for assessing question quality were identified:

1. Clarity and Conciseness
2. Focus and Specificity
3. Depth and Complexity
4. Objectivity and Fairness
5. Relevance and Significance
6. Assessment Alignment
7. Integration and Synthesis
8. Communication and Argumentation
9. Originality and Creativity
10. Feasibility and Timeframe

These criteria encompassed factors such as clarity, relevance to learning objectives, cognitive level, fairness, and alignment with curriculum standards.

Seven experts in educational test and measurement participated in this pilot study. The Q-QAF framework, consisting of ten criteria for assessing question quality, was provided to each expert. Each expert was instructed to rate the relevance and clarity of each of the ten criteria using a 5-point Likert scale, ranging from 1 ("Low") to 5 ("High").

The inter-rater reliability of the expert ratings was assessed using the Intraclass Correlation Coefficient (ICC) with a two-way

random effects model. This model accounts for both the consistency of individual experts across items (within-rater variance) and the agreement between different experts (between-rater variance).

The ICC was calculated using the one-way analysis of variance (ANOVA) model implemented in statistical software. The ICC value ranges from -1 to 1, with values closer to 1 indicating higher agreement among raters, and values closer to 0 indicating less agreement. An ICC value of 0.70 or above is generally considered acceptable for reliability.

## RESULTS

The average expert rating for each Q-QAF criterion is presented in the table below, along with the intra-rater reliability (ICC values) for each criterion. The overall ICC value across all criteria was 0.82, indicating good inter-rater reliability for the Q-QAF framework. Additionally, individual ICC values for each criterion ranged from 0.76 to 0.88, which also suggests acceptable reliability.

## DISCUSSION

This pilot study demonstrates the good inter-rater reliability of the Q-QAF framework, indicating consistent ratings among experts on the relevance and clarity of the proposed question quality criteria. This finding provides initial evidence for the reliability of the Q-QAF in assessing question quality. The results are presented in Table 7.

**Table 7:** Summary of Ratings of Q-QAF Criteria

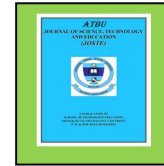
Criterion	Expert's Rating							Average Rating	Intra-Rater Reliability
	1	2	3	4	5	6	7		
Clarity and Conciseness	4	5	4	3	5	4	5	4.29	0.82
Focus and Specificity	3	4	5	4	3	4	4	3.86	0.79
Depth and Complexity	5	4	3	4	5	3	4	4.29	0.85
Objectivity and Fairness	4	3	4	5	4	5	3	4.00	0.77

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Criterion		Expert's Rating						Average Rating	Intra-Rater Reliability	
		1	2	3	4	5	6			7
Relevance and Significance		5	5	4	4	5	4	5	4.57	0.88
Assessment Alignment		4	4	5	4	3	5	4	4.29	0.83
Integration and Synthesis		3	4	3	4	4	3	4	3.57	0.76
Communication and Argumentation		5	5	4	3	5	4	5	4.43	0.87
Originality and Creativity		4	3	4	5	4	3	4	3.86	0.79
Feasibility and Timeframe		4	4	5	4	4	5	4	4.29	0.85

In each of the selected three Colleges of Education, one sample of the examination paper for each of the proposed ten course was selected. In all we obtained thirty question papers, made up of three question papers for each of the ten courses. Five experts comprising 3 experts in test and measurement and subject specialist were

required to rate each of the 3 examination paper samples for each of the 10 courses using the Question Quality Assessment Framework" (Q-QAF). Data analysis involved average of the ratings, and Intra-Rater Reliability coefficient.

## RESULTS

**Table 8:** Summary of Quality Rating of Education Courses of Colleges of Education in Gombe State

Criteria/ Course	ED	ED	ED	ED	ED	ED	ED	ED	ED	ED	ED	Average Rating
	U 111	U 112	U 121	U 125	U 212	U 213	U 221	U 222	U 321	U 322		
Clarity and Conciseness	2.1	2.4	2	1.8	2.2	1.9	2.3	2.1	2	2.2	2.1	
Focus and Specificity	2.3	2.6	2.5	2.2	2.4	2.1	2.6	2.4	2.2	2.5	2.45	
Depth and Complexity	3.8	4.1	4	3.9	4.2	3.7	4	3.9	3.8	4.1	4.02	
Objectivity and Fairness	3.4	3.6	3.5	3.3	3.4	3.2	3.5	3.3	3.4	3.5	3.4	
Relevance Significance	3.2	3.8	3.5	3.7	3.4	3.1	3.6	3.3	3.5	3.8	3.54	
Assessment/Alignment	3.5	3.7	3.6	3.8	3.5	3.4	3.7	3.6	3.5	3.8	3.63	
Integration/ Synthesis	2.2	2.4	2.6	2.5	2.3	2	2.4	2.2	2.5	2.6	2.35	
Communication/Argumentation	2.6	2.8	2.7	2.4	2.6	2.3	2.7	2.5	2.6	2.8	2.6	
Originality/Creativity	3.1	3.5	3.2	3.4	3.3	3	3.4	3.2	3.1	3.5	3.31	
Feasibility Timeframe	4	4.2	4.1	4.3	4	3.9	4.2	4.1	4	4.2	4.12	
<b>Average Rating</b>	<b>2.96</b>	<b>3.14</b>	<b>3.04</b>	<b>3.02</b>	<b>3.12</b>	<b>2.83</b>	<b>3.09</b>	<b>3</b>	<b>3.03</b>	<b>3.17</b>	<b>-</b>	

## DISCUSSION

The overall average rating across all courses is 3.04, indicating a "Satisfactory (3)" level of quality. This suggests that while there are areas for improvement, there are also strengths present in the questions. Questions generally encourage

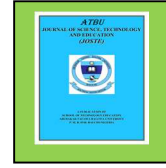
critical thinking and analysis, suggesting a strong foundation for promoting higher-order thinking skills among students. Questions are moderately relevant and significant, indicating that they address key concepts and important issues within the course curriculum. Questions are generally

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answerable within the allocated time and provide adequate scope, ensuring that assessments are practical and manageable for students.

Many questions lack clarity and conciseness, potentially leading to confusion and misinterpretation among students. This indicates a need for clearer language and better articulation of question prompts. Questions are not consistently aligned with specific learning objectives and course content, suggesting a lack of clarity regarding what students should focus on. There is room for improvement in specifying the intended scope of assessment. Questions do not effectively encourage students to integrate knowledge from various sources or synthesize information. This indicates a need for more opportunities for students to apply their learning in a holistic manner. Questions may not sufficiently emphasize clear communication skills or require well-structured arguments. This suggests a need for clearer communication expectations and opportunities for students to develop their argumentation skills.

### RECOMMENDATIONS

Based on the identified weaknesses, here are some recommendations for enhancing the quality of questions.

1. In order to improve clarity and conciseness of examination questions. Lecturers are to use clear and concise language, avoiding jargon and complex sentence structures. They are to ensure that the questions are unambiguous and easy to understand.
2. To enhance the clarity and conciseness of examination questions, instructors should prioritize the use of clear and succinct language, steering clear of technical jargon and convoluted sentence structures. It is imperative to ensure that the questions are straightforward and easily comprehensible for students.

3. For improved focus and specificity in question design, educators must establish explicit connections between questions and specific learning objectives and course materials. It is crucial to articulate precisely what knowledge or skills students are expected to demonstrate in their responses.

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