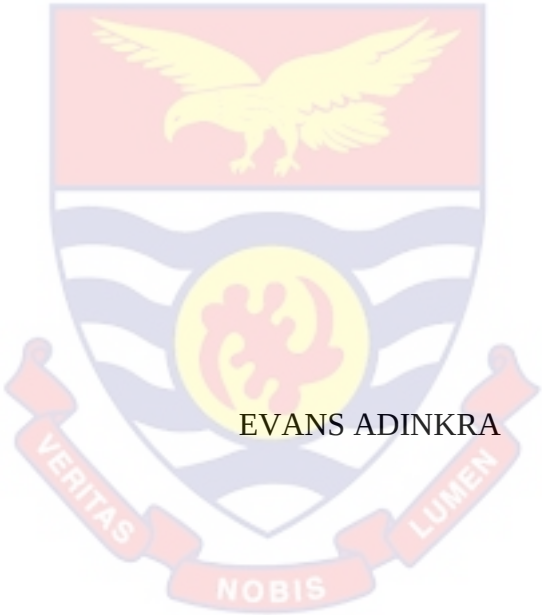
UNIVERSITY OF CAPE COAST

SENIOR HIGH SCHOOL MATHEMATICS TEACHERS' PERCEPTION AND PRACTICE OF SCHOOL-BASED ASSESSMENT



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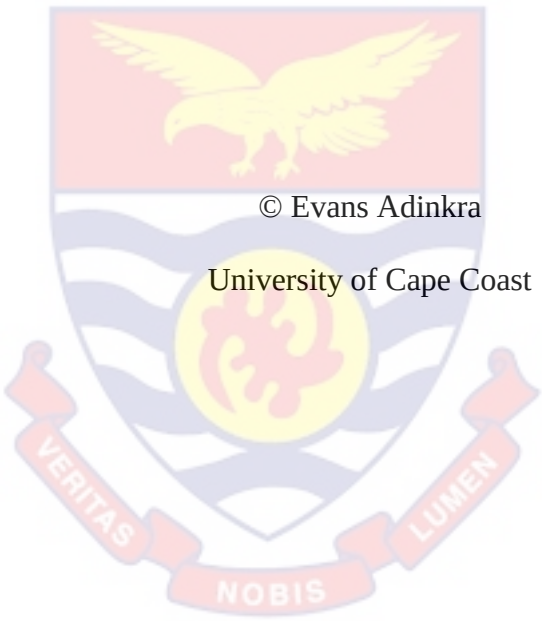

UNIVERSITY OF CAPE COAST

SENIOR HIGH SCHOOL MATHEMATICS TEACHERS' PERCEPTION AND PRACTICE OF SCHOOL-BASED ASSESSMENT

BY

EVANS ADINKRA

Thesis submitted to the Department of Mathematics and ICT Education of the Faculty of Science and Technology Education, College of Education Studies, University of Cape Coast, in partial fulfilment of the requirement for the award of Master of Philosophy degree in Mathematics Education

NOVEMBER 2023

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature …… Date ……

Name: Evans Adinkra

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Supervisor's Signature …… Date…….

Name: Prof. Ernest Kofi Davis

ABSTRACT

This study examined Senior High School (SHS) Mathematics teachers' perception and practice of school-based assessment in selected districts in the Bono Region. The study employed mixed methods approach which adopted the sequential explanatory design. The census method was employed to involve 117 SHS mathematics teachers. A questionnaire and interview guide were used as the main data collection instruments. Descriptive statistics (frequencies and percentages, mean and standard deviation) and inferential statistics (Independent sample t-test and One-Way ANOVA) statistics were used to analyse the quantitative data while thematic analysis was used to analyse the qualitative data that were obtained from the interviews. The study revealed that SHS mathematics teachers had positive perception about school-based assessment and they practiced school-based assessment. The results from the study showed that mathematics teachers use SBA results in: remedial teaching, and designing learning activities. It was found that mathematics teachers gave the required number of group exercise, midterm test, and end of term examination in the academic year, however majority of the mathematics teachers did not give the required number project work in a year. Finally, gender and teaching experience were found to have no effect on teachers' perception of school-based assessment. Based on the findings of the study, it was recommended that Ghana Education Service should offer targeted professional development opportunities for mathematics teachers to deepen their understanding of SBA methodologies and effective strategies for its integration.

KEY WORDS

Mathematics

Perception

Practice

School-Based Assessment

Senior High School Teachers

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DEDICATION

To my beloved parents

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LIST OF ABBREVIATIONS

SBA	School-Based Assessment
CRDD	Curriculum Research and Development Division
SHS	Senior High School
CA	Continuous Assessment
WAEC	West African Examination Council
NaCCA	National Council for Curriculum and Assessment
SCT	Social Cognitive Theory
CAT	Class Assessment Task
BECE	Basic Education Certificate Examination
GES	Ghana Education Service
STEM	Science, Technology, Engineering and Mathematics
ICT	Information Communication and Technology

CHAPTER ONE

INTRODUCTION

The study aimed to explore how Senior High School mathematics teachers perceive and practice School-Based Assessment (SBA) in their teaching. Teachers' assessment practices are influenced by their perceptions of assessment (Davis & Gbormittah, 2023). Assessment plays a crucial role in informing decisions by administrators, management, and teachers regarding student performance (Ghazali, 2015; Ghazali, 2016). SBA is an integrated assessment system conducted by subject teachers according to established guidelines, encompassing planning, administration, scoring, and reporting. It covers assessment for learning, assessment as learning, and assessment of learning, evaluating teaching and learning processes and outcomes across cognitive, affective, and psychomotor domains (Aduloju, Adikwu & Agi, 2016; Wilson, & Narasuman, 2020).

The introduction of SBA in mathematics in Ghana has influenced the classroom dynamic, with the SBA weighting increasing to 50% of total school score from the previous 30% in Continuous Assessment systems at basic schools. The study's outcomes hold value for stakeholders, offering insights into teachers' perceptions and practices related to SBA in mathematics. Policymakers can leverage the findings of the study to advocate for the adoption of SBA guidelines, ensuring students' comprehensive development and alignment with societal needs (Awoniyi, 2016; Issaka, Hammond, Yeyie, & Argoh, 2020).

Background to the Study

Education is often regarded as a critically important public function on a global scale. According to Asare (2011), a well-established educational framework contributes to the advancement of society and the creation of skilled individuals, hence fostering a movement towards social transformation and economic prosperity. It is important to acknowledge the various roles of education. The primary aim of education is to foster the individual's ability to engage in critical thinking, problem-solving, and adaptability to the surrounding environment (CRDD 2011). This is achieved through the development of essential information, skills, and attitudes. These remarks suggest that education plays a major role in the progress and advancement of a nation. This likely explains why nations and parents globally allocate substantial financial and non-financial resources towards the education of their respective populations and children.

In order to fulfil the primary goal of education, it is imperative to recognise mathematics as the preeminent discipline. Mathematics holds significant recognition among students and various individuals involved in education and the development of a nation. The phenomenon is seen in both our proximate and distant surroundings. Mathematics can be characterised as a discipline concerned with the study of patterns, encompassing several elements such as problem-solving, the exploration of relationships, imaginative thinking, creativity, and the application of critical and logical reasoning (Awinyam, 2018). This elucidates the practicality of mathematics in our daily lives, as it is widely regarded as a tool for problem-solving. Mathematics serves as the fundamental underpinning for all academic

disciplines and potentially all occupational fields. Mathematics plays a crucial role as a fundamental tool in comprehending and implementing scientific principles and technical advancements. It serves as a necessary foundation for the essential progress in technology that every nation, including Ghana, aspires to achieve. The field of mathematics has exerted a significant impact on human existence, to the extent that it has now become a matter of daily relevance for individuals from all walks of life. The significance of mathematics is of such magnitude that it is considered an essential subject in the majority of educational levels in Ghana and various other regions globally.

According to Seudib, Kwasi, and Dassah (2020), mathematics is considered to be the fundamental and essential tool for the progress of any given nation. According to Adetunde (2009), mathematics serves as a fundamental instrument for the advancement of science and technology. The affluent nations of the globe have achieved their prosperity through the progress they have made in the field of mathematics, which serves as a crucial link between science and technology. This suggests that the provision of mathematics education has a crucial role in fostering scientific and technological advancements within a culture. Consequently, it would be appropriate for interest groups, such as researchers, to allocate additional resources towards enhancing the ease and significance of mathematics instruction and acquisition.

After acknowledging the significance of mathematics in the growth of individuals and nations, it is logical to conclude that a country neglecting the education of its population in mathematics jeopardises its progress and development. In Ghana, a commendable emphasis on the relevance of

mathematics in the field of education can be noticed. Mathematics, like other academic disciplines, plays a key role in the attainment of our nation's hopes and objectives. The primary justification for the mathematics curriculum in Ghana centres around the objective of equipping all Ghanaian youth with the necessary mathematical competencies, perspectives, dispositions, and principles that are essential for achieving success in their respective professional pursuits and everyday existence (Ntow, 2022). According to the mathematics teaching syllabus, students must be instructed in the application of their knowledge, the cultivation of analytical thinking abilities, the formulation of plans, the generation of innovative solutions, and the resolution of everyday mathematical situations (CRDD, 2010).

At the foundational level in Ghana, the basic objective of mathematics education is to cultivate and enhance the numerical proficiency of students (CRDD, 2010). The mathematics syllabus is designed with the objective of ensuring an adequate curriculum, which is achieved by a careful consideration of three interconnected components: content, instruction, and assessment. This implies that the content, instruction, and assessment are interdependent and collaboratively contribute to achieving the intended goal. The failure to function effectively by one individual will have detrimental consequences for the entire system. This assessment serves as a means of evaluating the degree to which the objectives of mathematics have been realised. Assessment aids as a reliable strategy for determining the effectiveness of instruction and the extent to which content has been successfully taught and acquired. The interconnectedness of education and development implies that assessment is an important element of ensuring quality education.

The process of assessment is necessary in facilitating the effectiveness and efficiency of learners and teachers. Assessment is a fundamental component in enhancing educational practices and procedures. Assessment refers to the process of obtaining diverse information in order to cultivate proficient and capable educators and students. The absence of assessment poses challenges in discerning the students' accomplishments or lack thereof in their educational pursuits. In accordance with Alemayehu's (2022) perspective, assessment is regarded as a systematic procedure involving the gathering, interpretation, and synthesis of data. Its purpose is to facilitate teachers' comprehension of their pupils, enable effective instructional planning and monitoring, and foster a favourable classroom environment. Assessment is important in facilitating the provision of necessary educational support to individuals, evaluating the efficacy of various instructional approaches, and ensuring the efficient allocation of educational resources. Assessment inherently reflects the achievements and shortcomings of educators, students, educational institutions, and educational policies or programmes.

Also, assessment contributes to the facilitation of effective instruction and acquisition of knowledge. Accurate assessment data is essential for making well-informed judgements pertaining to students' learning capacities, proper placement, and academic accomplishments. According to Sadler (2009), assessment involves evaluating students' entire performance and forming inferences about their educational progress, encompassing factors such as the quality of their work and their achievements in various activities like tests, projects, reports, and examinations. Assessment serves as a means to evaluate educational outcomes, so fostering the enhancement of teaching and

learning practises and facilitating broader advancements in school performance. This statement suggests that the fundamental objective of assessment is to facilitate learning and enhance student achievement, rather than only evaluating it. Assessment plays a crucial role in enabling teachers to gauge the depth of comprehension and skill level exhibited by pupils (Mensah, Bassaw, Bordoh & Eshun, 2014). The efficacy of an assessment is contingent upon the proficient identification and implementation of suitable methodologies, as well as the accurate interpretation of students' achievements. Therefore, assessment processes are relevant in evaluating the appropriateness and efficacy of the curriculum, instruction, and teaching methodology.

Assessment can be employed for either formative or summative objectives in a generic sense. Formative assessment is a pedagogical tool that aims to assist educators in making informed instructional and learning decision throughout the teaching process. The system offers ongoing information and feedback to both the teacher and student regarding their individual performances in the realm of teaching and learning. The data is subsequently utilised to enhance the calibre of educational guidance. Formative assessment encompasses a range of evaluative methods, including portfolios, checklists, projects, quizzes, short examinations, as well as individuals and group presentations, which serve to discern the aptitudes and deficiencies of students (Ahenkora, 2019). The findings derived from the formative assessment are analysed and employed in the development of the subsequent instructional session.

The summative assessment type entails a comprehensive evaluation or determination of the value of an educational programme. The aforementioned approach assesses the efficacy of various programmes, objectives for enhancing educational institutions, the congruence between curriculum and desired outcomes, as well as the appropriateness of student placement in particular programmes (Mogboh & Okoye, 2019). Summative assessments, typically administered at the culmination of a subject or programme, yield valuable data that can inform the teaching and learning journey.

Continuous assessment (CA) refers to an evaluative practise characterised by the continuous gathering and interpretation of information pertaining to student learning. This continual procedure serves as a basis for making informed judgements regarding instructional content and assessing the extent to which students have acquired knowledge and skills (Sangoniyi & Gbolagade, 2022). Continuous assessment facilitates regular engagement between students and teachers in order to ascertain the strengths and weaknesses of learners, as well as to determine which students require additional review and remedial support. Moreover, the feedback provided through assessment enables students to concentrate on areas they are yet to master.

However, according to the 1993 WAEC Chief Examiners' report, it was observed that teachers exhibited a tendency towards greater leniency in the allocation of marks to their students. In the majority of situations, pupils exhibited higher scores in continuous assessment compared to their attained scores in the external test across all disciplines under investigation. Additionally, it was noted that the scores for continuous assessment (CA)

tended to be grouped closely together, suggesting that the teacher made a deliberate attempt to ensure that each student achieved a score closer to the maximum possible mark. The aforementioned findings have prompted questions regarding the reliability of the CA, which subsequently influenced the decision to decrease the weightage of the CA from forty percent to thirty percent (Ahenkora, 2019). Moreover, the practise of continuous assessment has garnered criticism due to its perceived impact on teachers' workload and its narrow emphasis on testing frequency, as highlighted by Morales, Salmeron, Maldonado, Masegosa, and Rumi (2022). In order to alleviate the burden on teachers and establish consistency in the methods and protocols employed to accomplish this objective, the classroom assessment known as Continuous Assessment (CA) was renamed School-Based Assessment (SBA).

The implementation of school-based assessment was initiated as a component of the educational reforms that commenced in September 2008. As stated by the Curriculum Research Development Division (2007), the purpose of the SBA system is to furnish educational institutions with an internal assessment framework that facilitates the attainment of the following objectives:

- ✓ Standardize the practice of internal school-based assessment in all schools in the country.
- ✓ Provide teachers with guidelines for constructing items or questions and other assessment tasks.
- ✓ Introduce standards of achievement in each subject area and each class of the school system.
- ✓ Guide in marking and grading of tests and other assessment tasks.

- ✓ Introduce a system of moderation that will ensure the accuracy and reliability of teacher's marks.
- ✓ Provide teachers with advice on how to conduct remedial instructions on difficult areas of the syllabus to improve students' performance (CRDD, 2007).

The implementation of the SBA has resulted in several modifications in the basic schools in the realm of classroom assessment. In the previous assessment system, the weightage assigned to the entire class score was 30%. However, in the current system known as the SBA, the weightage allocated to the overall class score has been increased to 50%. At SHS, in the CA system, the evaluation process incorporated class exercises and homework as components of assessment, whereas these elements were not included in the SBA.

SBA is seen as crucial for holistic student development, fostering competencies and higher-order skills relevant to 21st-century challenges (Branden, 2012). Its objectives include assessing potential, monitoring development, and meaningful reporting on individual learning (Ghazali, 2016). SBA encourages active involvement through teacher feedback, self-assessment, and peer-assessment, contributing to learner autonomy and independent learning (Cheng, Andrews & Yu, 2011; Varatharaj, 2018). The system shifts away from relying solely on high-stakes examinations to promoting a pressure-free assessment environment that enhances students' confidence and performance (Wilson, Piccoli, Hargreaves, Ng & Sahlberg, 2021).

Statement of the Problem

The classroom assessment practices in Ghana predominantly revolve around conventional testing methods, which are employed at various levels ranging from classroom to national (Davis & Gbormittah, 2023). There is a gap between what students learn in school and what they face out of school (Quansah & Asamoah, 2019). Quansah and Asamoah asserted that assessment in schools does not help students to apply what they learn in school to what they face in real life. Thus, their assessment failed to examine practical things experienced out of school and in the world of work. Gulikers, Bastiaens, and Kirschnner (2006) argued that the issue might be linked to a lack of alignment between school standards and the expectations of the professional atmosphere. Hence, a discrepancy exists between educational standards and the practical realm of employment. In the realm of mathematics education, Davis and Chaiklin (2015) posited that there has been a tendency to view school mathematics and out-of-school mathematics as dichotomous or incompatible entities. This problem exists due to teachers' failure to incorporate students' background and their knowledge of mathematics outside of the classroom into instructional practices through assessment (Davis, 2010). In a study conducted by Quansah, Amoako, and Ankomah (2019), it was found that there is a lack of proficiency among teachers in some Senior High Schools (SHS) in Ghana when it comes to test construction abilities. Consequently, any deficiencies or shortcomings in the assessment methods can significantly influence students' learning outcomes. Simply because students turn to learn what they know that they will be assessed on.

Furthermore, assessment has been subjected to criticism at the Senior High School level, as scholars such as Prestidge and Williams-Glaser (2000) have pointed out the perceived lack of alignment between the skills taught in the classroom and the practical challenges that students may experience in the real world. In several educational institutions inside Ghana, it has been observed that teachers possess less proficiency levels and exhibit substandard assessment methodologies, particularly in the areas of test development and evaluation. According to Sofo, Ocansey, Nabie, and Asola (2013), there is a limited use of evaluation methods that facilitate peer or self-assessment among Physical Education (P.E) teachers in SHS in Ghana. In their study, Sofo et al. (2013) found that P.E teachers in SHS in Ghana were not utilising diverse assessment strategies. Also, Kankam, Bordoh, Eshun, Bassaw, and Korang (2014) found that the assessment methods employed by Social Studies teachers at SHS in Ghana were incongruent with the post-school activities that students are expected to participate in.

The assessment practice employed by teachers within the classroom setting are influenced by a number of circumstances. One of the things that can influence assessment practice is the teacher's perception of it (Brown, 2004). The assessment practices of teachers are influenced by their beliefs of assessment (Aliningish & Sofwan, 2015; Susuwele-Banda, 2005). This suggests that teachers who hold a favourable perspective of school-based assessment incorporate it into their instructional and learning practises.

According to Chester and Quilter (1998), it is important to examine teachers' perceptions and practices of assessment as it provides insights into the utilisation and potential misuse of various assessment methods, hence

offering opportunities for enhancing the policy and practice. The aforementioned factors underscore the importance of conducting a research study on teachers' perception about school-based assessment in order to enhance its implementation in the teaching of mathematics. According to a study conducted by Somuah, Bentil, and Nkansah (2020), many factors such as gender, rank, age, academic degree, and years of teaching experience were found to have an impact on teachers' perception of classroom assessment.

Some studies have reported on teachers' perception on assessment. For example, Attom (2017) employed a quantitative research approach to investigate the perceptions of assessment and related practices among SHS teachers in the Central region. Also, Kankam et al. (2014) examined the perception of social studies teachers on assessment in the Central Region. Davis and Gbormittah, (2023) conducted a study on SHS mathematics teachers' perception and use of Continuous Assessment (CA) in Central Region of Ghana. The study revealed that teachers with positive perception towards CA, practice it. Awoniyi (2016), conducted a study on SHS mathematics understanding and use of SBA in Central Region of Ghana. The study revealed that mathematics teachers do not understand and do not practice SBA.

In their respective studies, Adediwura (2012) and Nworgu and Ellah (2015) examined the perceptions of teachers regarding school-based assessment. The findings of these studies indicated that teachers hold a negative perception towards school-based assessment. Specifically, teachers expressed concerns that school-based assessment practices impede the pace of instruction, pose challenges in implementation, lack a clear scope, and require

significant time investment. Furthermore, it was uncovered that the teachers lacked comprehensive understanding of the key principles and norms pertaining to school-based assessment practices. However, previous studies conducted by Okyere and Larbi (2019), Imasuen and Iyamu (2021) as well as Awinyam (2018) have indicated that teachers held a favourable perception towards assessment. The study conducted by Asare (2020) in the Central Region in Ghana revealed that basic school teachers hold positive perception of the usefulness of formative assessment, a vital component of SBA in the classroom. The existing body of research on the evaluation of SBA has only focused on specific characteristics of the SBA thus providing an incomplete assessment of the system's performance.

There exists a scarcity of research conducted in Ghana pertaining to the SHS mathematics teachers' perceptions and practices of school-based assessment. Furthermore, the researcher's anecdotal investigation revealed that a subset of mathematics teachers in the Bono region do not implement school-based assessment. There is a noticeable absence of research examining the Senior High School mathematics teachers' perceptions and practices of school-based assessment and the assessment methodologies employed to evaluate student learning outcomes in the Bono Region. Hence, this study aims to investigate the perceptions and practics of SBA among Senior High Schools mathematics teachers in the selected districts in Bono Region.

Purpose of the Study

The purpose of this study was to investigate public Senior High School mathematics teachers' perception and practice of school-based assessment. Specifically, the study is intended to:

1. Examine the mathematics teachers' perceptions of school-based assessment.
2. Explore the extent to which the mathematics teachers practice school-based assessment.
3. Ascertain the kinds of school-based assessment tasks that Senior High School mathematics teachers use to assess their students' learning outcomes.
4. Explore how mathematics teachers put students' assessment score to use
5. Investigate the challenges Senior High School mathematics teachers encounter in the practice of school-based assessment.
6. Determine whether there is any statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their gender.
7. Ascertain whether there is any statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience.

Research Questions

The following research questions were posed to guide the study:

1. What are the mathematics teachers' perceptions of school-based assessment?
2. To what extent do mathematics teachers practice school-based assessment?
3. What kinds of school-based assessment tasks do mathematics teachers use to assess their students' learning outcomes?

4. How do mathematics teachers put students' school-based assessment scores to use?
5. What challenges do mathematics teachers encounter in the practice of school-based assessment?

Research Hypotheses

The study tested the following research hypotheses:

1. H_0: There is no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on sex.
2. H_0: There is no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience.

Significance of the Study

The study's findings would yield insights into the level of expertise that mathematics teachers possess regarding school-based assessment. This knowledge could potentially enhance assessment practices inside senior high schools, particularly in the realm of mathematics instruction. The findings would provide valuable insights for the National Council for Curriculum and Assessment (NaCCA) into the mathematics teachers' implementation of assessment practices as outlined in the curriculum. Additionally, the results of this study would provide a valuable resource for teachers in SHS, as well as the Assessment Committee of SHS, in their endeavour to comprehend the utilisation of assessment for the purpose of facilitating the teaching and learning of mathematics in senior high schools.

The findings of this research would offer valuable knowledge to individuals involved in curriculum development, education, and teaching, with regards to the obstacles that hinder the successful utilisation of SBA for the purpose of implementing suitable interventions. This study holds significance for researchers who are interested in exploring the influence of mathematics teachers' school-based assessment practises on students' mathematical achievement.

Delimitation

The scope of the study was restricted to exclusively including second cycle educational institutions, specifically public senior high schools (SHS), within the Bono Region of Ghana. Furthermore, the study was restricted exclusively to teachers specialising in the field of mathematics. The scope of the study was limited to the examination of school-based assessment. Moreover, the study focused only on the examination of perception and practices related to school-based assessment, as well as the challenges associated with this form of assessment. Additionally, the research explored the various task employed in school-based assessment, as well as the utilisation of assessment results.

Limitations

The current study focused on only SHS mathematics teachers in selected districts of the Bono Region; hence, the findings of the study may not reflect the situation in all SHS mathematics teachers in Ghana.

Definition of Key Terms

The following concepts have been defined as used in the study:

Assessment: A process of gathering evidence of what a student can do and provide feedback on a student's learning to encourage further development.

School-based assessment: is assessment organized by the school in which the assessment guidelines involve three assessment and a project work will be conducted in a term, making a total of twelve assessments for the year. The assessment for a term will comprise group exercise, midterm test, a project work, and end of term examination.

Perception: Views or opinions held by an individual resulting from experience and external factors acting on the individual.

Organisation of the Study

The research is structured into five distinct chapters. Chapter one encompasses an introductory section that provides an overview of the research endeavour. This section includes the background of the study, the statement of the problem, the goal of the investigation, and the objectives of the study. The following sections provide a description of the research questions, the significance of the study, the delimitations and limitations, the definition of words relevant to the investigation, and the organisation of the study. Chapter two focused on conducting a comprehensive examination of pertinent literature linked to the study. This involved examining a wide range of published and unpublished sources, such as books, journals, newspapers, online resources, and other relevant materials. The third chapter of the thesis focused on the research methodologies employed in the investigation. This chapter encompasses various components, such as the research design, study area, population, sample and sampling procedure, data collection instruments, data collection procedure, data processing and analysis strategy. Chapter Four

of the research report centered on the findings and subsequent analyses derived from the investigation. Chapter Five of the research paper encompassed a comprehensive overview of the study, including a review of the findings, the conclusions derived from the analysis, recommendations based on the results, and proposals for future research endeavours.

CHAPTER TWO

LITERATURE REVIEW

The chapter examined studies completed by other researchers in the field, which are deemed relevant to the present study. The literature review enables a comparison between the findings of this study and other relevant investigations, serving as a foundation for validating previous conclusions. The chapter is divided into three distinct sections. The components of this study encompass a theoretical review, a conceptual review, and an empirical evaluation.

Theoretical Review

Social Cognitive Theory

The study employed Social Cognitive Theory. Albert Bandura propounded the Social Cognitive Theory in 1986. The Social Cognitive Theory (SCT) has help gain insights into the intrapersonal attributes and environment factors that generate change in human behavior. While developing the SCT, Bandura (1997) acknowledged that vicarious experience and observation play a significant role in human behavior and learning. Parajes (2002) reported that, according to Bandura, people are proactive, self-regulatory, and self-reflective entities, as opposed to merely reactive organisms responding to external factors. He considered human development to be the outcome of complex interactions of personal, behavioural, and environmental factors. Thus, the results of a person's behaviour inform and alter their intrapersonal and environmental factors, adjusting and informing subsequent behaviour. The resulting *reciprocal determinism* is hinged on the premise that; intrapersonal factors in the form of affective, biological, and

cognitive events; human behaviour and environmental factor create interconnections that to *triadic reciprocality.*

With the proliferation of SBA practice within schools (environment), intrapersonal factors have gained much attention as influential in teachers' quest to practice SBA (behavior). In the phase of SBA practice, environmental factors have a role to play. Nonetheless, teachers' perception of assessment influenced their practice of assessment (Davis & Gbormitha, 2023). This assertion presupposes that teachers' intrapersonal factors, such as teachers' perception play a decisive role in determining teachers practice of SBA in teaching mathematics.

In this study, teachers' perception of SBA was considered as the intrapersonal factor that influence the use of SBA guidelines (behaviour). The study employed the Social Cognitive Theory with greater emphasis on how intrapersonal factor influence behaviour to examine mathematics teachers' practice of SBA.

Conceptual Review

Assessment practices refer to the methods and techniques used to measure and evaluate the knowledge, skills, abilities, or performance of students. These practices encompass a wide range of tools and approaches, including tests, exams, projects, assignments, and group work. Assessment practices are essential in education to gauge learning progress, identify areas for improvement, and inform instructional decisions.

Perception of assessment pertains to how individuals, such as teachers or students, view and interpret the assessment process. It includes their beliefs, attitudes, and understanding of the purpose and value of assessment. Positive

perceptions of assessment often lead to constructive engagement and improvement, while negative perceptions can hinder the effectiveness of the assessment process.

School-based assessment (SBA) is an approach to assessment that takes place within the school or educational institution itself, as opposed to relying solely on external standardised tests. SBA typically involve assessment of coursework, projects, presentations, and teacher-created tests. The emphasis is on assessing both students' knowledge, skills and competencies that can assessed in time-limited paper and pencil tests and those which cannot be easily assessed in such tests within the school's curriculum.

The practice of school-based assessment refers to the implementation of assessment methods and strategies within the school or classroom setting. This includes how teachers design and administer assessments, evaluate student performance, provide feedback, and use assessment results to inform instruction. Effective practices of school-based assessment aim to support student learning and provide a comprehensive view of their progress and achievements.

Assessment Practices

Assessment practises and processes are distinct in nature, as the former pertains to particular actions undertaken, while the latter involves a broader range of activities. According to Scott, Webber, Lupart, Aitken, and Scott (2014), it is imperative that assessment methods possess accuracy and congruence with the intended purpose and contextual factors. Additionally, scoring processes should be suitable, the interpretation of results should be precise, and the communication of findings should be unambiguous. Scott et

al. conducted a study that focused on assessments through the use of student questionnaires and interviews. The researchers discovered instances of fairness and equality within these exams and provided recommendations for enhancing instructors' professional competencies in conducting assessments. The writers additionally put forth the notion that in order to attain optimal outcomes, it is imperative to possess knowledge and comprehension of student variety. Furthermore, they advocate for ongoing professional development throughout teachers' professional lives.

Scott et al. (2014) argue that it is imperative to advocate for the promotion of equitable assessment practises across all levels. The proponents advocated for the principles of fairness, non-discrimination, and alignment of assessments with educational policies and practises. They urged the entire school community to actively pursue fairness and equity. According to Klenowski (2013), the notion of fairness in assessment encompasses providing students with equitable opportunity to exhibit their knowledge and skills, while also acknowledging the influence of the social environment. According to Alm and Colnerud (2015), Brookhart (2015), and Scott et al. (2014), ensuring equal opportunities for all students to showcase their abilities in equitable conditions is crucial for promoting fairness and fostering students' perceptions of fairness. Furthermore, the authors proposed the inclusion of resource availability and accessibility as crucial factors to be considered alongside the potential outcomes of assessments. In a previous study on student impressions of assessments, McMillan and Workman (1988) (as referenced by Alkharusi, 2015) identified a prevailing trend among teachers to personalise exams, resulting in a range of diverse and inconsistent approaches.

Perceptions of Assessment

Perception refers to the cognitive process by which an individual reacts to and interprets sensory stimuli or impressions that they detect. This study examines the perspectives of mathematics teachers regarding school-based assessment.

In their study, Dayal and Lingham (2015) examined the varying conceptual understandings and views of assessment among teachers. The spectrum of assessments discussed encompassed several aspects, including their potential to enhance teaching, learning, and accountability for both students and schools, as well as contrasting perspectives that question the relevance of tests due to their perceived negative consequences. It is unequivocal that the attitudes of teachers have a significant impact on their instructional methods. In their inquiry on assessment, Dayal and Lingham conducted interviews with over seventy (70) Fijian teachers. Their findings revealed that a majority of teachers who perceived assessments as a learning tool held the belief that formative assessment positively impacted learning outcomes. This was attributed to the ability of formative assessment to empower students, enabling them to assume control over their learning process and derive significance from the comments provided. The validity and reliability of assessments have a significant impact on individuals' perceptions of them.

Alm and Colnerud (2015) conducted a study in which they noticed a sense of disappointment among teachers and students who held the belief that assessments were characterised by unfairness. The researchers explored the perspectives of teachers regarding inequitable grading practises, while the

students' beliefs regarding the fairness of assessments as an accurate evaluation of their academic performance were investigated through the utilisation of student questionnaires (Dhindsa, Omar, & Waldrip, 2007; Dorman & Knightley, 2006; Dorman, Waldrip, & Fisher, 2008).

School-Based Assessment (SBA)

According to CRDD (2010), students undergo assessment by their subject teachers, and the outcomes of these assessments are considered at the conclusion of each academic year. The school-based assessment system is a recent development in the field of assessment. It involves subject teachers conducting assessments in classrooms, following the assessment guidelines set by the school in terms of preparation, administration, scoring, and reporting (Veloo, Krishnasamy, Md-Ali, 2015). The integration of this approach is inherent in the pedagogical framework, signifying its ongoing and pervasive nature throughout the educational system. The assessment framework encompasses both formative assessment, also termed assessment for learning, and summative assessment, also termed assessment of learning. The assessment is used to evaluate both the instructional process and the outcomes of teaching and learning. The assessment is regarded as holistic as it encompasses the evaluation of multiple dimensions of children's development, including cognitive (intellectual), affective (emotional), and psychomotor (physical) domains. The primary aims of the School-Based Assessment (SBA) are to obtain a comprehensive assessment of an individual's capabilities, to oversee their progress and facilitate the enhancement of their potential, and to provide a substantive evaluation of their learning outcomes (Veloo, Krishnasamy, Md-Ali, 2015).

The School-Based assessment (SBA) is regarded as a viable alternative for assessment, serving as a potential substitute for traditional assessments that primarily prioritise public examinations. When examining the SBA specifically, its primary objective is to enrich the significance of assessment by prioritising students' learning progression over their grades (Che Noraini, Adlina, & Nurhidayah., 2013). In addition, this novel assessment approach employs Standards-referenced Assessment, which diverges from the conventional practise of comparing students' performance inside their classroom. Instead, students are evaluated based on their progress in learning, as measured against standard statements (CRDD, 2011). The promotion of active engagement in the learning process, encompassing teacher feedback, self-assessment, and peer-assessment abilities, is a key objective of the SBA approach (Cheng et al., 2011). Teachers must have a comprehensive understanding of feedback, which is a crucial component in the assessment for learning process. This is because well-targeted feedback has the potential to assist students in recognising the disparity between their present level of learning and the intended learning objective (Young & Giebenhaus, 2005). Likewise, these two talents serve as a means to bridge the disparity in student learning, since they both have a tendency to stimulate students' thinking and promote increased learning (Black & Wiliam, 1998).

School-Based Assessment in the Ghanaian School System

In the context of Ghana, the prevailing method of assessment within the education system is school-based assessment. According to Anamuah-Mensah (2006), the 2007 Education Reform in Ghana advocated for a significant decrease in the number of public examinations and tests

administered at the senior high and basic levels. This reform was scheduled to be implemented in September 2008. The purpose of this measure was to guarantee that teachers are provided with sufficient time to facilitate conceptual comprehension among students. According to the CRDD (2011), the School-Based Assessment (SBA) is a systematic approach used to gather regular data on students' learning progress. This information is then utilised to develop targeted improvement initiatives aimed at enhancing students' academic achievement. According to the CRDD (2011), the SBA offers a decreased quantity of tasks that are manageable for both teachers and students, effectively meeting the syllabus objectives and so improving the quality of education.

In Ghana, the SBA system is structured around six interconnected focal points, as outlined in the CRDD (Curriculum Research and Development Division) report of 2011. The school-based assessment will provide support to students in acquiring:

1. The development of thinking skills entails the cultivation of students' capacity to comprehend complex matters, generate novel ideas, and formulate innovative methods and solutions.
2. Problem-solving skills encompass the capacity for students to develop the aptitude to comprehend a given challenge, employing diverse perspectives and employing solutions that draw upon a synthesis of knowledge and methodologies derived from several disciplines.
3. Cooperative Learning: Students should possess the ability to collaborate with their peers in group settings to engage in project-based activities, hence facilitating the acquisition of knowledge.

4. Enhancing Numerical Proficiency: Develop enhanced proficiency in numerical operations to foster a deeper comprehension and use of mathematical processes in real-world scenarios.
5. The development of moral and emotional attributes is essential for children to cultivate a sense of justice in their interactions with others and foster a positive outlook on life.
6. Formal presentation skills: The topic of discussion pertains to formal presentation skills. One important skill is the capacity to deliver formal presentations in front of peers and effectively respond to questions. This study examines the various forms and administration timelines of school-based assessments in the educational system of Ghana. As stated by CRDD (2011), each term will consist of three assessments and a project, resulting in a cumulative total of twelve assessments for the academic year. The assessment components for a given term will consist of two tests, a group work, and a project. The assessments are commonly known as Class Assessment Tasks (CAT).

In Ghana, the primary methods of evaluating student performance since 1987 have been continuous assessments, end-of-term assessments, and semester examinations. According to Ogunniyi (as described in Etsey, 2012), continuous assessment is a formative evaluation method that aims to systematically determine the total progress made by students in terms of knowledge, attitude, and abilities following a specific set of learning experiences. The assessment of students' academic achievement encompasses their overall performance in the cognitive, affective, and psychomotor domains. This assessment is derived from scores obtained through a variety of

instruments and techniques, including tests, projects, and observations (Okonkwo, 2002). C. A. stands in contrast to the notion of a singular assessment or an evaluation solely based on an end-of-term examination (Alufohai & Akinlosotu, 2016; Amedahe, 2014).

Continuous assessment offers a comprehensive evaluation of a student's academic progress over an extended duration. The assessment tool evaluates the three fundamental domains of learning and mitigates students' apprehension and distress around potential academic shortcomings. According to Etsey (2012), this system offers continuous feedback, current documentation of students' development, and active engagement of both classroom educators and school administrators. According to Alemu (2013), continuous assessment encompasses the utilisation of diverse assessment tools to evaluate several facets of learning, extending beyond cognitive processes to encompass behaviours, personality traits, and manual dexterity. The author argued that the process spans a duration and commences with the educators' determination on the initial day of the academic year, culminating with the teachers and administrators making judgements regarding the learners' final grade and advancement. Regrettably, the anticipated impact of continuous evaluation on students' academic achievement has not been realised as a result of the way it was initially conceived (CRDD, 2011). Quansah (2005) has identified several inherent challenges associated with the operation of continuous assessment. These challenges include a reduction in teacher-pupil contact hours, a high level of stress experienced during test taking and marking, a lack of emphasis on project-based assessments, the use of

questions that are easily marked, a lack of uniformity in continuous assessment procedures across schools, and a lack of moderation.

Furthermore, Alemu (2013) conducted studies that revealed disparities in scores among schools, an excessive number of tests and grading, and an excessive focus on the cognitive domain while neglecting the emotive and psychomotor domains of behaviour as issues within the implementation of the continuous assessment system. The adoption of the school-based assessment technique in Ghana was driven by the challenges encountered in the continuous assessment system. The SBA method, which is a modified version of continuous assessment, was implemented by educational authorities as a means to rectify the shortcomings observed in the existing continuous assessment system. The SBA system encompasses the periodic collection of assessment data through various testing methods, integration of higher-order thinking skills into the assessment programme, provision of teacher support and remediation, reduction in the frequency of assessments and record-keeping, prioritisation of student-centered learning, and establishment of standardised SBA practises across schools (CRDD, 2011). According to the CRDD (2011, p. 2), the primary objective of the SBA is to:

1. guarantee that the grades attained by students in the Basic Education Certificate Examination (BECE) are determined by their performance in both the internal assessments conducted within the school and the external examination administered by the West Africa Examination Council (WAEC),

2. provide schools with the opportunity to comprehensively evaluate the performance of students by considering all facets of their education and training during their time in school,
3. demonstrate the proficiency of students' learning both within and beyond the school environment through the assessment of their marks achieved on their SBA.

The SBA provides students with the opportunity to get a comprehensive education. In the context of the SBA, traditional components of a teacher's instructional approach, such as class exercises, assignments, tests, and homework, are substituted with monthly class assessment tasks (CATs) and projects that can be completed alone or in groups. The implementation of the SBA system has resulted in a reduction of teachers' workload within the educational institutions in Ghana. According to CRDD (2011), the SBA comprises 12 assessments per year, as opposed to the 33 assessments included in continuous assessment. This shift results in a notable decrease of 64% in the workload of instructors.

Awoniyi (2016) posits that the assessment is conducted within educational institutions and evaluated by the students' respective instructors. According to Yates (2018), internal assessments possess inherent characteristics that make them suitable for both formative and summative evaluation purposes. This is due to their capacity to facilitate feedback and learning, while also enabling teachers to make conclusive assessments regarding students' knowledge and abilities at any given moment. Furthermore, it provides teachers with the opportunity to evaluate aptitudes

and understandings that are not assessable through external assessments (Yates, 2018).

The practise of school-based assessment is a policy-driven approach that has gained traction in various educational systems worldwide, such as Australia, New Zealand, Canada, the United Kingdom, the United States of America, and several Asian countries, including those in which it is implemented as a national educational policy. This includes developing nations like Ghana, Kenya, Liberia, Nigeria, and Zambia (Williamson, 2017). The global initiative is motivated by the objective of enhancing students' learning and academic performance in schools. This objective is pursued through the integration of assessment for learning and assessment of learning, as highlighted by Cheng, Andrews, and Yu (2011) and Looney (2011). Therefore, the objective is to evaluate both the process of learning and the resulting learning outcomes (CRDD, 2011; Md-Ali, Veloo, & Krishnasamy, 2015; Opara, Onyekuru, & Njoku, 2015; Yan, 2014). The assessment system implemented in schools is comprehensive in its approach, encompassing various dimensions of student learning. It is carried out by subject teachers and evaluates the cognitive, affective, and psychomotor aspects of students' development (Opara et al., 2015).

The implementation of the SBA method by teachers, when done correctly, has been shown to be highly effective in facilitating teaching and learning (Etsey, 2012). This approach encompasses several processes aimed at using information to enhance students' educational attainment and overall growth (Aduloju et al., 2016). This is achieved by increasing the instructional contact hours by decreasing the quantity of assessments that students are

required to complete and placing a greater emphasis on project-based assignments, which empower students to actively engage in their own educational process (CRDD, 2011).

Nugba (2012) and Veloo, Ramli, and Khalid (2016) have provided evidence suggesting that the incorporation of school-based assessment yields beneficial outcomes for both teachers' instructional practises and students' academic development. According to Grima (2003), the conventional method of evaluation is no longer adequate in meeting the educational and societal demands of the modern era. Consequently, numerous educational systems have included or replaced external assessments with the use of SBA as a component of their certification process. According to Darling-Hammond and McCloskey (2008), European and Asian countries have observed enhanced student learning outcomes over the last three decades as a consequence of implementing the SBA to foster higher-order thinking skills and prepare learners for real-life situations. In the African continent, nations like as Malawi have observed enhanced rates of achievement in fundamental reading and numeracy competencies subsequent to the adoption of the SBA approach. According to Mhishi, Mandoga, Tunjera, and Bhukuvhani (2012), the promotion of students to form one and five in Zimbabwe is determined based on the results of the SBA.

Nevertheless, despite the significant impact that the implementation of school-based assessment has on enhancing student learning outcomes, fostering higher-order cognitive abilities, and evaluating students comprehensively, research conducted worldwide consistently reveals that teachers possess insufficient knowledge and, consequently, struggle to

effectively implement SBA strategies within their instructional practises. A study conducted in Malaysia by Hamzah, Idris, Abdullah, and Muhammad (2015) found that a significant number of teachers lack proficiency in utilising SBA to evaluate their students' learning. Consequently, these teachers exhibit resistance towards adopting SBA as a valid assessment method. Furthermore, Lukman and Uwadiegwu (2012) and Omorogiuwa and Aibangee (2017) conducted studies that yielded comparable results, indicating that teachers encounter challenges while attempting to adopt SBA in their educational settings.

Empirical Review

The study conducted by Mansor, Vikaraman, Medina, and Alias (2019) centred on the management of school-based assessment, as well as the issues and potential solutions that arise in the context of educational practise in Malaysia. Data collection was conducted through focus group interviews with a sample size of twenty teachers. The findings of the study indicate that there are several obstacles associated with the implementation of SBA, namely the lack of administrative support, inadequate teacher preparedness, insufficient technical assistance, and inadequate professional support from the state education department. The study findings indicate that the use of SBA in teacher training and professional development initiatives is crucial.

Also, Majid (2011) conducted a study which indicated that teachers lack the capacity to effectively include school-based assessment inside their instructional practises. In Malaysia, it has been observed that the school-based assessment practises in the classroom are confronted with significant problems, namely the inadequate knowledge of teachers, insufficient

guidelines on SBA, and a lack of external monitoring (Malakolunthu & Hoon, 2010). According to Azleena (2007), teachers had challenges in adhering to the designated timeline for completing the School-Based Assessment (SBA) and verifying the assessment's validity. According to a study conducted by Talib, Naim, Ali, and Hassan (2014), it was observed that teachers exhibited insufficient understanding of the concept of SBA, leading to ineffective implementation of this approach within their instructional practises. The study conducted by Talib et al. (2014) did not yield statistically significant results on the observed differences among teachers with varying years of teaching experience. However, the study did reveal that teachers with more years of teaching experience achieved higher scores in the School-Based Assessment in terms of knowledge.

Veloo et al. (2016) conducted a study to investigate the assessment practises employed by English teachers in Malaysian Secondary Schools, focusing specifically on the practises of the SBA. A descriptive study design was employed, incorporating the use of both questionnaires and structured interviews. The study involved the administration of a Two-part Assessment Practises Inventory (API) to a sample of 49 English teachers in the region of Terengganu, Malaysia. Subsequently, a semi-structured interview was done with a subset of 15 teachers in order to gain a more comprehensive insight of their assessment practises. The findings of the study indicated that the implementation of SBA among English language instructors in Marang was of moderate proficiency. The authors additionally disclosed that classroom assessments administered by instructors were constrained in scope, primarily serving the purpose of fulfilling the SBA mandate rather than effectively

identifying kids' learning difficulties or informing instructional planning. The authors posited that the implementation of relevant assessments by teachers facilitates students' self-monitoring of their learning progress and simultaneously unveils their latent capabilities. Additionally, the research revealed disparities in the evaluation methodologies employed by educators who had received training in SBA compared to those who had not undergone such instruction. This implies that the inclusion of SBA courses had a discernible influence on the efficacy of SBA practise. The researchers reached a conclusion and provided a recommendation that teachers should undertake the requisite measures to enhance their understanding and proficiency in assessment, particularly in the context of school-based assessment.

Adediwura (2012) conducted a study in Nigeria to examine the perceptions of teachers regarding school-based assessment in secondary schools. The study utilised a descriptive survey design. Responses were obtained from a sample of 540 instructors in 36 secondary schools through the utilisation of a questionnaire. The findings of the study indicated that a majority of the teachers lacked sufficient preparation to effectively administer the SBA. Additionally, a study revealed that teachers held a pessimistic viewpoint regarding the impact of the standardised testing known as the SBA on their instructional methods and the academic progress of their students. Nevertheless, the research conducted was primarily quantitative in nature, limiting the ability to go deeper into the subject matter. Therefore, it is imperative to incorporate additional research methods such as interviews and observations to provide further clarification. Additionally, the study placed emphasis on teachers in a broad sense, suggesting that it may have been more

effective if it had been tailored to a specific subject area. Despite the study's intended focus on exploring teachers' perceptions of school-based assessment, the research goals failed to adequately address this aspect.

In a study conducted by Awinyam (2018), an investigation was undertaken to explore the correlation between mathematics teachers' perspectives of assessment and their corresponding assessment practises within the Binduri district. The objective of this study was to ascertain the correlation between mathematics teachers' impression of assessment and their actual assessment practises. The study employed a descriptive survey design as its research methodology. A set of questionnaires was distributed to a representative sample of 63 instructors in the Binduri District, followed by the observation of their lessons to collect data for the study. The researchers employed a multi-stage sampling procedure in order to obtain the sample for the study. The study's results revealed that teachers held favourable attitudes towards the content to be evaluated, the methods of evaluation, and the feedback to be provided to students. However, the study did not examine the variations in mathematics teachers' opinions regarding evaluation. Additionally, the research may have centred on the evaluation of the school-based assessment's implementation across multiple senior high schools within the Binduri area.

Moreover, the research encompassed solely primary school teachers and junior high school mathematics teachers among the chosen educational institutions. Therefore, it is imperative to determine the perception of senior high school mathematics students regarding school-based assessment practises.

Awoniyi (2016) conducted a study in Ghana to examine the comprehension levels of senior high school mathematics teachers regarding school-based assessment and the associated difficulties. The study involved a cohort of 110 teachers. The study included a questionnaire and an interview schedule as data collection instruments, while frequencies and percentages were utilised for data analysis. The findings of the study indicate that there is a lack of comprehension among mathematics teachers regarding the guidelines set forth by the SBA, resulting in their limited utilisation of those rules. The teachers continue to implement the traditional 'continuous assessment' framework inside the classroom setting. Once more, the study findings indicate that teachers have significant problems while utilising SBA, including inadequate proficiency in assessment practises, time constraints, integrity issues among certain teachers, students' lack of commitment, and insufficient availability of resources. However, the study neglected to examine the manner in which mathematics teachers engage in school-based assessment and utilise students' assessment scores. Additionally, the research employed questionnaires and interviews as the primary research instruments. However, the inclusion of observation could have enhanced the richness of the study's findings.

The study conducted by Iddrisu (2020) examined the level of understanding and implementation of school-based assessment among teachers in the Savelugu Municipality of Northern Ghana. The study utilised a descriptive survey design. The study involved a random selection of 270 primary school teachers in the Savelugu Municipality. Data collection was conducted using a questionnaire consisting of 44 items. The analysis

employed many statistical tools like frequencies, percentages, means, standard deviation, independent t-test, and ANOVA. The study's findings indicated that primary school teachers have a good level of expertise in the area of school-based assessment. Additionally, primary school teachers have verified the implementation of the SBA approach. Once more, the investigation has uncovered that primary school teachers within the Savelugu Municipality have difficulties while attempting to implement SBA. The results of the study revealed that there was no significant correlation between the number of years of teaching experience and teachers' knowledge and practises in the implementation of SBA. The study additionally determined that the provision of in-service training regarding SBA had minimal or negligible influence on teachers' comprehension of SBA. Hence, it is suggested that the Ghana Education Service (GES) should furnish all schools with comprehensive SBA guidelines, which can serve as a valuable resource and reference material. This measure aims to alleviate the workload of instructors involved in the administration of SBA.

In their study, Issaka, Hammond, Yeyie, and Agroh (2020) undertook an investigation with the objective of ascertaining the advantages of the use of SBA in the context of Social Studies education within the Biakoye District of Ghana. The research employed a descriptive survey methodology, wherein a deliberate selection process was used to choose a sample of 40 Social Studies teachers from the Biakoye District for the study. The findings of the study indicate that educators make efforts to adhere to the SBA principles, despite the fact that a majority of them have not had any formal training pertaining to the implementation of SBA. Nevertheless, a significant proportion of these

teachers fail to adequately develop the assessment framework in alignment with the standards stipulated within the syllabus. The study revealed that SBA offers numerous advantages, including the enhancement of instructional methods' efficacy, the comprehensive nature of assessment, the provision of feedback to improve instructional techniques, and the standardisation of assessment practises. Additionally, the study unveiled that the SBA offers teachers with explicit instructions for developing assessment items, furnishes assistance in evaluating assessment activities, fosters student motivation to engage in learning, and equips students with the necessary preparation for external examinations.

The study undertaken by Appiah (2020) focused on examining the practises and issues faced by primary school teachers in the Asikuma-Odoben-Brakwa area in Ghana regarding the implementation of the school-based assessment (SBA) system. The research employed a descriptive survey methodology. The study employed cluster and disproportional sampling approaches to choose a sample of 240 primary school teachers. The data gathering process involved the utilisation of a self-developed observational check-list and questionnaire. The findings of the study indicate that teachers predominantly implement the SBA approach in accordance with the prescribed policy standards. Nevertheless, the study uncovered some challenges encountered by teachers, including the lack of access to assessment materials, inadequate expert support in the development of assessment tasks, and the absence of project subjects provided by the District Education Office. Hence, it is recommended that Educational Directorates should promote adherence to established protocols in the implementation of School-Based

Assessment by arranging regular seminars to familiarise teachers with SBA practises.

In the study conducted by Oduro-Okyireh (2008), the objective was to investigate the extent to which Senior High School teachers in the Ashanti Region of Ghana adhered to fundamental principles in their assessment methods. The study additionally aimed to investigate if pre-service training in testing is associated with proficiency in practical testing implementation. The study employed cluster and simple random selection procedures to pick a total of 265 teachers specialising in Mathematics, Integrated Science, and English Language from 26 Senior High Schools. The data collection for the study was conducted using a questionnaire and an observation guide as the primary instruments. The findings of the study indicate that teachers largely adhered to fundamental principles in the creation, administration, and scoring of tests.

According to Oduro-Okyireh (2008), the study revealed that pre-service instruction in educational measurement had a beneficial effect on the implementation of testing practises. Oduro-Okyireh thus proposed the inclusion of pre-service training in educational measurement and evaluation as an essential component of teacher preparation, as proficiency in assessment plays a vital role in enhancing teacher efficacy. Furthermore, the assessment practises employed by tutors in the nurses' training schools located in the Western and Central regions of Ghana were investigated by Wiredu (2013). The objective of this study was to ascertain the level of knowledge had by tutors in the field of assessment, as well as to explore the potential correlation between the duration of teaching experience and their assessment practises. A comprehensive survey was conducted, encompassing the whole accessible

population under study, so employing a census approach. According to a study conducted by Wiredu (2013), it was determined that the duration of teaching experience had a greater impact on instructors' evaluation practises.

According to Wiredu (2013), teaching experience was found to have a greater impact on several aspects of assessment, including planning, item building, item preparation, and test evaluation practises. According to Wiredu (2013), it may be inferred that tutors tend to remain in Nurses' Training Schools for an extended duration, as there is a positive correlation between their length of service and their adherence to assessment standards.

In a study conducted by Md-Ali et al. (2015), it was found that many teachers lacked clarity regarding the components of SBA, namely whether it solely encompassed formative assessment or if it also incorporated summative assessment. The study additionally indicated that teachers lacked enough training in the implementation of school-based assessment. In the context of Ghana, Awoniyi (2016) conducted a study examining the comprehension of Senior High School teachers regarding the concept of school-based assessment and the associated obstacles. The study focused on ten Senior High Schools located in the Cape Coast Metropolis. The findings revealed that the teachers exhibited a lack of awareness regarding the principles pertaining to SBA.

However, a study conducted by Hashim, Rusli, Hashim, and Hua (2015) revealed that a significant proportion of teachers in Malaysia possess sufficient understanding on the implementation of SBA. However, they claimed that their sufficient understanding was a result of their extensive experience with the school-based assessment and their years of teaching. Consistent with this assertion, Wiredu (2013) discovered in a separate

investigation that the duration of a teacher's teaching experience exerted a greater impact on their evaluation methodologies.

According to Lingam and Lingam (2016), teachers who lack sufficient knowledge and abilities in assessment, as well as the ability to prepare high-quality assessment tasks, are likely to encounter challenges in their classroom practise. Consequently, this can have a detrimental impact on students, who are more susceptible to negative consequences. However, according to a study conducted by Awoniyi (2016), a significant number of teachers continue to employ traditional continuous assessment methods due to a lack of comprehension regarding the rules for school-based assessment (SBA).

Perception of Teachers about School-Based Assessment based on their Teaching Experience

Kinyua and Odiemo (2014) found that there was a positive correlation between teachers' level of experience and the quality of the exams they developed, in terms of validity and reliability. According to Amedahe (as stated in Anhwere, 2009), there exists a modest amount of association between the number of years of teaching experience and the level of accuracy demonstrated by teachers in constructing their classroom achievement exam. This implies that as teachers gain more expertise in their profession, their ability to create accurate accomplishment exams improves.

According to Wiredu's (2013) research findings, the duration of teaching experience has a greater impact on the total assessment practise, encompassing design, construction, scoring, and feedback, compared to academic qualifications. However, it is important to note that this influence does not extend to test administration. Wiredu (2013) observed that the

potential deviation from the norm could be attributed to the collective involvement of all tutors during the administration of the test, resulting in a mutual learning experience among the tutors.

According to a study conducted by Talib et al. (2014), teachers with greater tenure in the field of teaching demonstrated superior implementation of SBA (Self-Regulated Learning, Broadly Speaking) inside their instructional environments compared to their less experienced counterparts. The findings indicate that those who had teaching experience ranging from 0-5 years had a mean score of 2.72. Similarly, those with teaching experience of 6-10 years obtained a mean score of 2.71. In contrast, participants who taught for 11-15 years achieved a mean score of 2.75, while those with more than 15 years of teaching experience had the highest mean score of 2.85. Nevertheless, there remains ambiguity regarding the statistical significance of the observed disparity. Based on an analysis of the observed disparities in the average scores, it is plausible to suggest that the observed variances may lack statistical significance.

In a study conducted by Bassey, Akpama, Ayang, and Iferi-obeten (2013), it was determined that the extent to which basic education teachers demonstrate effective assessment practises is not greatly impacted by their individual qualities, such as teaching experience. According to Anhwere's (2009) study, no statistically significant distinction was found between tutors with 1-3 years of teaching experience and those with more than three years of experience in teacher training colleges, specifically in the context of test item construction. Therefore, it can be concluded that the teachers' best assessment practises were not considerably affected by their teaching experience.

According to the findings of Amedahe and Etsey (as stated in Anhwere, 2009), one possible explanation for this phenomenon could be a deficiency in skills and expertise pertaining to evaluation practises.

Teachers' Perception of Classroom Assessment/School-Based Assessment

In a study conducted by Adediwura (2012), the researcher examined the perceived impact of School-Based Assessment (SBA) on secondary school teachers in Nigeria. The study aimed to assess the level of preparedness among teachers to implement SBA and to determine the perceived effects of SBA on their teaching practises and students' learning outcomes. The study's population comprises secondary school teachers located in the six South-Western States of Nigeria. A purposeful selection process was employed to choose six secondary schools from each of the six states, with the selection criteria being the ownership of the schools. The survey included a total of 36 secondary schools. A random selection of 15 instructors was made from each of the schools to participate in the study. The study's sample size consisted of 540 teachers. The study data was collected using a modified questionnaire. The questionnaire that underwent modifications was designated as the Nigerian Teachers' Perception of School-Based Assessment Questionnaire. The questionnaire was partitioned into four distinct sections labelled as A, B, C, and D. The test-retest reliability coefficients for Sections B, C, and D of the instrument are 0.72, 0.77, and 0.73, respectively, with a significance level of $p < .05$. These coefficients were obtained during a two-week period. Additionally, the Cronbach coefficient alpha values for Sections B, C, and D are 0.79, 0.70, and 0.71, respectively. The findings revealed that a majority of the teachers included in the sample were insufficiently prepared to administer

SBA. In contrast, educators from Federal Government Colleges shown a higher level of preparedness. Furthermore, it has been determined that a majority of the educators hold an unfavourable viewpoint regarding the impact of the SBA (Standardised Testing) on both their instructional methods and the academic progress of pupils. Hence, the study proposes the creation of efficient monitoring mechanisms for educational policy and the provision of timely in-service training to all instructors, regardless of school ownership.

The study conducted by Somuah, Bentil, and Nkansah (2020) aimed to examine the perceptions of Social Studies instructors on classroom assessment. Additionally, the researchers explored the potential influence of teachers' demographic characteristics on their perception of classroom assessment. The research employed a sequential explanatory mixed method approach, incorporating the collection and analysis of both quantitative and qualitative data. The study involved the selection of sixty-five (65) social studies teachers using purposive and convenience sampling approaches. The data collection for this study involved the utilisation of a questionnaire and a semi-structured interview guide as the primary instruments. The quantitative data were subjected to analysis using descriptive statistics, including measures of frequency, mean, and standard deviation. Additionally, inferential statistics such as t-tests and ANOVA were employed. The analysis of the qualitative data was conducted using a thematic analysis. The findings of the study indicated that Social Studies teachers exhibited varying perspectives on classroom assessment. The individuals in question regarded classroom assessment as a mechanism for enhancing both the teaching and learning processes, prioritising this aspect over the evaluation of students' progress and

the establishment of school responsibility. In addition to gender and rank, the study findings indicate that factors such as age, academic degree, and years of teaching experience exerted an influence on Social Studies instructors' impression of the nature of classroom evaluation.

The study conducted by Veloo and Md-Ali (2016) in Malaysia focused on examining the difficulties faced by teachers during the implementation of school-based evaluation in the field of physical education. The results indicate that physical education (PE) teachers encountered three primary obstacles, including a lack of foundational knowledge in the subject matter, limited access to assessment resources and equipment, and difficulties in managing the PE classroom.

Chapter Summary

In this section, theoretical, conceptual and empirical review were presented. The classical test theory was used to underpin the study. The concept of assessment practices, perception of assessment and school-based assessment were reviewed. Also, empirical studies concerning the research objectives were reviewed.

The evidence from the previous studies discussed in this chapter suggest that teachers' perception of assessment influenced their assessment practice and also there are challenges teachers faced in assessment. Also, most of the studies on SBA in Ghana focused on basic schools' teachers, few focused on SHS mathematics teachers, in context of this study, the study examined public SHS mathematics teachers' perception and practice of school-based assessment.

CHAPTER THREE

RESEARCH METHODS

This chapter looks at the various methods and procedures used in gathering data in finding answers to the research questions that guided the study. It describes the research design, the population, the sample and sampling procedure, the instruments used for data collection, pilot testing of instruments, data collection procedure and data analysis procedure.

Research Approach

Creswell (2003) pointed out that researchers possess the autonomy to choose the methodologies, strategies, and investigative processes that best align with the specific inquiries addressed in their study. In the present investigation, a mixed-method approach was employed to explore the perspectives of mathematics teachers on school-based assessment and to gain insights into their actual practices of school-based assessment. This methodological choice was motivated by the recognition that it offers a more intricate and nuanced comprehension of the phenomenon under scrutiny, an understanding that might remain elusive when exclusively employing a single research approach (Creswell & Plano-Clark, 2011).

The mixed-method approach was favoured for several reasons. First, it holds the potential to bolster the robustness of research findings by providing multiple sources of evidence, thereby enhancing the overall confidence in the study's outcomes. This aligns with Creswell and Plano-Clark's assertion (2011) that utilising mixed methods can serve as a safeguard against potential limitations inherent in a mono-method design. By combining both quantitative and qualitative data collection and analysis techniques, the study aimed to

produce a more comprehensive and well-rounded interpretation of the research topic.

Incorporating a variety of methodological tools enabled the researchers to capitalise on the respective strengths of quantitative and qualitative research paradigms. Bryman (2008) emphasised the value of methodological pluralism, as it can mitigate the potential biases and limitations of any single research method. The mixed-method approach, in this context, not only provides a broader spectrum of data but also allows for a convergence of findings from different angles, thus lending a more convincing and nuanced portrayal of the research subject (Creswell & Plano-Clark, 2011; Creswell, Klassen, Plano Clark & Smith, 2011).

The mixed-method design used in this study empowers researchers to investigate the multifaceted aspects of mathematics teachers' perceptions and practices regarding school-based assessment. By harnessing the synergistic potential of both quantitative and qualitative methods, it strengthens the rigor and comprehensiveness of the research, affording a more complete understanding of the complex issues at hand (Clark, Foster, Bryman & Sloan, 2021).

Research Design

The design that was used to investigate the perceptions of SHS mathematics teachers about school-based assessment and how they practice the school-based assessment was the sequential explanatory design which is in line with research approach. The sequential explanatory mixed methods design is an organised research approach that involves two distinct phases. In the initial phase, researchers collect and analyse quantitative data, while in the

subsequent phase, they employ qualitative data collection methods to provide a comprehensive explanation of the quantitative findings (Plano-Clark & Creswell, 2015). This design offers the advantage of blending the strengths of both quantitative and qualitative research by harnessing extensive quantitative data alongside rich qualitative insights gathered from study participants (Clark et al., 2021). The primary goal of this design is to enhance the depth of understanding and provide clarification by leveraging the results obtained from one method to illuminate and elucidate the findings of the other method (Plano-Clark & Creswell, 2015; Plano-Clark, 2017).

In essence, the sequential explanatory mixed methods design is a deliberate and systematic approach to research that aims to bridge the gap between numbers and narratives. By initially focusing on quantitative data and subsequently exploring the qualitative dimension, researchers are better equipped to not only identify trends and correlations but also delve into the underlying reasons, motivations, and nuances that explain the observed quantitative outcomes (Clark et al., 2021). This methodological strategy acknowledges the value of multiple perspectives, enabling a more holistic and insightful interpretation of research results. It underscores the idea that numbers alone may not tell the whole story, and qualitative data can play a pivotal role in unraveling the intricacies behind statistical findings, offering a more profound and comprehensive understanding of the research phenomenon (Bryman, 2008).

Efficient use of SBA guidelines in assessing learning outcomes in mathematics is complex because it involves an interplay of environmental factors and personal factors as posited in the Social Cognitive theory. The

research design enabled the researcher to collect multiple forms of data to explore mathematics teachers' perception and practice of school-based assessment. The statistical analysis from the quantitative data tested the broader trend among teachers' perception and practice of SBA in the mathematics classroom. On the other hand, the qualitative data were used to support the quantitative data and account for meanings and deeper understandings of participants' perception and practice of SBA in the mathematics classroom (Gray, 2013).

The design enabled the researcher in this study to incorporate quantitative and qualitative methods to delve into diverse domains of mathematics teachers' perception and practice of SBA. Notably, employing the sequential explanatory mixed-methods design for this study generated a rich depth of data to provide to provide deeper insights and understanding of the SHS mathematics teachers' perception and practice SBA (Pluye & Hong, 2014). Tashakkori and Teddlie (2010) accentuated that this mixed methods design possesses the ability to evaluate and contrast different typologies, contributing to a broader view of this research approach. This mixed-method design enabled the researcher in this study to integrate findings from the study by comparing and connecting quantitative and qualitative data findings (Creswell & Tashakkori, 2007). Furthermore, Fetters, Curry, and Creswell (2013) clarified that although results can be compared in any of the types of mixed-method designs, usually, a connection of results is made only in sequential designs.

This study collected quantitative data on SHS mathematics teachers' perception and practice of SBA and later gathered qualitative data to provide

in-depth insights into the statistical results obtained from the preliminary analysis of teachers' perception and practice of SBA. A research design that yields maximum data and delivers the prospect for considering diverse facets of a research problem is regarded as the most efficient and appropriate research design in relation to other research problems (Kothari, 2004). As a result, the sequential explanatory mixed-method design was deemed most suitable for the study.

Population

The study used three purposive selected districts in the Bono Region and these districts were Sunyani Municipal, Sunyani West and Berekum Municipal. These districts were selected based on proximity to the researcher. All Senior High School mathematics teachers in public senior high schools formed the accessible population for this study. The population comprised of 120 Senior High School mathematics teachers. Numerically, the districts have 12 public senior high schools. For the study, the population comprised all the 120 mathematics teachers in public senior high schools in selected districts.

Sample and Sampling Procedure

All the public Senior High School mathematics teachers were involved in the study (N = 120). Hence, the census method was used to select all the public SHS mathematics teachers in the study. This was because the population was manageable and the use of the entire population prevents the risk of sampling errors. According to Kothari (2004), when all population elements are covered in a study, the highest accuracy can be assumed since no element was left out.

Table 1 shows the distribution of the respondents in the public Senior High Schools.

Table 1: Distribution of Respondents from the Public SHS in Selected Districts in the Bono Region

SN	Name of School	No. of Teachers
1	School A	25
2	School B	10
3	School C	8
4	School D	13
5	School E	7
6	School F	6
7	School G	12
8	School H	5
9	School I	11
10	School J	6
11	School K	7
12	School M	10
	Total	120

Source: Fieldwork (2023)

According Kumar, (2011), much attention is not paid to sample seize in qualitative research. However, the sample size in qualitative research depends mainly on the participants who can provide the rich information needed by the researcher. Also, a researcher stops collecting data when the themes are saturated (Charmaz, 2006). The sample size in the qualitative phase was determined when the data saturation point (a point where you are not getting any new information) was attained (Braun & Clarke, 2013; Fugard & Potts, 2015). In line with this, the researcher realized from the engagements with participants that saturation point was attained after interviewing six teachers. Thus, six (6) mathematics teachers from the three districts were engaged in the qualitative phase for the interview data. The selection of these teachers was based on their positive responses on the questionnaire in the first

phase which were in line with the findings from the quantitative data. Subsequently one more teacher was selected for the interview from each of the selected districts. There was second round of selection of participant for the interview because the data had not reached saturation. However, the data reached saturation after six participants were interviewed.

Data Collection Instruments

The study adopted a structured questionnaire (see Appendix A) and an interview guide (see Appendix B) as the instruments for data collection from the respondents and participants respectively.

Questionnaire

The questionnaire was the major instrument used to elicit responses from the teachers who partook in the study. Questionnaires are extensively used and useful devices for gathering survey information, providing organised numerical data, and can be delivered without the presence of the researcher (Cohen, Manion, & Morrison 2018). The questionnaire used for collection of the data from the respondents was self-developed. All the sub-scales or Sections on the instrument were measured on a five-point Likert scale except the Section A.

The questionnaire was designed with respect to the specific objectives of the study. The questionnaire was made up of five sections: Section A; Section B; Section C; Section D; Section E and Section F. Section A elicited responses on the demographic information of respondents and consisted of six (6) items: sex, age, teaching experience, educational qualification, school category and school location. Section B elicited responses on the perceptions

of SHS mathematics teachers about school-based assessment and consisted of 12 items.

Section C also elicited responses on the extent to which SHS mathematics teachers practice school-based assessment and it had 16 items. In addition, Section D elicited responses on how SHS mathematics teachers put students' school-based assessment scores to use and it comprised of 10 items. Again, Section E elicited responses on the kinds of school-based assessment tasks that mathematics teachers use to assess students' learning outcomes and it comprised of 12. The last section of the questionnaire, Section F elicited responses on the challenges SHS mathematics teachers encounter when using school-based assessment and it had 9 items. In all, the questionnaire had 65 items.

The Interview Guide

The interview guide was also adopted because it allowed the researcher to explore areas that explain questionnaire results. The interview guide, had six (6) sections which were led by an introduction containing a brief background to the study, the purpose of the interview, and informed consent. Section A focused on preparatory issues of the interview. Second B, C, D, E and F of the interview guide dealt with perceptions of mathematics teachers about SBA, mathematics teachers' practice of SBA, SBA tasks that teachers use to assess students' learning, mathematics teachers' use of SBA results and challenges mathematics teachers encounter in the use of SBA respectively. One of the advantages of interview is that it is inquiry based and open-ended which allows participants to raise issues that matter most to them (Yauch &

Steudel, 2003). Therefore, a qualitative data was collected through the use of interview.

According to Yauch and Steudel (2003) one of the weaknesses of an interview is that it allows the participant to have more control over the content of the data collected. Also, they further asserted that the process of interviewing is time-consuming and a specific important issue could go unnoticed.

Pre-testing

The researcher conducted a pilot study in the Cape Coast Metropolis, which has remarkably similar educational traits as public schools in the Bono region, to evaluate the instrument and find any flaws or areas for improvement. The questionnaire was tested at five (5) selected SHS in the Cape Coast Metropolis. The teachers selected from these schools were a total of twenty (20). These schools were selected because they all employ school-based assessment practices, and also because of the proximity and accessibility of the schools to the researcher. Furthermore, the mathematics teachers at these five (5) schools share many of the same features such as mode and uses of assessment as the teachers at the schools chosen for the study.

Reliability and Validity of Instrument

Meticulously, the researcher designed the items on the questionnaire to correspond to the literature so as to determine the face validity of the items on the questionnaire. To also ensure content validity, the questionnaire was handed to my supervisor, a professor in Mathematics Education and other colleagues who went through them and offered their suggestions. This was

done to ensure that the items in the instrument accurately reflected the scope of the concerns being investigated.

Cronbach's Alpha reliability coefficient was used by the researcher to estimate the internal consistencies of the instrument. According to Nunnally (as cited in Pallant, 2020), in terms of reliability, a value of .7 and above makes an instrument appropriate and reliable for use. Taber (2018) is of the view that any scale with Cronbach's Alpha less than 0.7 cannot be considered reliable. Based on DeVellis' (2012) recommendation, a decision rule of .7 was established to assess reliability of the sub-scales on the instrument. The reliability coefficients of the sub-scales are indicated in Table 2.

Table 2: Reliability Coefficients of Subscales

Sub-scale	Reliability Coefficient (α)
Perceptions of Mathematics teachers about SBA	.713
Mathematics teachers' practice of SBA	.733
Mathematics teachers' use of SBA results	.863
Challenges with the use of SBA	.782

Source: Fieldwork (2023)

Ethical Considerations

The essence of the study necessitated mutual respect, the cultivation of constructive relationships, and the creation of a collaborative setting among the researcher and respondents. As a result, the study obtained ethical approval from the University of Cape Coast's Institutional Review Board (Ethical Clearance – ID [UCCIRB/CES/2023/48]), allowing the researcher to gain consent from the numerous schools where the research was conducted. All ethical concerns were handled by the researcher, including informed consent,

anonymity, and confidentiality. In-text citations and references were used to acknowledge all content obtained from various sources.

Data Collection Procedure

Prior to the data collection, the researcher obtained ethical clearance from the Institutional Review Board (IRB) of the University of Cape Coast (Ethical Clearance – ID [UCCIRB/CES/2023/48], see Appendix D). Also, a letter of introduction (see Appendix C) was collected from the Department of Mathematics and ICT Education, University of Cape Coast.

The data collection was done in two phases. The first phase used a survey to collect quantitative data from SHS mathematics teachers on their perception and practice of SBA. Introductory letters from the Department of Mathematics and ICT Education were submitted to the headmasters of various schools selected in the Bono Region to enable the researcher build rapport with the mathematics teachers. After headmasters approved the research visit, heads of the mathematics department of the various schools were contacted to arrange for appropriate day and time to meet with the teachers.

The teachers in each of the schools were invited to participate in the study after the project was explained to them. All teachers in the participating schools voluntarily participated. Participants were assured that the data will be kept confidential and used for research purposes only. The questionnaires were administered by the researcher to the mathematics teachers to provide their candid responses to the items. On the average, the teachers used 20 minutes to respond the questionnaires. Teachers were contacted during break times and staff meetings to avoid disruptions of their class hours. In some schools, the questionnaires were left for the teachers to complete them at their

own convenient time to avoid interruptions with their class hours. Such questionnaires were retrieved two days later. A total of one hundred and twenty (120) questionnaires were distributed to mathematics teachers in the selected public Senior High Schools in selected districts in the Bono Region.

In the qualitative phase, teachers were selected based on their responses on the questionnaire in the first phase, and also their availability and willingness to participate in the qualitative phase. Bernard (2017) noted the importance of participant's availability and willingness to participate in the study when using purposive sampling. Before each of the interview sessions, the researcher introduced himself to the participants and explained the purpose of the study to them. In addition, the researcher sought for permission from the participants and recorded the interviews. During the interview sessions each participant was asked the beginning questions on the interview guide and followed up with more specific questions based on the participants' responses. Averagely each interview lasted for 15 minutes. The entire data collection process lasted for four weeks.

Data Processing and Analyses

In order to address the research questions and hypothesis, the data obtained were filtered to remove any irrelevant responses. It was then coded and entered into the Statistical Product for Service Solution (SPSS) version 26 for data processing and management. The demographic characteristics of the respondents were analysed using frequencies and percentages. Descriptive and inferential statistics were used to analyse the data to address the research questions and hypotheses respectively. The specific tools for data collection and analysis are presented in Table 3.

Table 3: Tools for Data Collection and Data Analysis

Research Questions/Hypotheses	Tools for Data Collection	Data Analysis Tools
RQ1: What are the perceptions of mathematics teachers about school-based assessment?	Questionnaire	Mean and Standard Deviation
RQ2: To what extent do mathematics teachers practice school-based assessment?	Questionnaire	Mean and Standard Deviation, Frequency counts, and percentage
RQ3: What kinds of school-based assessment tasks do mathematics teachers use to assess their students' learning outcomes?	Questionnaire	Frequency counts and percentage
RQ4: How do mathematics teachers put students' school-based assessment scores to use?	Questionnaire	Mean and Standard Deviation
RQ5: What challenges do mathematics teachers encounter in the use of school-based assessment?	Questionnaire	Frequency counts and percentage
RH1: There is no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their gender.		Independent sample t-test
RH2: There is no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience.		One-Way ANOVA

Source: Author's Construct (2023)

Also, Semi-structured Interview guide was used to collect the qualitative data. According Braun and Clarke's (2013) approach of thematic analysis was used to analyse the qualitative data. In this study, the researcher listened to the recordings from the interview sessions repeatedly to familiarize himself with the incipient patterns in the data. Later on, the data from the qualitative phase

was transcribed to identify emerging themes from the data. The qualitative data was examined to ascertain differences and similarities. Colour codes were assigned to identified patterns using Microsoft Word font color option. The codes were later defined and organized under the research questions. The researcher identified, and organised and interpreted the themes in the textual data in relation to the research questions (King & Brooks, 2018). Comments and phrases from participants were used to produce reports for the qualitative findings to support and explain the findings from the quantitative phase (Creswell, 2014).

Chapter Summary

The study adopted the descriptive survey design to examine the perception of public Senior High School mathematics teachers about school-based assessment in selected districts in the Bono Region of Ghana. The census method was used to involve all the 120 public SHS mathematics teachers in selected districts in the Bono Region. The questionnaire, which was designed on a five-point Likert scale, aided in the collection of relevant data required to answer the research questions that guided the study. The obtained data was analysed using both descriptive and inferential statistics. Data on demographic variables were analysed using frequency and percentage; mean and standard deviation for the research questions; independent sample t-test for research hypothesis one and one-way ANOVA for research hypothesis two. Lastly, thematic analysis was utilised to analyse the qualitative data.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter provides an exposition of the outcomes of the fieldwork and a thorough analysis of the findings. The chapter is segmented into three distinct sections. The initial segment provides the findings about the demographic attributes of the participants, which is subsequently followed by a discussion of these data. The second component of the chapter centers on the exposition of the primary data to tackle the research inquiries. The findings are displayed using headers that correspond to the research inquiries being examined. The third section is dedicated to analysing the main findings in relation to the research questions and hypotheses.

Out of the 120 questionnaires that were distributed, 117 questionnaires were retrieved from the teachers. In all, the study involved 117 SHS mathematics teachers. Hence, the return rate for the questionnaire is 97.5%.

Demography of Respondents

This part presents and examines the preliminary data which comprises of the background data of the respondents for the study. Five characteristics of the study respondents were sought for which were judged relevant for the study in order to address the research questions. The characteristics are sex, highest level of academic qualification, qualification in mathematics, teaching experience and school category of the respondents.

Demographic Characteristics of Respondents

Table 4 shows the demographic characteristics of the respondents based on sex, highest level of academic qualification, qualification in mathematics, teaching experience and school category.

Table 4: Demographic Characteristics of Respondents

Variable	Sub-scale	Frequency (n)	Percentage (%)
Sex	Male	103	88.0
	Female	14	12.0
Highest Academic Qualification	Bachelor of Education	64	54.7
	Bachelor of Arts/Bachelor of Science	27	23.1
	BA/B.Sc with PGDE	5	4.3
	Master of Education	8	6.8
	MPhil in Education	4	3.4
	MA/M.Sc	9	7.7
Is your academic qualification in Mathematics?	Yes	100	85.5
	No	17	14.5
Teaching Experience (in years)	5 and below	48	41.0
	6-10	25	21.4
	11-15	23	19.7
	16 and above	21	17.9
School Category	Category A	30	25.6
	Category B	80	68.4
	Category C	07	6.0

Source: Fieldwork (2023)

In Table 4, the results show that the majority (n = 103, 88.0%) of the respondents were males. However, minority (n = 14, 12.0%) of the respondents were females. This result shows that majority of the SHS mathematics teachers that participated in the study were males. The result suggests a gender imbalance in the teaching of mathematics at the SHS level. This may reflect broader societal trends and stereotypes regarding gender roles in Science, Technology, Engineering and Mathematics (STEM) fields. It could

indicate that fewer females are choosing to become mathematics teachers or that there may be systemic barriers preventing them from entering the profession. Also, the gender disparity among mathematics teachers may perpetuate gender biases and stereotypes related to mathematical ability and aptitude. Students may develop beliefs that certain genders are more suited for mathematics or that mathematics is a subject primarily for males. Addressing this imbalance can help challenge such biases and create a more equitable learning environment.

Also, majority (n = 64, 54.7%) of the respondents had Bachelor of Education as their highest level of academic qualification. On the contrary, minority (n = 4, 3.4%) of the respondents had MPhil in Education as their highest level of academic qualification. The results indicate that majority of the mathematics teachers had B.Ed as their highest level of academic qualification. The majority of respondents holding a Bachelor of Education suggests that a significant proportion of the SHS mathematics teachers in the study may have entry-level qualifications in education. This could indicate that a substantial number of teachers may have pursued a teaching-focused undergraduate degree program, which typically includes pedagogical training and preparation for teaching careers. Again, the small percentage of respondents with an MPhil in Education as their highest qualification suggests that a relatively low number of teachers have pursued advanced academic degrees specifically in the field of education.

Additionally, in terms of academic qualification in mathematics, majority (n = 100, 85.5%) of the respondents had qualification in mathematics. However, minority (n = 17, 14.5%) of the respondents had no academic

qualification in mathematics. The high percentage of respondents with qualifications in mathematics suggests that a significant proportion of the SHS teachers in the study possess specialised knowledge and expertise in the subject. This can be advantageous as it indicates that a large number of teachers have undergone formal training and education specifically in mathematics, potentially equipping them with a deep understanding of the subject matter. In addition, having qualification in mathematics indicates that teachers have likely acquired pedagogical knowledge and strategies specific to teaching mathematics. They may be familiar with curriculum content, instructional methods, and assessment practices relevant to the subject. This can contribute to effective teaching and help students develop a solid foundation in mathematics.

Moreover, majority (n = 48, 41.0%) of the respondents had 5 years and below of teaching experience. On the contrary, minority (n = 21, 17.9%) of the respondents had 16 and above years of teaching experience. The high percentage of respondents with 5 years and below of teaching experience indicates that a significant portion of the SHS mathematics teachers in the study are relatively new to the profession. These teachers may still be in the early stages of their careers, adjusting to the demands of teaching and gaining experience in the classroom. Also, the relatively low percentage of respondents with 16 and above years of teaching experience suggests a scarcity of highly experienced teachers within the surveyed group. This may reflect a broader trend of experienced teachers transitioning out of the profession due to retirement, career changes, or other reasons. The shortage of

highly experienced teachers can impact the availability of mentors and leaders within the mathematics teaching community.

Furthermore, more than half (n = 80, 68.4%) of the respondents were from Category B schools while minority (n = 07, 6.0%) of the respondents were from Category C schools. This result implies that majority of the respondents were from Category B schools.

Lastly, the respondents were asked whether they have attended workshop on school-based assessment. Figure 1 shows the results on whether respondents have attended workshop on school-based assessment.

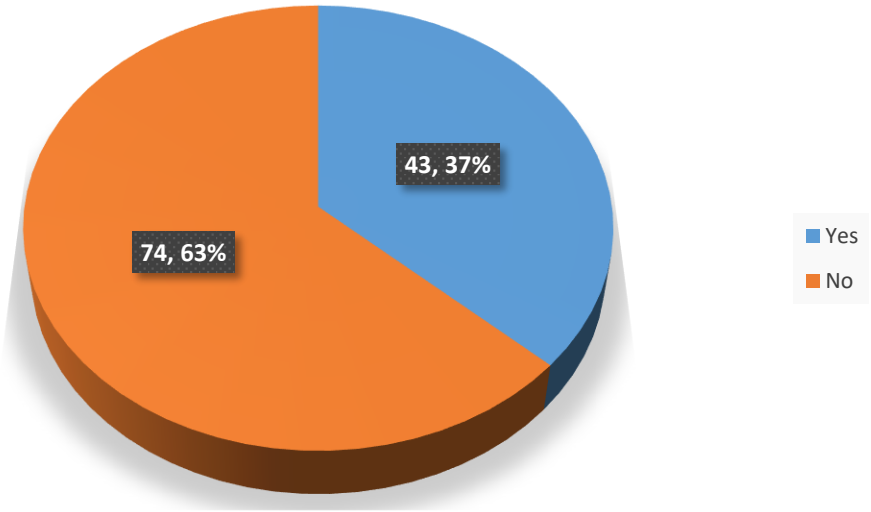

***Figure 1*: Workshop on School-Based Assessment**

Source: Fieldwork (2023)

From Figure 1, the results show that the majority (n = 74, 63%) of the respondents indicated that they have not attended any workshop on school-based assessment. On the contrary, minority (n = 43, 37%) of the respondents indicated that they have attended workshop on school-based assessment. This result suggests that majority of the SHS mathematics teachers indicated that

they have not attended any workshop on school-based assessment. The lack of attendance at school-based assessment workshops may indicate a broader gap in professional development opportunities for SHS mathematics teachers. It could suggest a need for more comprehensive and targeted professional development programs that address assessment practices specifically. Providing teachers with access to training and workshops can improve their pedagogical skills, enhance their understanding of assessment, and ultimately benefit student learning outcomes.

Presentation of Main Results

This section presents the main results of the research questions that were formulated to guide the study. Data on research question one and four were collected on a five-point Likert scale (Strongly Agree = 5, Agree = 4, Uncertain = 3, Disagree = 2 and Strongly Disagree = 1). For research question two, data were collected on a four-point Likert scale (Always = 4, Very Often = 3, Sometimes = 2 and Never = 1). Also, data were collected on a five-point Likert scale (More than three times = 5, Three times = 4, Two times = 3, Once = 2 and Never = 1) for research question three. Lastly, data on research question five was collected using Yes or No.

Perceptions of Mathematics Teachers about School-Based Assessment

Research question one was meant to examine the perception of mathematics teachers about school-based assessment. The mathematics teachers were made to rate their responses using Strongly Agree = 5, Agree = 4, Uncertain = 3, Disagree = 2 and Strongly Disagree = 1 to gather evidence for the study. A criterion value of 3.00 was established for the scale. To obtain the criterion value (CV=3.00), the scores were added together and divided by

the number in the scale (1+2+3+4+5 = 15/5 = 3.00). To understand the mean scores, items or statements on each subscale that scored means of less than 3.00 were regarded as a disagreement. Those items/statements that scored means above 3.00 were regarded as agreement. All the negative items were recorded in a reversed order to make compatible with the positive items. Standard deviations measured the dispersion of the responses as they were gathered from the respondents. A standard deviation of 1.00 and below denoted homogeneity in responses, whereas a standard deviation of more than 1.00 denoted diversity in responses of respondents.

Table 5 shows the results of the analysis of data on the perception of mathematics teachers about school-based assessment.

Table 5: Perception of Mathematics Teachers about SBA

Statement	M	SD
School-based assessment encourages creative thinking of students	3.94	1.10
School-based assessment encourages collaboration between students	4.04	0.86
School-based assessment encourages communication between teachers and students.	4.00	1.09
School-based assessment is interesting.	3.87	1.05
School-based assessment is not time wasting.	3.66	1.08
School-based assessment procedures are easy.	3.35	1.15
School-based assessment is a good way to assess a student.	3.90	1.12
School-based assessment is an imprecise process.	3.22	1.12
School-based assessment is unfair to students.	3.84	1.11
School-based assessment interferes with teaching	3.75	0.98
School-based assessment has little impact on teaching and learning.	3.71	1.15
Average Mean/Average Standard Deviation	3.75	1.07

Note: M = Mean; SD = Standard Deviation

Table 5 shows that the highest mean was recorded on the statement that school-based assessment encourages collaboration between students (M = 4.04, SD = .86). This result implies that mathematics teachers agreed that SBA encourages collaboration between students. This was followed by their agreement on the statement that school-based assessment encourages communication between teachers and students (M = 4.00, SD = 1.09).

Additionally, the respondents indicated that school-based assessment encourages creative thinking of students (M = 3.94, SD = 1.10). Also, the results revealed that teachers agreed that school-based assessment is a good way to assess a student (M = 3.90, SD = 1.12).

Moreover, the lowest mean was recorded on the statement that school-based assessment has little impact on teaching and learning (M = 2.03, SD = 1.15). This result suggests that the majority of mathematics teachers disagreed that school-based assessment has little impact on teaching and learning.

Qualitative Results

Mathematics teachers were interviewed about their perception of SBA. In all, most of the participants expressed positive perception about the SBA assessment. For instance, the participants' responses were organised in the table below:

Table 6: Interview responses on Teachers' Perception of SBA

Themes	Excerpts	No. of teachers
Creative thinking	I make sure that tasks given to students will let them think outside the box (T3)	6
Collaboration	... through group works students learn from their peers as they collaborate in their groups (T5)	5
Communication	… they feel empowered to discuss their progress, ask questions, and seek clarifications. This open channel of communication has help me understand their individual's needs (T2).	6
Time consuming	… activities involve in SBA; group discussion, project etc demand a lot of time in dealing with them (T4)	3

From Table 6, all the six teachers interviewed accepted the fact that SBA encourages creative thinking and communication which further explained the quantitative results, however, despite their positive views of SBA, three teachers asserted that at times the procedure involved in SBA consumed time.

Mathematics Teachers Practice School-Based Assessment

The second research question was intended to examine the extent to which mathematics teachers practice school-based assessment. Table 7 shows results on mathematics teachers' practice of school-based assessment.

Table 7: Mathematics Teachers' Practice of School-Based Assessment

Statement	N Freq (%)	S Freq (%)	VO Freq (%)	A Freq (%)	M	SD
In practicing school-based assessment, I give four assessments per term.	13 (11.1)	50 (42.7)	31 (26.5)	23 (19.7)	2.55	0.93
In practicing school-based assessment, I give total class score of 50% to overall school assessment.	29 (24.8)	49 (41.9)	22 (18.8)	17 (14.5)	2.23	0.99
In SBA practice, I give my students two tests, one group exercise and a project work in a term.	9 (7.7)	46 (39.3)	50 (42.7)	12 (10.3)	2.56	0.78
I develop test items based on objectives that are very critical in each term's work.	8 (6.8)	25 (21.4)	40 (34.2)	44 (37.6)	3.03	0.93
I give project task to my students at the beginning of the term and submitted at the end of the term.	23 (19.7)	45 (38.5)	35 (29.9)	14 (12.0)	2.34	0.93
I develop test items based on objectives that need creativity on the part of the student for learning performance.	7 (6.0)	28 (23.9)	41 (35.0)	41 (35.0)	2.99	0.91
I complete the administration of school-based assessment by the end of the eleventh week.	22 (18.8)	52 (44.4)	25 (21.4)	18 (15.4)	2.33	0.96
In practicing school-based assessment, I give total exams score of 70% to overall school assessment.	20 (17.1)	28 (23.9)	24 (20.5)	45 (38.5)	2.80	1.13
In practicing school-based assessment, I make sure classroom instruction do not make use of real life as illustration to encourage students to apply their knowledge to problems of varying complexities.	45 (38.5)	39 (33.3)	20 (17.1)	13 (11.1)	3.16	1.00
In school-based assessment practice, I do not give eleven assessments to my students in an academic year.	37 (31.6)	57 (48.7)	14 (12.0)	9 (7.7)	3.04	0.86
In school-based assessment, I do not analyse the problems students faced with the items and then organise a remedial session for the class.	59 (50.4)	37 (31.6)	12 (10.3)	9 (7.7)	3.25	0.93
Average Mean/Average Standard Deviation					2.75	0.94

Note: N = Never; S = Sometimes; VO = Very Often; A = Always; M = Mean; SD = Standard Deviation

From Table 7, the majority (n = 59, 50.4%) of the respondents indicated "never" to the statement that they do not analyse the problems students faced with the items and then organise a remedial session for the class. This result suggests that mathematics teachers analyse the problems students faced with the items and then organise a remedial session for the class. Also, majority (n = 57, 48.7%) of the respondents acknowledged that they sometimes give eleven assessments to their students in an academic year.

In addition, majority (n = 52, 44.4%) of the respondents indicated that they sometimes complete the administration of school-based assessment by the end of the eleventh week. Moreover, majority (n = 50, 42.7%) of the respondents affirmed that they often give students two tests, one group exercise and a project work in a term.

Qualitative Results

This section presents the qualitative results for the interview on mathematics teachers' practice of school-based assessment. For instance, one of the participants intimated that:

> *"Certainly. My main goal is to ensure that students grasp mathematical concepts effectively. To achieve this, I analyse the difficulties they face with specific items in assessments. This helps me identify common challenges and tailor our teaching approach accordingly."* (Participants 1 & 6)

Similarly, one of the participants indicated that:

> *"I organise remedial sessions for the entire class. These sessions allow us to delve deeper into the problem areas and provide additional*

explanations and examples. It is like giving students a second chance to fully understand the material." (Participant 2)

These results emphasize the quantitative results that mathematics teachers analyse the problems students faced with the items and then organise a remedial session for the class.

In addition, one of the participants commented that:

"Of course. I believe in providing students with frequent opportunities to engage with the subject. So, in an academic year, we might give them up to eleven assessments. These can include tests, group exercises, and project work." (Participant 3 & 6)

Moreover, a participant mentioned that:

"I aim to complete the administration of school-based assessments by the end of the eleventh week of the term. This ensures that students receive feedback in a timely manner. Prompt feedback is crucial as it allows them to track their progress and make necessary adjustments." (Participant 4)

School-Based Assessment Tasks Mathematics Teachers use to Assess their Students' Learning

Research question three sought to investigate the kinds of school-based assessment tasks that mathematics teachers use to assess their students' learning outcomes. Table 8 displays the results of the kinds of SBA tasks that mathematics teachers use to assess their students' learning outcomes.

Table 8: School-Based Assessment Tasks

School-Based Assessment Tasks/Strategies	Never	Once	Two Times	Three Times	More than three times
	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)
Group Exercise	6 (5.1)	4 (3.4)	8 (6.8)	84 (71.8)	15 (12.8)
Midterm Test	9 (7.7)	15 (12.8)	20 (17.1)	72 (61.5)	1 (0.9)
Project Work	25 (21.4)	40 (34.1)	25 (21.4)	27 (23.1)	0 (0.0)
End of term examination	0 (0.0)	0 (0.0)	0 (0.0)	117 (100)	0 (0.0)

Source: Fieldwork (2023)

It can be observed from Table 8 that the majority (n = 84, 71.8%) of the respondents indicated that they give group exercise three times. This result suggests that mathematics teachers gave the number of recommended group exercises. Also, 15 (12.8%) respondents gave more than the required number of group exercises.

In addition, the results revealed that majority (n = 72, 61.5%) of the respondents indicated they gave midterm tests thrice a year. This result indicate that majority of the respondents gave required number of midterm test. However, majority (n = 40, 34.2%) of the respondents indicated that they once gave project work in the academic year. Only 27 (23.1) gave the required number of project work in the academic year.

Lastly, all (n = 117, 100%) of the respondents acknowledged that they give thrice end of term examination in the academic year. This result implies

that all the SHS mathematics teachers gave recommended number of ends of term examination.

Qualitative Results

This segment presents the interview results on some of the school-based assessment tasks that mathematics teachers use to assess students' learning. For example, one of the participants indicated that:

> *"I find that administering class tests multiple times throughout the year allows me to gauge students' progress effectively."* (Participant 1)

Another participant mentioned that:

> *"I incorporate a group assignment into my teaching approach on one occasion… Sometimes, once in a term or twice [in a term]"* (Participant 2 & 6).

Moreover, a participant commented that:

> *"I administer midterm tests to gauge students' understanding of specific topics."* (Participant 3 & 5)

Likewise, another participant indicated that:

> *"I conduct thrice end of term examination in a year to assess students' progress." (Participant 4)*

Mathematics Teachers use SBA Scores

Research question four sought to investigate how mathematics teachers put students' SBA scores to use. The items were measured on a five-point Likert scale ranging from Strongly Agree = 5, Agree = 4, Uncertain = 3, Disagree = 2, to Strongly Disagree = 1. All the negative worded items were reverse coded during the data processing stage. Table 9 shows the results on the uses of students' SBA scores.

Table 9: Mathematics Teachers' use of SBA results

Statement	M	SD
I use SBA results in designing learning activities which are suitable for students.	4.03	1.07
I use SBA results in supporting in remedial teaching	4.05	0.93
I use SBA results in supporting and following up the students' development	3.91	1.01
I use SBA results to develop and improve teaching and learning	4.03	1.08
I use SBA results to help administrators understand how groups of students are progressing	3.83	1.01
I use SBA results to help parents understand more about their children's progress as learners	3.74	1.06
I use SBA results help students become more self-reflective and take control of their own learning	3.98	0.94
I use SBA results to help students set their own goals to further their learning	3.67	0.92
I use SBA results to help other teachers focus their instruction more effectively	3.21	1.10
I always file and ignore SBA results	3.89	1.02
I always use SBA results for promotion	3.15	1.20
I always use SBA results for awarding grades	3.44	1.23
Average Mean/Average Standard Deviation	3.74	1.05

Note: M = Mean; SD = Standard Deviation
Source: Fieldwork (2023)

In Table 9, the results show that the highest mean recorded was on the statement that teachers use SBA results in remedial teaching (M = 4.05, SD = .93). This result suggests that mathematics teachers agreed that they use SBA results in remedial teaching. Again, the results reveal that mathematics teachers use SBA results in designing learning activities which are suitable for students (M = 4.03, SD = 1.07).

Similarly, the respondents agreed that they use SBA results to develop and improve teaching and learning (M = 4.03, SD = 1.08). This result implies

that mathematics teachers use SBA results to develop and improve teaching and learning.

However, the lowest mean was recorded on the statement that teachers always file and ignore SBA results (M = 2.11, SD = 1.02). This result means that mathematics teachers disagreed that they always file and ignore SBA results.

Qualitative Results

Mathematics teachers were interviewed on how they put students' SBA scores to use. The participants indicated that SBA results are used in remedial teaching, and designing learning activities which are suitable for students. Also, the SBA results are used to improve teaching and learning. For example, one of the participants commented that:

> *"Indeed, I leverage students' SBA results to identify areas where they need extra support. This informs my remedial teaching plans, allowing me to tailor interventions that directly address their weaknesses. It's a personalised approach that brings tangible improvement."* (Participant 1)

Additionally, a participant asserted that:

> *"SBA scores provide crucial insights into individual student strengths and weaknesses. I design learning activities that align with these insights, ensuring that the content is not only relevant but also engaging." (Participant 2)*

Moreover, another participant indicated that:

> *"Using SBA results as a basis for reflection has been transformative. It helps me fine-tune my teaching strategies by highlighting which*

concepts need more attention. This constant adjustment enhances the overall teaching and learning experience in my mathematics classroom." (Participant 3)

Challenges Mathematics Teachers Encounter in the use of SBA

Research question five sought to examine challenges that mathematics teachers encounter in the use of SBA. Table 10 shows the results on the challenges that mathematics teachers encounter in the use of SBA.

Table 10: Challenges that Mathematics Teachers Encounter in the use of SBA

Statement	Yes Freq (%)	No Freq (%)
Large number of students prevents me from implementing school-based assessment.	78 (66.7)	39 (33.3)
Non-availability of school-based assessment guidelines.	68 (58.1)	49 (41.9)
Lack of training for teachers on school-based assessment.	84 (71.8)	33 (28.2)
Truancy and irregular students' attendance.	86 (73.5)	31 (26.5)
Lack of support from the school authorities in terms of logistics and facilities.	76 (65.0)	41 (35.0)
Lack of motivation from school authorities.	55 (47.0)	62 (53.0)
Inadequate time allotted on the timetable for various subjects does not permit the use of school-based assessment effectively	72 (61.5)	45 (38.5)
Student copying one another's assignment and class work.	81 (69.2)	36 (30.8)
Insufficient time for discussion in groups	86 (73.5)	31 (26.5)
Inadequate school-based assessment materials	73 (62.4)	44 (37.6)
Difficulty in marking of scripts/assignments	60 (51.3)	57 (48.7)

Source: Fieldwork (2023)

From Table 10, the results show that majority (n = 86, 73.5%) of the respondents indicated that insufficient time for discussion in groups, and

truancy and irregular students' attendance are challenges that mathematics teachers encounter in the use of SBA. Additionally, more than half (n = 84, 71.8%) of the respondents indicated that lack of training for teachers on school-based assessment is a challenge.

Also, the results from Table 9 reveal that majority (n = 81, 69.2%) of the respondents indicated that student copying one another's assignment and classwork is one of the challenges they encounter in the use of SBA.

However, majority (n = 62, 53.0%) of the respondents indicated that lack of motivation from school authorities is not a challenge they encounter in the use of SBA.

Qualitative Results

Mathematics teachers were interviewed about the challenges they encounter in the use of school-based assessment. It was revealed from the interviews that some of the challenges that they encounter in the use of SBA are: lack of training for teachers on SBA, large number of students and inadequate school-based assessment materials. For example, one of the participants mentioned that:

> *"The lack of proper training for teachers on school-based assessment (SBA) has been a significant hurdle. While the concept is valuable, I often find myself unsure about the best practices for implementing SBA effectively. Without proper training, it's challenging to design appropriate assessment tasks, provide constructive feedback, and manage the assessment process smoothly."* (Participant 1)

This shows that lack of proper training for teachers on SBA in the various SHS is a challenge.

Also, another participant commented that:

> *"Implementing school-based assessment (SBA) becomes a daunting task when faced with a large number of students. The sheer volume of assessments to manage and evaluate makes it incredibly time-consuming. As a result, I struggle to provide timely and detailed feedback, which is crucial for student improvement. The workload associated with SBA can sometimes hinder my ability to focus on actual teaching and fostering meaningful interactions with students."* (Participant 2)

Furthermore, another participant asserted that:

> *"One of the main challenges I encounter in using school-based assessment (SBA) is the lack of adequate assessment materials. The materials provided by the school or curriculum might not align well with the learning objectives or the diversity of student abilities. This makes it difficult to create assessments that accurately gauge students' understanding and progress."* (Participant 3)

Moreover, one of the participants intimated that:

> *"I've faced difficulties in maintaining the quality and diversity of hen using school-based assessment (SBA). Designing a variety of assessments that cater to different learning styles and abilities requires a significant amount of time and effort. Additionally, creating assessments that effectively evaluate higher-order thinking skills can be particularly challenging."* (Participant 4).

Difference in Mathematics Teachers' Perception of SBA based on Sex

H_0: There is no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on sex.

The first research hypothesis sought to determine whether there is any statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on sex. Independent sample t-test was considered appropriate to test this hypothesis. The independent variable is sex which is made up of male (M) and female (F) SHS mathematics teachers and the dependent variable is perception of SBA. The test for homogeneity of variances was conducted prior to using the independent sample t-test. Levine's test was conducted to test the homogeneity of variance assumption for t-test analysis. Table 11 displays a summary of the results.

Table 11: Test of Homogeneity of Variances

Variable	Group	Test of Equality of Variances	
		F	Sig.
Perception of SBA	Gender	.250	.618

Source: Fieldwork (2023)

In Table 11, the Levine's test produced a non-significant result. A sig. value of .618 was obtained which is above the .05 threshold. This implies that the variances were assumed to be equal (homogeneous), thus, homogeneity of variances test has not been violated. Table 12 reveals the results of difference in the perception of SHS mathematics teachers about school-based assessment based on sex.

Table 12: Difference in the perception of SHS mathematics teachers about school-based assessment based on sex

Sex	M	SD	T	Df	*p*-value
Male	3.64	.46	-1.609	115	.110
Female	3.86	.48			

Source: Fieldwork (2023)

From Table 12, it can be observed that there is a difference in terms of the mean values for the male and female teachers with the mean of female teachers exceeding that of the males by .22. Nevertheless, to test whether the difference in the mean values was statistically significant, an independent sample t-test was used. The mean value of female teachers' perception of SBA (M = 3.86, SD = .48) is not significantly higher [t = -1.609, df = 115, p = .110 > .05 (two-tailed)] than that of males (M = 3.64, SD = .46). This result implies that mathematics teachers' perception of SBA may not susceptible to sex. Therefore, the null hypothesis is sustained.

Difference in Mathematics Teachers' Perception of SBA based on their Teaching Experience

H_0: There is no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience.

This research hypothesis sought to examine whether there is any statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience. One-way ANOVA was considered appropriate to analyse this hypothesis. The independent variable is teaching experience (in years) of mathematics teachers

and the dependent variable is perception of SBA. The test for homogeneity of variances was conducted prior to using the One-way ANOVA. Levine's test was conducted to test the homogeneity of variance assumption for One-way ANOVA. Table 13 presents a summary of the results.

Table 13: Test of Homogeneity of Variances

Variable	Group	Test of Equality of Variances	
		Levine Statistic	Sig.
Perception of SBA	TE	3.821	.111

Note: TE = Teaching Experience (in years)

Source: Fieldwork (2022)

From Table 13, the Levine's test produced a non-significant result. A sig. value of .111 was obtained which is above the .05 threshold. This implies that the variances were assumed to be equal (homogeneous), hence, homogeneity of variances test has not been violated. Afterwards, the descriptive statistics for difference in perception of SBA based on teaching experience was presented. Table 14 shows the descriptive statistics for difference in perception of SBA based on teaching experience.

Table 14: Descriptive Statistics for difference in Perception of SBA based on Teaching Experience

Teaching Experience (in years)	N	M	SD
5 and below	48	3.76	.46
6-10	29	3.80	.61
11-15	32	3.74	.43
16 and above	14	3.70	.29
Total	117	3.75	.46

Note: N = number, M = Mean; and SD = Standard Deviation
Source: Fieldwork (2023)

From Table 14, the results show that SHS mathematics teachers who had 6-10 years of teaching experience had a mean of 3.80 (*SD* = .61) which is higher than the rest of the teaching experience ranges. In order to ascertain whether there is a statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience. Table 15 shows the perception of SHS mathematics teachers about school-based assessment based on teaching experience.

Table 15: Difference in Perception of SBA based on Teaching Experience

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.601	3	.200	.925	.431
Within Groups	24.473	113	.217		
Total	25.074	116			

Source: Fieldwork (2023) *Significance level .05

In Table 15, the result reveals that there is no statistically significant difference in the perception of teachers about SBA based on their teaching experience (F = .925; df = 3, 113; p = .431 > .05). This implies that the perception of mathematics teachers about SBA is not sensitive to their teaching experience. Consequently, the null hypothesis is supported.

Discussion of Results

Perceptions of mathematics teachers about school-based assessment

Research question one examined the perceptions of mathematics teachers about school-based assessment. The findings of the study revealed that SHS mathematics teachers had positive perception about SBA. For instance, teachers affirmed that school-based assessment encourages collaboration between students, school-based assessment encourages communication between teachers and students, and school-based assessment encourages creative thinking of students. In the context of this study, the positive perception of SHS mathematics teachers towards SBA implies that they likely believe SBA to be beneficial or effective in some way. This could mean that they see SBA as a valuable tool for assessing students' understanding and skills in mathematics. It might also indicate that they think SBA helps in improving teaching and learning processes, provides a more holistic assessment of students, or aligns well with their teaching methodologies. The study's result is in tandem with that of Okyere and Larbi (2019) who discovered that mathematics teachers had positive perception about classroom assessment. It also collaborates with Imasuen and Iyamu (2021), who revealed that teachers have positive perception about SBA.

Likewise, the finding of the study is consistent with that of Awinyam (2018) who revealed that teachers had positive perceptions about what should be assessed. However, it is worth noting that Awinyam's study focused on assessment in general. Also, the findings of the study contradict that of Adediwura (2012) who revealed that secondary school teachers had negative perception of SBA.

Mathematics teachers practice school-based assessment

The second research question was intended to examine the extent to which mathematics teachers practice school-based assessment. Senior high school mathematics teachers confirmed the practice of SBA. For instance, the study showed that mathematics teachers analyse the problems students faced with the items and then organise a remedial session for the class, they sometimes give eleven assessments to their students in an academic year, they sometimes complete the administration of school-based assessment by the end of the eleventh week, they often give students two tests, one group exercise and a project work in a term, and develop test items based on objectives that are very critical in each term's work. The findings of the study were consistent with that of Iddrisu (2020) who found that primary school teachers practice SBA.

Conversely, the findings of the study is at variance with that of Awoniyi (2016) who discovered that SHS mathematics teachers lacked comprehension of SBA guidelines, resulting in their continued use of the previous continuous assessment scheme. Correspondingly, Nugba (2012) identified instances where certain schools and instructors deviated from the proper SBA procedures while evaluating students in Obuasi.

Kinds school-based assessment tasks do mathematics teachers use to assess their students' learning outcomes

Research question three sought to investigate the kinds of school-based assessment tasks that mathematics teachers use to assess their students' learning outcomes. The findings of the study indicated that majority of mathematics teachers give group exercise and midterm test three times in an academic year. Also, it was revealed that majority of the teachers give project work once in the year. Lastly, it was revealed that all the mathematics teachers conduct end of term examination. This result show that majority of the mathematics teachers follow the SBA guidelines in assessment.

The findings of the current study conformed to Oduro-Okyireh (2008) who found out that SHS teachers in Ashanti Region followed the basic principles in their testing (assessment) practices. However, the findings contradict Awoniyi (2016), who indicated that mathematics teachers in Central Region do not understanding the SBA guidelines and so do not practices, and still practice the old continuous assessment scheme

Teachers use of students' school-based assessment scores

The fourth research question was meant to examine how mathematics teachers put students' SBA scores to use. The findings of the study showed that mathematics teachers use SBA results in remedial teaching, mathematics teachers use SBA results in designing learning activities which are suitable for students, SBA results to develop and improve teaching and learning, use SBA results in supporting and following up the students' development. Again, mathematics teachers indicated that they use SBA results to help students become more self-reflective and take control of their own learning.

Challenges mathematics teachers encounter in the use of school-based assessment

The last research question examined the challenges mathematics teachers encounter in the use of SBA. The study showed that SHS mathematics teachers are confronted with certain challenges in the use of SBA. For example, the study revealed that insufficient time for discussion in groups, and truancy and irregular students' attendance, lack of training for teachers on school-based assessment, student copying one another's assignment and classwork is one of the challenges they encounter in the use of SBA, are challenges that mathematics teachers encounter in the use of SBA. The results from the study are in line with that of Iddrisu (2020) who revealed that some of the challenges that teachers faced in practicing SBA were truancy and irregular pupil attendance, and student copying one another's assignment and class work. Also, Belay and Tesfaye (2017) found that lack of professional support and training on assessment issues was a challenged in the use of assessment.

Similarly, in Awoniyi's (2016) study, it was uncovered that mathematics educators in the Senior High Schools located in the Cape Coast Metropolis encountered a range of difficulties. These challenges encompassed issues like the scarcity of assessment materials, inadequate facilities for record keeping, occurrences of truancy and absenteeism, instances of assignment and class work copying among peers. Additional hurdles included favoritism, instances of fictitious result inputting by specific teachers due to their close relationships with students or the students' parents. Furthermore, constraints such as insufficient time for test development, inadequate instructional time,

and a dearth of competence in assessment practices were also among the identified obstacles.

Perception of teachers about school-based assessment based on their gender

Research hypothesis one sought to determine whether there was any statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their gender. The study showed that there was no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their gender. This finding implies that, within the sample of teachers studied, the gender of the teachers does not appear to have a substantial influence on how they perceive school-based assessment. In other words, regardless of whether a teacher is male or female, they tend to share similar views and opinions regarding school-based assessment practices. The finding of the study confirms that of Somuah et al. (2020) who revealed that gender did not influence social studies teachers' perception of assessment.

Perception of teachers about school-based assessment based on their teaching experience

The last research hypothesis was meant to determine whether there was any statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience. The findings of the study indicated that there was no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience. This finding suggests that, within the studied group, the length of teaching experience does not seem to

have a significant impact on how teachers perceive school-based assessment practices. In other words, whether a teacher is relatively new or experienced in their teaching career, they tend to share similar views and opinions regarding school-based assessment.

The study's finding is consistent with that of Iddrisu (2020) who found that teachers' perception of school-based assessment was not influenced by their teaching experience. However, Talib et al. (2014), and Kinyua and Odiemo (2014) observed that teachers with more years of teaching experience practiced SBA in their classroom better than the less experienced ones.

Chapter Summary

The study examined SHS Mathematics teachers' perception and practice of school-based assessment in the Bono Region. The study revealed that SHS mathematics teachers had positive perception about school-based assessment. Also, the study showed that mathematics teachers use school-based assessment. Again, it was found that mathematics teachers give class/individual test more than three times, group project work and individual project work once, and group exercise more than three times.

Additionally, the findings of the study showed that mathematics teachers use SBA results in remedial teaching, mathematics teachers use SBA results in designing learning activities which are suitable for students, SBA results to develop and improve teaching and learning, use SBA results in supporting and following up the students' development. Again, mathematics teachers indicated that they use SBA results to help students become more self-reflective and take control of their own learning.

Moreover, the study showed that SHS mathematics teachers are confronted with certain challenges in the use of SBA. For example, the study revealed that insufficient time for discussion in groups, and truancy and irregular students' attendance, lack of training for teachers on school-based assessment, and students copying one another's assignment and classwork are challenges that mathematics teachers encounter in the use of SBA.

Furthermore, the study showed that there was no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their gender. Lastly, the findings of the study indicated that there was no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study investigated the perceptions and practices of school-based assessment among SHS Mathematics teachers in selected districts within the Bono Region. This chapter provides a concise overview of the primary discoveries derived from the investigation. Additionally, the chapter encompasses the conclusions and recommendations derived from the empirical findings of the study. The chapter also presents potential avenues for future research.

Summary

The following research questions were formulated to address the research objectives:

1. What are the mathematics teachers' perceptions of school-based assessment?
2. To what extent do mathematics teachers practice school-based assessment?
3. What kinds of school-based assessment tasks do mathematics teachers use to assess their students' learning outcomes?
4. How do mathematics teachers put students' school-based assessment scores to use?
5. What challenges do mathematics teachers encounter in the use of school-based assessment?

Also, the following research hypotheses were posed to guide the study:

1. H_0: There is no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on sex.
2. H_0: There is no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience.

The mixed methods research approach was employed for the study. The sequential explanatory mixed methods design was employed for the study. Also, the census method was used to select 117 SHS mathematics teachers. In addition, 6 mathematics teachers were interviewed for the qualitative data.

A questionnaire and interview guide were utilised as the data collection instruments. The demographic characteristics of the respondents were analysed using frequency and percentage. The research question one was analysed using mean and standard deviation. Again, the second research questions were analysed using frequency and percentage, and mean and standard deviation. Third research questions were analysed using frequency and percentage. Also, research question four was analysed using mean and standard deviation. Thematic analysis was used to analyse the qualitative data. The last research question was analysed using frequency and percentage. Research hypothesis one and two were analysed using independent samples t-test and One-way ANOVA respectively.

Key Findings

This section provides details of the key findings that evolved from the current study. The major findings of the study can be summarised as follows: The study revealed that SHS mathematics teachers had positive perception about school-based assessment.

1. The findings of the study showed that SHS mathematics teachers in the study had positive trend of perception about school-based assessment.
2. Additionally, the study indicated that mathematics teachers very often use school-based assessment guidelines.
3. It was found that majority the mathematics teachers gave the required number of group exercises, midterm test, and end of term examination in the academic year, however majority of the mathematics teachers did not give recommended number of project work in a year.
4. The study revealed that majority of the mathematics teachers use SBA results in: remedial teaching, designing learning activities which are suitable for students, developing and improve teaching and learning, supporting and following up the students' development.
5. Moreover, the findings of the study indicated that SHS mathematics teachers are confronted with certain challenges in the use of SBA. Some of the challenges are: insufficient time for discussion in groups, and truancy and irregular students' attendance, lack of training for teachers on school-based assessment, and students copying one another's assignment and classwork.

6. The study revealed that there was no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on gender.
7. Lastly, it was discovered that there was no statistically significant difference in the perception of SHS mathematics teachers about school-based assessment based on their teaching experience.

Conclusions

The following conclusions could be drawn from the findings of the study:

1. The study's findings revealed that the SHS mathematics teachers had positive perception towards SBA practices within the mathematics education domain. The willingness of SHS mathematics teachers to embrace SBA suggests a potential avenue for enhancing the teaching and learning experience, as well as promoting a more comprehensive evaluation of students' mathematical abilities.
2. Additionally, the study's findings shed light on a significant aspect of the educational landscape, highlighting the active engagement of senior high school mathematics teachers in the practice of school-based assessment. This discovery reaffirms the teachers' commitment to modern recommended assessment practices.
3. Furthermore, it can be concluded from the study that, the teachers hardly used project work to assess students' learning outcomes. On the contrary, teachers used end of term examination and group work regularly.

4. It can be concluded from that the finding that mathematics teachers utilise SBA results for remedial teaching to address individual learning needs. This personalised approach reflects the dedication of educators to ensure that no student is left behind and that comprehensive support is provided.
5. Also, the revealed that SHS mathematics teachers are grappling with challenges in SBA implementation underscores the need for a comprehensive approach to support and capacity building. The challenge of insufficient time for group discussions reflects the delicate balance teachers must strike between assessment and meaningful interaction. Likewise, issues of truancy and irregular attendance emphasize the broader context within which SBA operates, often requiring strategies beyond the classroom to ensure consistent participation. The lack of training for teachers on school-based assessment signifies the significance of ongoing professional development. This challenge underscores the importance of equipping teachers with the necessary skills and knowledge to effectively navigate the intricacies of SBA implementation. Additionally, the identification of students copying assignments and classwork highlights the importance of academic integrity and the need to instill values of originality and honest effort in students.
6. It can be concluded from the findings that, regardless of whether a teacher is a male or female, they seen to share similar views and opinions regarding school-based assessment practices.

7. The study concludes that the SHS mathematics teachers' perception of school-based assessment is not sensitive to their teaching experience.

Recommendations

The following recommendations were made based on the findings and conclusions of the study:

1. Ghana Education Service should offer workshops and seminars for mathematics teachers to encourage them to turn their positive perception to better practice.
2. Based on the study's findings that SHS mathematics teachers are engaged in the practice of school-based assessment, it is recommended that educational institutions and policymakers acknowledge and support this positive trend.
3. To further enhance the effectiveness of school-based assessment practices, it is advisable for educational authorities such as Ministry of Education and Ghana Education Service to provide these teachers with professional training for the teachers on how to use project work to assess students learning outcome. This will ensure that the assessments align with educational objectives, adequately measure student learning outcomes, and offer valuable insights into individual progress.
4. Stakeholders could support SHS mathematics teachers to continue using SBA results in this positive direction.
5. Recognizing the challenges identified, it is imperative to provide SHS mathematics teachers with specialised training on effective implementation of school-based assessment. Workshops and training sessions should address issues such as managing group discussions

within limited time frames, strategies to address truancy and irregular attendance, and methods to prevent assignment and classwork copying among students. Moreover, Ghana Education Service and head of SHS institutions should consider developing resource materials, handbooks, or guidelines specifically tailored to addressing these challenges. These resources can serve as practical references for teachers, offering insights into proven methods for handling issues related to time constraints, student attendance, and academic integrity.

6. Since gender and teaching experience do not appear to influence teachers' perceptions of school-based assessment, it is recommended that professional development programs and workshops related to gender bias on SBA urged to be designed and implemented in a gender-neutral and inclusive manner.
7. Given that there is no significant disparity in perception based on teaching experience, efforts should be directed towards ensuring that school-based assessment concepts and principles are universally understood and accepted among all teachers, regardless of how long they have been in the profession.

Suggestions for Further Research

This study examined SHS Mathematics teachers' perception and practice of school-based assessment in the Bono Region.

1. Further studies should concentrate on exploring the factors that shape SHS mathematics teachers' perceptions of school-based assessment.

2. Also, future studies should focus on investigating the professional development needs of mathematics teachers in the Bono Region regarding school-based assessment.
3. Again, studies should concentrate on analysing whether there is a disparity between teachers' perceptions of school-based assessment and their actual practices in the classroom.
4. Furthermore, future studies can focus on examining whether the current school-based assessment practices align with the mathematics curriculum in the Bono Region.
5. Lastly, further studies should explore how school-based assessment influences student engagement and motivation in mathematics.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

COLLEGE OF EDUCATION STUDIES

DEPARTMENT OF MATHEMATICS AND ICT EDUCATION

QUESTIONNAIRE

Dear Respondent,

My name is Evans Adinkra, an MPhil, Mathematics Education student of University of Cape Coast, Ghana. I am researching on the topic: senior high school mathematics teachers' perception and use of school-based assessment in three Districts in Bono Region which is the chosen area for the study. Your candid responses to this questionnaire are very valuable and will be appreciated.

Your response will be treated as confidential and will be used for research purpose only. The findings from this study will help to improve senior high school mathematics teachers' perception and use of school-based assessment. Thank you for taking your time to complete this questionnaire.

SECTION A: Demography of Respondents

Please put a check mark (√) where appropriate in the box corresponding to your choice concerning each statement.

1. School:

   Category A [ ]

   Category B [ ]

   Category C [ ]

2. Sex:

Male [ ]

Female [ ]

3. Highest Academic Qualification:

Diploma in education (Dip. Ed) [ ]

Bachelor of education (B. Ed) [ ]

Bachelor of Art/Bachelor of Science [ ]

BA/B.Sc with PGDE [ ]

Master of Education (M. ED) [ ]

MPhil in Education (M. Phil) [ ]

MA/M.Sc [ ]

Other (specify)……

3. Is your academic qualification in Mathematics?

Yes [ ]

No [ ]

4. Teaching Experience (Mathematics):

5yrs and below [ ]

6-10yrs [ ]

11-15yrs [ ]

16yrs and above [ ]

5. Have you attended workshop on school-based assessment?

Yes [ ]

No [ ]

7. If yes, when was the last year you attended the workshop?.....

Instruction: *Please tick [√] the appropriate box to indicate your level of agreement or disagreement with each statement on items in sections B & C.*

Key: *Strongly Agree (**SA**); Agree (**A**); Uncertain (**U**); Disagree (**D**); Strongly Disagree (**SD**)*

SECTION B

PERCEPTIONS OF MATHEMATICS TEACHERS ABOUT SCHOOL-BASED ASSESSMENT

Please tick {√} the appropriate box to indicate your opinion on these statements where **Strongly Agree (SA)**, **Agree (A)**, **Uncertain (U)**, **Disagree (D)**, and **Strongly Disagree (SD)**

SN	Statement	SD	D	U	A	SA
1	School-based assessment encourages creative thinking of students					
2	School-based assessment encourages collaboration between students					
3	School-based assessment encourages communication between teachers and students.					
4	School-based assessment is interesting.					
5	School-based assessment is not time wasting.					
6	School-based assessment procedures are easy.					
7	School-based assessment is a good way to assess a student.					
8	School-based assessment is an imprecise process.					
9	School-based assessment is unfair to students.					
10	School-based assessment interferes with teaching					
11	School-based assessment has little impact on teaching and learning.					

12. What other perception do you have about school-based assessment?
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SECTION C
MATHEMATICS TEACHERS' PRACTICE OF SCHOOL-BASED ASSESSMENT (SBA)

Please tick {√} the appropriate box to indicate your level of practice of SBA in teaching mathematics by indicating **Always (A), Very Often (VO), Sometimes (S) and Never (N)**

SN	Statement	N	S	VO	A
1	In practicing school-based assessment, I give four assessments per term.				
2	In practicing school-based assessment, I give total class score of 50% to overall school assessment.				
3	In SBA practice, I give my students two tests, one group exercise and a project work in a term.				
4	I develop test items based on objectives that are very critical in each term's work.				
5	I give project task to my students at the beginning of the term and submitted at the end of the term.				
6	I develop test items based on objectives that need creativity on the part of the student for learning performance.				
7	I complete the administration of school-based assessment by the end of the eleventh week.				
8	In practicing school-based assessment, I give total exams score of 70% to overall school assessment.				
9	In practicing school-based assessment, I make sure classroom instruction do not make use of real life as illustration to encourage students to apply their knowledge to problems of varying complexities.				
10	In school-based assessment practice, I do not give elven assessments to my students in an academic year.				
11	In school-based assessment, I do not analyse the problems students faced with the items and then organize a remedial session for the class.				

12. What other strategies do you adapt in administering school-based assessment?

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SECTION D
SCHOOL-BASED ASSESSMENT TASKS THAT TEACHERS USE TO ASSESS STUDENTS' LEARNING

Please indicate the extent to which you use these school-based assessment tasks or strategies in the academic year.

Key: Key: A = More than three times, B = Three times, C = Two times, D = Once, E = Never

S/N	School-Based Assessment Tasks/Strategies	A	B	C	D	E
1	Group Exercise					
2	Midterm Test					
3	Project Work					
4	End of Term Examination					

SECTION E

MATHEMATICS TEACHERS' USE OF SCHOOL-BASED ASSESSMENT RESULTS

Instruction: Please indicate with a tick {√} how you, as a mathematics teacher, put students' school-based assessment score to use. Where: SA = **Strongly Agree**, A = **Agree (A)**, U = **Uncertain**, D = **Disagree**, and SD = **Strongly Disagree**

SN	Statement	SD	D	U	A	SA
1	I use SBA results in designing learning activities which are suitable for students.					
2	I use SBA results in supporting in remedial teaching					
3	I use SBA results in supporting and following up the students' development					
4	I use SBA results to develop and improve teaching and learning					
5	I use SBA results to help administrators understand how groups of students are progressing					
6	I use SBA results to help parents understand more about their children's progress as learners					
7	I use SBA results help students become more self-reflective and take control of their own learning					
8	I use SBA results to help students set their own goals to further their learning					
9	I use SBA results to help other teachers focus their instruction more effectively					
10	I always file and ignore SBA results					
11	I always use SBA results for promotion					
12	I always use SBA results for awarding grades					

13. In what other ways do you, as a mathematics teacher, make use of students' school-based assessment results?

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CHALLENGES MATHEMATICS TEACHERS ENCOUNTER IN THE USE OF SCHOOL-BASED ASSESSMENT

Instruction: Please indicate with a Yes or No to the challenges you face in practicing school-based assessment.

SN	Statement	Yes	No
1	Large number of students prevents me from implementing school-based assessment.		
2	Non-availability of school-based assessment guidelines.		
3	Lack of training for teachers on school-based assessment.		
4	Truancy and irregular students' attendance.		
5	Lack of support from the school authorities in terms of logistics and facilities.		
6	Lack of motivation from school authorities.		
7	Inadequate time allotted on the timetable for various subjects does not permit the use of school-based assessment effectively		
8	Student copying one another's assignment and class work.		
9	Insufficient time for discussion in groups		
10	Inadequate school-based assessment materials		
11	Difficulty in marking of scripts/assignments		

12. What other challenges do you, as a mathematics teacher, face in practicing school-based assessment?

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APPENDIX B

INTERVIEW GUIDE

SECTION A: Preparatory Issues

Welcome Address

Introduction of the interviewer

Objective of the interview

Estimated Duration for Interview

SECTION B: Perceptions of Mathematics Teachers about School-Based Assessment

1. What are your perceptions about school-based assessment?

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SECTION C: Mathematics Teachers' Practice of School-Based Assessment

2. How do you practice school-based assessment?

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SECTION D: School-Based Assessment Tasks That Teachers Use To Assess Students' Learning

3. What are some of the school-based assessment tasks that you use to assess students' learning?

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SECTION E: **Mathematics Teachers' Use of School-Based Assessment Results**

4. How do you put students' school-based assessment results to use?

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SECTION F: **Challenges Mathematics Teachers Encounter in the Use of School-Based Assessment**

5. What are the challenges that mathematics teachers encounter in the use of school-based assessment?

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APPENDIX C

INTRODUCTORY LETTER

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF MATHEMATICS AND I.C.T EDUCATION

Telephone: 0332096951
Telex: 2552, UCC, GH
Telegrams & Cables: University, Cape Coast
Email: dmicte@ucc.edu.gh

University Post Office
Cape Coast, Ghana

Your Ref:

Our Ref: DMICTE/P.3/V.3/019

Date: 16th January, 2023

TO WHOM IT MAY CONCERN

Dear Sir / Madam,

RESEARCH VISIT

I write to introduce Evans Adinkra, with registration number ET/MDP/19/0013 an MPhil (Mathematics Education) student of the Department of Mathematics and ICT Education, College of Education Studies, University of Cape Coast.

As part of the requirement for the award of a master's degree, he is required to undertake a research on the topic **"SENIOR HIGH SCHOOL MATHEMATICS TEACHERS' PERCEPTION AND PRACTICE OF SCHOOL-BASED ASSESSMENT IN BONO REGION".**

I would be grateful if you could give him the necessary assistance he may need.

Thanks for your usual support.

Yours faithfully,

Dr. Forster D. Ntow
HEAD

APPENDIX D

ETHICAL CLEARANCE LETTER

UNIVERSITY OF CAPE COAST

INSTITUTIONAL REVIEW BOARD SECRETARIAT

TEL: 0558093143 / 0508878309
E-MAIL: irb@ucc.edu.gh
OUR REF: IRB/C3/Vol.1/0282
YOUR REF:
OMB NO: 0990-0279
IORG #: IORG0011497

2ND AUGUST, 2023

Evans Adinkra
Department of Mathematics and ICT Education
University of Cape Coast

Dear Mr Adinkra

ETHICAL CLEARANCE – ID (UCCIRB/CES/2023/48)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted Provisional Approval for the implementation of your research on **Senior High School Mathematics Teachers' Perception and Practice of School-Based Assessment in the Bono Region of Ghana.** This approval is valid from **2nd August, 2023 to 1st August, 2024**. You may apply for an extension of ethical approval if the study lasts for more than 12 months.

Please note that any modification to the project must first receive renewal clearance from the UCCIRB before its implementation. You are required to submit a periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

You are also required to report all serious adverse events related to this study to the UCCIRB within seven days verbally and fourteen days in writing.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours faithfully,

Kofi F. Amuquandoh
Ag. Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST