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ANALYSIS OF THE WASSCE CHIEF EXAMINER'S REPORT IN GENERAL MATHEMATICS (2023–2025): IMPLICATIONS FOR EFFECTIVE MATHEMATICS INSTRUCTION

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Abstract

This study critically analyses the West African Senior School Certificate Examination Chief Examiners Report in General Mathematics for the years 2023 to 2025 based on the trends in students' performance. A qualitative document analysis was employed in analyzing the performances of the candidates, as shown in the WAEC reports. The results obtained show that even though candidates have displayed their proficiency in simple computations and procedures such as drawing graphs, mensuration, and working out algebraic expressions, there remain several difficulties in the aspect of applying higher-order thinking processes like interpreting questions, applying principles, and communicating mathematics. It will be found in the research that some difficulties that recur throughout the years include the translation of word problems into symbols, diagrammatical illustration, and statistics.

Keywords: WASSCE; Chief Examiner's Report; General Mathematics; Mathematics Instruction; Students' Performance; Mathematics Education; Assessment; Instructional Strategies.

Introduction

Mathematics plays an essential role in advancing science, technology, and national development. In Nigeria, proficiency in mathematics is mandatory for moving forward in further studies and STEM-related jobs. Although mathematics has played a vital role in Nigeria, students' performances in WASSCE mathematics have been inconsistent.In order to understand the areas of weakness and strength, the Chief Examiner's report is used to give a diagnosis of the students' performances. Such reports not only give details about the students' performances but also about the teaching methodologies used by teachers, evaluation and assessmenttechniques, and more. A critical analysis of such reports helps make sense of common problems and plan for future interventions.

Reports between 2023 and 2025 are significant because this period represents the post-pandemic period where schools had resumed normalcy in operation. A critical analysis of such reports will be useful for making necessary improvements.

THE WAEC CHIEF EXAMINER'S REPORT: DEFINITION AND SIGNIFICANCE

The WAEC Chief Examiner's Report is an official document that provides a comprehensive analysis of candidates' performance in WASSCE examinations. This report gives important information about the strengths, weaknesses, common mistakes and difficult aspects among other important things.The importance of this document can be attributed to its use in diagnosis. This document helps teachers assess the areas in which learners perform well and those in which they do not. Curriculum developers also benefit from this document because it assists them in understanding the gap between desired results and actual achievements.

This report helps ensure that there is proper link between assessments and instructions. When used in the right way, the report becomes an effective tool in improving mathematics instruction.

3.0 LITERATURE REVIEW (COMPARISON OF PAST REPORTS)

Previous studies on the WAEC Chief Examiner's Report consistently highlight recurring weaknesses in the mathematical abilities of students, especially in terms of solving problems related to algebra and trigonometry. According to these studies, students often depend on rote memory in mathematics, making them weak in interpreting mathematical concepts in a way that can help them apply their knowledge appropriately when needed. Comparative studies conducted on the reports from year to year show that despite differences in the performance level of students from one year to another, the underlying weakness in the teaching and learning process remains the same.

This aspect of the problem needs to be considered in relation to teachers' use of WAEC Chief Examiner's Reports in their lessons. For instance, a study conducted by George and Amachree (2018) assessed the availability and usefulness of Chief Examiner's Reports to mathematics teachers in senior secondary schools in Rivers State, Nigeria. The results showed that, although teachers knew the importance of the reports, most of them did not have access to them. Moreover, those who had the reports did not make use of them in their lessons.

Likewise, Wonu and Zalmon (2018) carried out an extensive investigation by analyzing WAEC Chief Examiner's Reports ranging from 2005 to 2014 for the purpose of diagnosing students' difficulties. The results indicated that although there were less difficulties in the

areas of number and numeration, algebra, and statistics, geometry was identified as one of the main sources of difficulty among students. It was stressed the necessity of implementing the strategies of diagnostic and remedial teaching, and it was suggested that instructional interventions could greatly enhance the process of learning based on the reports of examiners.

Furthermore, Ibrahim and Maude (2022) investigated students' performance in mathematics in WAEC and NECO examinations in Kano State during the period from 2015 to 2019. The findings revealed that there was no significant difference in the performance of students in General Mathematics in WAEC and NECO, which means that the problems related to students' poor performance in mathematics are not associated with the type of examinations but refer to systemic issues.

The implications drawn from this is important, because if the students demonstrate similar performance patterns on both WAEC and NECO, it would imply that the weaknesses identified such as problem interpretation, low concept understanding, and lack of ability to apply mathematical knowledge are linked with the mode of instruction provided and not the examination.

In addition, it emerges from the literature review that the successful implementation of Chief Examiner's Reports depends on conscious efforts in utilizing them as a classroom tool. Not only should teachers be able to gain access to Chief Examiner's Reports but also be knowledgeable on how to interpret and apply the information provided in them in their instructional activities.

Generally speaking, the discussed studies provide a significant body of evidence demonstrating the significance of using Chief Examiner's Reports in mathematics teaching. However, the literature under review shows that there is a notable gap between having access to, understanding, and applying this report in the process of instruction. In this respect, an analysis of reports issued in recent years (2023-2025) is crucial.

4.0 2023 REPORT ANALYSIS

According to the 2023 WAEC Chief Examiner's Report (APPENCIX A), there was an improvement in the performance of the candidates as compared to the last year. Students performed well in Core Mathematics and Elective Mathematics subjects in terms of simple interest, sets, graphs, ratio, and transformation. Candidates did well in Elective Mathematics when dealing with implicit differentiation, regression, and coordinate geometry topics.

Despite their good performance, the candidates faced some challenges. Candidates had issues in comprehending word problems concerning limits and probability topics. Issues in standard deviation, integration, constructing histograms, and drawing cumulative frequency curves were experienced. In the Core Mathematics subject, the main issues faced by the candidates were related to translating word problems into mathematical equations, pie charts, and geometry topics.

The report recommended that students needed to have remedial exercises in the topics of calculus, trigonometry, and problem solving.

5.0 2024 REPORT ANALYSIS

In the 2024 report (APPENCIX B), it was observed that the quality of the test paper was similar to that of past years, although there were improvements in overall performance. The areas in which students performed satisfactorily included proportions, graph sketching,

logarithms, and trigonometry within Core Mathematics. In Elective Mathematics, students scored well in sequences, vectors, circular measure, and partial fractions.

However, there were still notable weaknesses. One area where students had difficulties included the representation of diagrams, their ability to translate them into mathematical expressions, and their proficiency in solving real-world application questions. In Elective Mathematics, the areas in which the students faced problems were their lack of knowledge of trigonometric equations, calculator abuse, and incorrect use of formulas.

Some of the recommended remedies include enhancing students' problem-solving skills by regular practice and careful question analysis.

6.0 2025 REPORT ANALYSIS

The report of 2025 (APPENCIX C) shows a drop in the performance of candidates compared to 2024. Though the quality of the examinations was constant, the level of performance by candidates was low in both Core and Elective Mathematics.

Among the strong areas, students did well in mensuration, calculating the midpoints, solving equations, and performing integration. The weakness of the candidates was evident in their inability to convert word problems, forming cumulative frequency distribution tables, and solving application questions. Weaknesses in statistics, indices, and vectors also stood out.

From the report of 2023, 2024, and 2025, it can be seen that some of the weaknesses repeat themselves yearly, implying problems in teaching mathematics. Remedies that have been proposed include regular practice and effective methods of instruction.

7.0 COMPARATIVE ANALYSIS OF WAEC CHIEF EXAMINER'S REPORT (2023–2025)

The following analysis examines the WAEC Chief Examiner's Report on General Mathematics for the years 2023 to 2025, with emphasis on important aspects such as the standard of the question papers, candidates' performance, strengths, weaknesses, and recommended solutions. This analysis highlights common themes, similarities, and differences between the three reports and sheds light on the fundamental problems associated with mathematics education. The trends across the three years is summarized in Table 7.1

Table 7.1: Comparative Analysis of WAEC Chief Examiner's Report in General Mathematics (2023-2025)

COMPONENT	2023	2024	2025	PATTERN
Performance	Improved	Improved	Declined	Fluctuating
Strengths	Procedural	Procedural	Procedural	Consistent
Weaknesses	Word problems, statistics	Diagrams, formulas	Word problems, statistics	Persistent
Remedies	Practice-based	Practice-based	Practice-based	Repetitive

Table 7.1 provides a comparative analysis of candidates' performance, areas of strength and weakness, as well as proposed solutions for candidates taking the WAEC General Mathematics examination between 2023 and 2025. It can be observed that while the quality

of the test was similar, candidates' performance was inconsistent, showing improvement in 2023 and 2024 but declining in 2025.

It is evident from Table 7.1 that candidates showed strength in procedural questions, like solving algebraic equations and answering graph questions. Candidates showed consistent weakness in interpreting word problems, representing diagrams, and applying mathematical concepts, suggesting a lack of conceptual understanding.

It can also be observed that the same remedial measures have been proposed in all three years, pointing towards their ineffectiveness in addressing candidates' weaknesses in class.

7.1 Standard of the Papers (2023–2025)

For the period of three years being reviewed, it emerged from the reports made by the Chief Examiners that the quality of the General Mathematics examinations was adequate and comparable to that of past examinations. This means that variations in students' performances could not have been caused by differences in examination quality or examination format. On the contrary, this implies that there was a consistent quality of examination that had consistent cognitive load as expected of the curriculum content.

The inference drawn from this point is that students' performances may be affected more by instruction than examination standards.

7.2 Candidates' Performance (2023–2025)

Analysis of candidate performances for the three years in comparison indicates that there is an up-and-down trend with regards to their performance. There were notable improvements in performance noted in 2023 and 2024 compared to what was witnessed in the previous years, showing that there were efforts towards improvement and stabilization in the teaching and learning of mathematics. But in 2025, there was a decline in performance despite the same levels of consistency in examinations being upheld. This demonstrates that the improvements made in the past few years have not been consistent, possibly due to lack of long-term solutions in teaching.

It shows how fragile gains in the teaching and learning of mathematics can be, and the effect of various factors like classroom environment and preparation by teachers.

7.3 Comparative Analysis of Candidates' Strengths (2023–2025)

Over the period of three years, the students showed proficiency in fundamentals and procedures of mathematics. In the year 2023, some of the areas where the students did exceptionally well include simple interest, sets, graph theory, transformations, and a few other complex areas under Elective Mathematics. The same was evident in the year 2024 when strengths were shown in areas like proportions, logarithms, trigonometric functions, sequences, vectors, and partial fractions. In the year 2025, the students demonstrated competence in topics like mensuration, midpoint theorem, algebraic manipulation, and integration.

The repetition of similar strengths over the years clearly reveals that the students have been competent in computational and procedural areas of mathematics. The above-highlighted areas are mostly related to direct formula usage and standard procedures. They mostly involve routine computational skills and hence do not require much thinking. In this case, the

repetition of the strengths over the three years shows that the teaching of mathematics in schools is dominated by low-level cognitive abilities.

7.4 Comparative Analysis of Candidates' Weaknesses (2023–2025)

One of the findings from the research paper is that the same weaknesses persist for all three years, especially in higher-order thinking skills and problem solving. The weakness in 2023 was in interpretation of word problems, statistical skills such as standard deviation, and graphing such as histograms and cumulative frequency graphs. In 2024, some weaknesses were noted in diagram representation, conversion of diagrams into mathematical equations, misinterpretation of formulas, and application of mathematics in real-life situations.

This weakness persisted and was more intense in 2025 where students found it difficult to convert word problems into mathematical equations, construction of cumulative frequency tables, and solving problems based on applications. There were weaknesses also in statistics, indices, and vector mathematics. This shows that these weaknesses did not occur randomly; they were persistent and fundamental to the learning and teaching processes.

It is clear that students have been unable to develop their ability to interpret word problems as mathematical problems. Students are unable to translate word problems into mathematical equations, which is a key concept in any mathematics lesson. It also shows that students have insufficient skills to represent and interpret diagrams and graphs.

7.5 Comparative Analysis of Suggested Remedies (2023–2025)

A review of the proposed remedies across the three years shows a high degree of consistency in terms of the recommendations made by the Chief Examiners. In 2023, teachers were advised to focus on problem-solving practice, topics that required application such as trigonometry and calculus, and the use of past examinations questions. In 2024, similar recommendations were made in the sense that there was an encouragement for students to pay close attention to questions, practice more, and work on their diagrams. In 2025, the recommendations were still almost the same where emphasis was put on increased practice, understanding of what was required in questions, and diagrams.

The fact that the same recommendations kept repeating over several years is an indication that the problems have not been addressed sufficiently in class. This raises serious concerns regarding the adoption of the feedback provided in the Chief Examiner's Report by teachers. Although the report makes clear recommendations that will help in improving student performance, the fact that the same recommendation continues to appear in different years means that teachers have not taken advantage of the report to plan their instructions.

8.0 IMPLICATIONS FOR EFFECTIVE MATHEMATICS INSTRUCTION

The key issues noted during 2023 to 2025 reveal the major gap between the procedural understanding and conceptualization in mathematics.

i. Students manage to do quite well in the area of computation; however, when it comes to higher-order cognitive processes like comprehension, application, and reasoning, they encounter serious difficulties. It means that existing methods for teaching mathematics do not facilitate deep learning.
ii. The consistent lack of ability to interpret word problems mathematically calls for a reconsideration of current teaching approaches. Teachers should abandon their tendency

to employ lectures as a tool of instruction and shift towards learner-oriented approaches that encourage reasoning and problem solving.

iii. Furthermore, the recurring focus on diagramming and graphics shows that there are serious deficiencies in learners' visual literacy. Therefore, it becomes necessary to employ more visual representations in instruction.

9.0 SUGGESTIONS

The following suggestions are brought forward to improve the positive achievement and outcomes for Mathematics Instruction:

i. The adoption of teaching methods that emphasize comprehension and problem solving instead of rote memorization is recommended for teachers. Frequent implementation of formative assessments and error analysis will be effective in detecting and correcting misconceptions.

ii. Learning activities such as practicing previous WAEC questions and collaborative learning should be encouraged among students while schools adopt the incorporation of technology in mathematics education. Policy makers must provide support for professional development programs on pedagogical content knowledge.

iii. Curriculum developers need to ensure coherence between learning and assessment objectives.

10.0 CONCLUSION

This study has shown that while students demonstrate strengths in basic mathematical operations, significant challenges persist in higher-order thinking and application. The consistency of these weaknesses across 2023–2025 highlights the need for systemic changes in mathematics instruction.

Improving mathematics education requires a shift towards student-centered teaching, enhanced teacher capacity, and better alignment between curriculum, instruction, and assessment. The WAEC Chief Examiner’s Reports provide valuable insights that, if properly utilised, can significantly improve teaching practices and student outcomes.

Ultimately, strengthening mathematics instruction is essential for national development and for preparing students to thrive in a knowledge-driven global economy.

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APPENDIX A - WASSCE CHIEF EXAMINER'S REPORT 2023

THE WEST AFRICAN EXAMINATIONS COUNCIL
WEST AFRICAN SENIOR CERTIFICATE EXAMINATION (WASSCE) FOR SCHOOL CANDIDATES, 2023
CHIEF EXAMINER'S REPORTS

MATHEMATICS

(i) CANDIDATES' PERFORMANCE

The Chief Examiner for Mathematics (Core) and Mathematics (Elective) stated that candidates' performance was better compared to the previous year.

(ii) SUMMARY OF CANDIDATES' STRENGTHS

(a) Mathematics (Elective)

According to the Chief Examiner the candidates' strengths were evident in the following areas:

- solving problems on implicit differentiation;
- finding the equation of a curve given two sets in infinity of an exponential function;
- finding residuals from graphs;
- solving reading and milling production function graph;
- finding the equation of a circle;
- solving graphs on regression analysis;
- solving questions on transformations involving the operations: anticlockwise rotation through ninety degrees, translation, reflection and enlargement and finding the distance between two points.

(b) Mathematics (Core)

According to the Chief Examiner the candidates' strengths were observed in the following areas:

- solving problems on simple interest and appreciation;
- solving problems on sets;
- solving problems on linear graphs;
- solving problems on ratio, rate and proportion;
- simple problems relating to pie charts;
- solving problems on gradient, using line representative fraction;
- solving problems on regular shapes.

(iii) SUMMARY OF CANDIDATES' WEAKNESSES

Mathematics (Elective)

The Chief Examiner identified the candidates' deficiencies in the following areas:

i interpreting word problems in relations to limits;

ii understanding standard deviation and variance;
iii interpretation of a travel card as related to probability.
iv expressing of 2nd/3rd forms of sum and product of roots;
v ability to choose convenient scale in drawing histogram;
vi solving problems on integration;
vii ability to construct Cumulative Frequency Curve;
viii solving past questions on Trigonometry;
ix solving problems on the areas of sectors on bodies (3-dimensional).

(b) Mathematics (Core)

The Chief Examiner stated that candidates had challenges in the following areas:
i. translating word problems into mathematical equations; ii. drawing pie charts on bearing, trigonometry and congruence; iii. past questions on plane Geometry.

(c) SUGGESTED REMEDIES FOR CANDIDATES' WEAKNESSES

(a) Mathematics (Elective)

The Chief Examiner recommended that teachers should encourage students to:

i. solve more questions on applied calculus;
ii. solving past questions on applied calculus;
iii. solving word problems on integration;
iv. integration of $(2x + 3)^2$ and interpretation and generalizing;
v. computing probability on sum and product of roots;
vi. expressing of 2nd/3rd forms of sum and product of roots;
vii. solving problems on Integration;
viii. ability to construct Cumulative Frequency Curve;
ix. solving past questions on Trigonometry;
x. solving problems on Sine Curve;
xi. solving problems on the areas of sectors on bodies (3-dimensional).

(b) Mathematics (Core)

The Chief Examiner recommended that teachers should encourage students to solve more questions in these selected areas:

i. translating word problems into real-life experiences;
ii. drawing pie charts; line method of mappings;
iii. computing problems related to solving congruences;
iv. solving problems in Plane Geometry.

APPENCIX B - WASSCE CHIEF EXAMINER'S REPORT 2024

THE WEST AFRICAN EXAMINATIONS COUNCIL
ST AFRICAN SENIOR CERTIFICATE EXAMINATION (WASSCE) FOR SCHOOL CANDIDATES, 2024
CHIEF EXAMINER'S REPORTS

MATHEMATICS
STANDARD OF PAPER
The examiners said the level of the paper matched the previous year.

CANDIDATES' PERFORMANCE
Overall performance was better than the year before.

STRENGTHS
Core Mathematics:
- Good with proportions
- Clear graph reading
- Strong with logarithms
- Confident with trigonometry
- Good with problems involving parallel lines

Elective Mathematics:
- Strong with sequences and geometric progressions
- Good with circular measure
- Good with vectors
- Clear with partial fractions

(4) SUMMARY OF CANDIDATES' WEAKNESSES
(a) Mathematics (Core)
Candidates showed weaknesses in the following:
i. representing mathematical illustrations in a diagram;
ii. solving global mathematics related problems;
iii. translating diagrams into mathematical statements;
iv. solving problems on mensuration;
v. solving problems in business mathematics.

(b) Mathematics (Elective)
Candidates showed weaknesses in the following:
i. writing required angles in trigonometric equation in a given range;
ii. applying approximations in solving questions;
iii. wrong application of calculator instead of showing workings;

iv. use of wrong formula in solving questions;
v. sketching a force diagram;
vi. simplifying expression involving combination.

(5) SUGGESTED REMEDIES

(a) Candidates should be advised to read carefully and understand the demands of questions before attempting them.
(b) Candidates are required to solve more problems in these areas of weakness.
(c) Teachers must give more exercises especially in the area of sketching and representations in a diagram.

APPENCIX C - WASSCE CHIEF EXAMINER'S REPORT 2025

THE WEST AFRICAN EXAMINATIONS COUNCIL
EST AFRICAN SENIOR CERTIFICATE EXAMINATION (WASSCE) FOR SCHOOL CANDIDATES, 2025
CHIEF EXAMINER'S REPORTS

EMATICS

1. STANDARD OF PAPER

The Chief Examiners for Mathematics (Core) and Mathematics (Elective) reported that the standard of the papers compared favourably with that of the previous years.

2. PERFORMANCE OF CANDIDATES

The Chief Examiners for Mathematics (Core) and Mathematics (Elective) reported a decline in the performance of candidates compared to that of the previous year.

3. SUMMARY OF CANDIDATES' STRENGTHS

(a) Mathematics (Core)

Candidates' strengths were evident in the following areas:

i application of the midpoint concept to solve problems;
ii solving problems on mensuration;
iii solving simple problems on average speed;
iv finding distance of a line when given two points.

(b) Mathematics (Elective)

Candidates' strengths were evident in the following areas:

i solving binary operation problems;
ii solving problems on polynomials;
iii solving problems on partial fractions;
iv solving questions on surd;
v solving problems in integration.

4. SUMMARY OF CANDIDATES' WEAKNESSES

(a) Mathematics (Core)

Candidates showed weaknesses in the following areas:

i representing mathematical information in a diagram;
ii solving global mathematics related problems;
iii constructing cumulative frequency table from given data distribution;
iv making deductions from real life problems;
v solving application problems in Simple Interest;
vi translating word problems into mathematical expressions.

(b) Mathematics (Elective)

Candidates' weaknesses were observed in the following areas:

i solving combination equation problems;

ii simplifying a given indices expression;
iii solving problems involving standard deviation;
iv solving problems on vectors.

5. SUGGESTED REMEDIES TO CANDIDATES' WEAKNESSES

a. Candidates should be advised to read carefully and understand the demands of the questions before attempting them.
b. Candidates should solve more problems involving stated topics they had difficulty with.
c. Teachers must give more exercises especially in the area of sketching and representations in a diagram.