UNIVERSITY OF CAPE COAST

PREDICTIVE VALIDITY OF BASIC EDUCATION CERTIFICATE EXAMINATION RESULTS ON STUDENTS' ACADEMIC ACHIEVEMENT IN WEST AFRICA SENIOR SCHOOL CERTIFICATE EXAMINATION IN UPPER DENKYIRA EAST MUNICIPALITY

ADU ISAAC ABOAGYE

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BY

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Thesis submitted to the Department of Education and Psychology of the Faculty of Educational Foundations, College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Philosophy Degree in Educational Measurement and Evaluation

DECEMBER 2021

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:……..

Supervisors' Declaration

We 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:……..

ABSTRACT

The purpose of this study was to explore the predictive validity of BECE results in students' achievement on WASSCE in Upper Denkyira East Municipality. The target population for this study was students from the two selected public SHS who participated in the 2016 BECE and sat for their 2019 WASSCE. In total, a sample size of 300 students was considered for this study (165 students from Boa-amponsem Secondary Technical School and 135 students from and Dunkwa Secondary Technical School). Purposive, proportionate, and simple random sampling were used in selecting the participant for the study. The study adopted a correlational research design. Student inventory was used for the data collection and was analyzed with simple and multiple linear regression. Findings from this study revealed that, on the whole, student's achievement on BECE across the four core subjects under investigation were poor predictors of their WASSCE achievement. It was recommended that School authorities should pay serious attention to students' preparations at the BECE level to enhance larger progressive possessions on their achievement at the WASSCE level.

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DEDICATION

To all my dear mother, Yaa Nyarko and my sister, Sophia Adu Obenewaa.

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CHAPTER ONE

INTRODUCTION

Background to the Study

Every school's most valuable asset is its student, and schools are worthless without students. With this, there is now pressure on educational institutions to provide accountability for student success on their academic achievement (Campbell & Oblinger, 2007). In every Country, social and economic development are directly linked to students' academic achievement. Academic achievement of students' plays a vital part in the production of best excellence graduate to lead and constitute the labour (skilled and unskilled) force of the country (Adane, 2013; Otoo, 2007). Thus, every economy needs labour that can operate advanced machinery and can generate new ideas and methods for economic activities (Ray, 1998). However, the measurement of students' academic achievement in both external and internal examinations contributes to the success of educational institutions. Examinations are used to assess curriculum implementations by educational policy makers. Examinations are again used to promote students to their later stage in learning and for awarding of certificate (Jagero, 2013). Result from students' examinations is also used for selecting students for an advanced program (Musibau & Adigun, 2010).

There has been a growing concern among all Ghanaian's especially stakeholders of education as to whether there is a significant relationship between students' achievement on Basic Education Certificate Examination (BECE) result and the West African Senior Secondary School Certificate Examination (WASSCE) result obtained by candidates. These concerns are

related to whether the results from these examinations are the true reflection of their academic achievement. The issues are as a result of people perceptions on examination malpractices such as cheating in examination hall by candidate, usage of foreign materials, leakage of examination papers etc. For instance, in the 2015 Basic Education Certificate Examination, five subjects were cancelled by the West African Examination Council (WAEC) claiming the papers had been compromised. Also, the Director of the WAEC, at the national head office, also alleged that 2,293 examinees cheated in 2015 WASSCE (WASSCE Distinction Awards, 2016). In BECE 2018, the entire result of 83 candidates were cancelled and 2,061 withheld. WAEC said the results were cancelled because the candidate brought mobile phones into examination halls and received external assistance.

Again, WAEC Provisional Result in 2019 showed that the results of, 48,855 (14.12%) out of 346,094 candidate that took the WASSCE were retained waiting for further investigations into various sources of examination malpractices that occurred during and after the examination process. This includes; collusion among candidates and connivance of some school authorities and supervisors with candidate in cheating and bringing of foreign materials like smart phones, ready notes and written materials into the examination hall. These and many issues have raised general public concerns as to whether there is significant association between student's BECE and WASSCE achievement. Examinations is considered as a good quality measure in Ghana educational system. Examinations can be either internal or external. Examination that are set by classroom teachers are called internal examination. Such examinations are end of term examination, class exercises and assignment.

External examinations are also organized by external recognized examination body like WAEC. This include BECE and WASSCE. They are considered as external examination because those examination bodies do not organize instructional courses and also do not prepare students for the examinations. According to Salami, as sited in Adeyemi (2008), examinations that are based on norms which meets standard and are planned and organized under distinct terms and conditions are considered as external examinations. They are generally held after the conclusion of a program or a term of study.

Now in Ghana, examinations are set up such that scores and grades obtained by candidates from the BECE are computed and used for placement and selection into the Senior High School (SHS). The Ghana Education Service (GES) uses the Computer School Selection and Placement System (CSSPS) to place qualifying BECE contenders into SHS, Vocational Institute (VI), and Technical Institute (TI). A secretariat section of the Secondary Education Division of GES uses a computer to automatically pick and assign candidates into SHS based on their success in Mathematics, English Language, Social Studies, Integrated Science, and any extra two best subjects. Introduction of various reforms in the educational system in Ghana have made provision for external examinations (BECE and WASSCE) usually conducted by (WAEC) accompanied by grading pattern. Pattern of grading system of WAEC in BECE is based on Standard Nine with the descriptions presented in Table 1.

Table 1- *Descriptions of Grading System of WEAC*

BECE GRADES	DESCRIPTION	WASSCE GRADES	DESCRIPTION
1	HIGHERST	A1	EXCELLENT
2	HIGHER	B2	VERY GOOD
3	HIGH	B3	GOOD
4	HIGH AVERAGE	C4	CREDIT
5	AVERAGE	C5	CREDIT
6	LOW AVERAGE	C6	CREDIT
7	LOW	D7	PASS
8	LOWER	E8	PASS
9	LOWEST	F9	FAIL

Nevertheless, academic achievements are observed to be of direct outcome of learning. The main indicator of learning acquisition is through student's academic achievement. Learning is the continuous change in students' academic achievement from interconnection and experience with the world (Driscoll, 2015). Then, learning can be perceived through confirmation of student's achievement on associated tasks. Over the years, student's grades from examination are their source of determining their academic achievement in a program.

Predicting student's academic achievement is very important in education in that deliberate programs can be organized in monitoring or improving student's achievement throughout their course of study in an institution (Zaidah & Daliala, 2007). It can also be a yardstick for selecting student's that will flourish in other academic endeavors. It can again expose

how well teacher's instruction have been understood (Omirin & Ale, 2008). Predictive validity is an evidence-based validity which usually dealt with the capability of a test scores to predict future achievement (William & Irvin, 1990). Brown and Coughlin (2007), claims that Predictive validity is the ability of student's prior achievement from an assessment instrument to predict future achievement of the same construct (Using WASSCE result in predicting student year one GPA in University of Cape Coast). Correlation coefficient is always used to decide the predictive strength among two set of measures from the same targeted groups. A study of predictive validity of students' academic achievement is an interesting aspect to stakeholders of education because it is one more ultimate real-life performances (Messick, 1989). Many situations happen that allow for predictions to be made. Universities use predictive examinations for making decisions towards candidates prospective on educational study (Zaidah & Daliela, 2007). By this persistence, examinations serve as a tool in predicting students' academic achievement and eventually for making decisions on admittance of students for educational programs.

However, there has been a varying view on the predictability on students' assessment results from various researchers. For example, Babalola and Hashimu (2020) investigated on predictive validity of students' internal assessment scores on their achievement on JSC Examination in Mathematics at Gomba state, Nigeria and argued that continuous assessment scores of students were not a predictor of their JSCE Mathematics for 2015/2016 academic session. Findings from Al-Shorayye (1995) and Adeyemi (1998) buttressed the results found by other researchers that SSC examination result and that of GCE of Nigeria gave the best predictor of the academic achievement in 1993. Again,

Adeyemi, (2008) conducted research to examine how achievement on Senior Secondary Certificate (SSC) examination can be predicted from students' achievement on Junior Secondary Certificate examination at Nigeria and concluded that students' JSC examinations was a good predictor of their achievement at SSC examination. This finding was opposed by O'Rourke, Martin and Hurley's (1989) who found that the test of Scholastic Aptitude (SAT) was not a good predictor of Leaving Certificate Examination (LCE). Uchechi, (2017) also concluded that students' academic achievement on basic Science was a bad predictor of students' achievement of in Physics, Chemistry and Biology during their SSC at Abia State, Nigeria. This current study therefore tries to establish the predictive value of students' academic achievement of BECE results on WASSCE result of students in Upper Denkyira East Municipality.

Statement of the Problem

The measurement of the relationship between examinees' test performance and their true status as non-masters or masters is known as predictive validity. Predictive validity addresses the issue of how effectively the test predicts whether examinees will become masters or non-masters in the future (Adeyemi, 2015.). Predictive validity is useful for purposes of test like selection or admission and placement. Henceforth, the significance of predictive validity on examinations cannot be abandoned. The value of tests for learners and some practitioners in education is enhanced by their predictive validity. The topic of predictive validity of external examinations remains great concern as it seems inequitable to evaluate the worth of a student on a single examination.

Though many studies have been carried out worldwide on predictive ability of an examinee's achievements on various levels of academic endeavor including studies at United States (Kobbrin & Schmidt, 2006), London (Cortis, 1968) and other developing countries (Daniel & Schouteen, 1970), (Gonnela & Rothsein, 2004), (Daniel, 2011), their findings revealed a remarkable positive relationship between students' college grades and high school grades. Only a handful have been carried out in Africa, with the majority taking place in Nigeria. Opara, Ijeoma and Uchechi (2017) found a low relationship between achievement of students' JSCE on basic Science and students' achievement in SSCE on Physics. Their findings were in consonance with Afolabi and Falaye, (2015) who also revealed that students' academic achievement on JSCE predicted badly their achievement on SSCE. According to another study conducted by Badru (2015), there exist no significant relationship between students' cognitive style test and problem-solving method test in Mathematics.

Findings made by Babatunde, Chukuwuemeka, Abdulrahim and Adai (2019) reported a significant change among the mean scores of academic achievements of non-direct entry and Direct Entry (Pre-NCE) and NCE III and NCE I, NCE II) students in the Niger State College of Education's school of sciences. One related study conducted in Kenya by Ochieng, (2012) reveals that achievement in internal summative examination well predicted students' achievement in external summative examination of all the subject under study. In most of these studies, the result was inclusive, but no study of this kind has been conducted in Ghana specifically at Upper Denkyira East Municipality of Central Region.

Again, the studies conducted in this area seems to have been conducted on only one subject area but not on a combination of different subject's areas. The effort of this current study is then to explore how well students' achievement in Core subjects from the BECE (Mathematics, English Language, Social Studies and Integrated Science) would predict their achievement in the same core subjects of WASSCE (Mathematics, English Language, Social Studies and Integrated Science) in Upper Denkyira East Municipality of Ghana. This is because these core subjects are considered the most important among all the subjects in both JHS and SHS in Ghana. Failure in any of these core subjects prevents students from moving to the next level in their educational pursuit. Again, previous studies of this nature have not been conducted on two external examinations in Ghana. Also, due to reports from the GES that there are high examination malpractices during BECE, concerns have been raised as to whether WASSCE results are true reflections of students' ability. This study therefore seeks to explore whether BECE results will predict WASSCE results among students.

Purpose of the Study

The purpose of this study was to investigate the predictive validity of students' achievement on WASSCE from their achievement in BECE. Precisely, the study seeks to investigate: whether student's academic achievement in:

1. BECE English language can predict students' achievement in WASSCE English language in Upper Denkyira East Municipality.
2. BECE Mathematic can predict students' achievement in WASSCE Mathematics in Upper denkyira East Municipality.

3. BECE Integrated Science can predict students' achievement in WASSCE Integrated Science in Upper Denkyira East Municipality.
4. BECE Social Studies can predict students' achievement in WASSCE Social Studies in Upper Denkyira East Municipality.

Research Hypotheses

This study was directed by the succeeding research hypotheses:

1. H_0: The achievement on student's BECE English Language is not significant predictor of student's achievement on WACCE English language in Upper Denkyira East Municipality.

   H_1: The achievement on student's BECE English Language is a significant predictor of student's achievement on WACCE English language in Upper Denkyira East Municipality.
2. H_0: The achievement on student's BECE Mathematics is not significant predictor of student's achievement on WACCE Mathematics in Upper Denkyira East Municipality.

   H_1: The achievement on student's BECE Mathematics is a significant predictor of student's achievement on WACCE Mathematics in Upper Denkyira East Municipality.
3. H_0: The achievement on student's BECE Integrated Science is not significant predictor of student's achievement on WACCE Integrated Science in Upper Denkyira East Municipality.

   H_1: The achievement on student's BECE Integrated Science is a significant predictor of student's achievement on WACCE Integrated Science in Upper Denkyira East Municipality.

4. H_0: The achievement on student's BECE Social Studies is not significant predictor of student's achievement on WACCE Social Studies in Upper Denkyira East Municipality.

   H_1: The achievement on student's BECE Social Studies is a significant predictor of student's achievement on WACCE Social Studies in Upper Denkyira East Municipality.

Significance of the Study

Students' academic records are of great concern to all stakeholders of educational enterprise especially in the area of reliability and validity of students' assessment results. This study will be of benefits to the Ghana Education Service in that, it will enable them put measures in place to deal with obstacles that prevent the attainment of true reflections of students in examinations such as malpractices in examinations. This study will further guide the GES to include effective teaching and learning programs that will equip students to attain a high mastery level on their academic achievement in subjects with poor mastery level.

Findings from this study would again help teachers and school counselors as well as stakeholders of education to be capable of identifying and predicting the mastery level of students' achievement on a particular subject for onwards decisions. This study would substantially help school administrators as they would use the results in finding out the effectiveness of teaching and learning.

Finally, this study is foreseen to be of great help to other researchers. This is because it will lay grounds for further research for academicians and researchers who would like to research in similar area due to the fact that only

little studies in Ghana has considered predictive validity of two external examinations in Ghana.

Delimitation

The study was confined to secondary schools at the Upper Denkyira East Municipality in the Central Region of Ghana. The study was narrowed to only the two public SHS in the Municipality. Besides, the scope of this study concentrated on predicting students' academic achievement on WASSCE (2019) from students' academic achievement on BECE (2016) among secondary schools in Upper Denkyira East Municipality. Finally, the study was delimited to only the four core subjects from Ghanaian school curriculum.

Limitations

Considering nationwide study would have justify any generalization in ideal circumstances but time and resources available for the study made this unworkable. This accounted for the selection of the only two public senior high secondary schools in the Upper Denkyira East Municipality. Only the four core subjects taught at the JHS and SHS were considered for the study, therefore, might affect generalization on the predictability of student's academic achievement.

Definition of Terms

Academic Achievement: these are the grades of the core subject obtained by students at the BECE and WASSCE level. In general, Academic achievement are scores and grades obtained by students after victorious fulfillment at the conclusion of a program or a period of study.

Predictive Validity: Refers to the association among BECE and the WASSCE result or the ability of the BECE to predict WASSCE result.

Organization of the Study

This study examines the predictive validity of WASSCE results from student's academic achievement on BECE results in Upper Denkyira East Municipality. The research is divided into five chapters. The first chapter dealt with the study's introduction. It includes the study's background, statement of the problem, purpose, research questions, and significance, as well as the study's delimitations and limits. The review of related literature was the subject of the second chapter. It included the study's theoretical and empirical evidence. The methodology used in this study was covered in Chapter 3. The research design, population, sample, and sampling procedures were all part of this. It also looks at the instrument employed in the study's design and administration. The technique for gathering data was also discussed in the chapter, as well as how the data was analyzed. The fourth chapter concentrated on the analysis and discussion of data collected from the selected schools, while the fifth chapter, the summary, conclusions, recommendations, and proposals for future research, was the last but not least.

CHAPTER TWO

LITERATURE REVIEW

This study is to explore the predictive validity of BECE results on students' academic achievement on WASSCE in Upper Denkyira East Municipality. This chapter examines the review of related literature in relation to the topic under discussion. The review has been divided in three sections. The theoretical review, which discusses the theories that explains the topic of the present study, the conceptual review, in which the concepts in this study has been defined, and the empirical review, which highlights the findings of studies conducted in the area that are associated with the present study.

Theoretical Framework

Positivist (Scientific) view: Writing of examinations or test is part of an assessment procedure (Mckellar, 2002). Traditionally, assessing student is observed as a way of confirming their learning after an instructional unit (Birtz, 1991). With positivists, an assessment is based on concepts of scientific, beliefs which appeals to social settings including sociological and educational contexts. According to Mckella (2002), Positivists assumed that objectivity can be achieved by someone and therefore discover facts about the actual world. It argues that knowledge is value free and fair. The goal of the school curriculum is therefore to use communication models of instruction to facilitate students' this truth and making sure these truths are learned by students. The positivist view considers knowledge to be end product that can be controlled, measured and predicted (Grundy, 1987). With this argument of view, the drive of education is to develop the youth to put up to the wellbeing of the whole society. Public external examinations are purposely to ascertain how much the end

product of students' have been achieved, and also for selection, ranking and grading. Traditional examination is an external force which form part of the general curriculum as well as students' learning (Short & Burke, 1991).

Positivists (scientific) view under theoretical perspective of assessment has a significant bearing on this study. Both BECE and WASSCE serves the purpose of traditional external examinations which are used to ascertain how much students' academic end products (knowledge) are attained as well as determining students' mastery level and for grading and selection (Allen & Yen, 2002).

Classical True Score (test) Theory

Classical test theory is a collection of linked psychometric theories that predict psychological testing results including item difficulty and student skill level. This hypothesis began to take shape when academicians realized that all human measurements are likely to contain human error (Traub, 1997). Traditional test theory's purpose is to better comprehend and increase the reliability of psychological test. Every measurement, according to the standard test theory of measurement, is the totality of a person's true score, random error, and systematic error (Allen & Yen, 1979; DeVellis, 2003). A person's real score is an error-free assessment of the concealed variable. Random error is defined as unaccounted-for influences on the final test score that affect some but not all examinees. Random error impacts individual scores differently than systematic error, which affects all results in the same way. The true score theory is defined as $X = T + E$ $(r + s)$, where X represents the observed or accomplished score on a measure or test, T represents the true score, and E represents the error (random and systematic).

True score theory is crucial for psychological and educational assessment, according to DeVellis (2003) and Kline (2005), as it allows for the computation of a true score using the shared variance of the sum of the true score and error scores. Psychological conceptions are merely theoretical constructs, and measuring them does not provide a precise approximation of an individual's true score and inaccuracy. A persons' true scores and error can be approximated using their obtained score (total of error and genuine ability) on a test which has been validated as a reliable and valid demonstration of the underlying construct of concern, or latent variable. The bases of true score theory are validity and reliability (DeVellis, 2003). If the test scores do not generate a valid measure of the complete construct of concern, the measure could never be used to estimate participants' true scores because on a different framework, it would merely assess error or individual differences (or combination of both). True score theory, as a result, needs exams to assess the psychometric soundness of measures (Messick, 1989). Traditional test theory prohibits evaluating reliability directly because it would entail knowing the true results, which is difficult. Classical test theory is a prevalent hypothesis of test scores in the social sciences (Allen and Yen, 2002).

Classical True Score (Test) theory has a significant bearing and will guide this study. Students' scores from BECE and WASSCE are estimation of their true and error scores based on their obtained score. This theory is essential for this study in that it implies that the scores obtained on BECE is a combination of true and errors scores of the student and this score may or may not realized as WASSCE score because different factors come into play such as

students characteristics, personality of rater, difficulty level of examination among others.

Conceptual Review

Assessment

According to Brown, (1990) assessment refers to a related series of measures used to determine a complex attribute of an individual or group of individuals. This involves gathering and interpreting information about student level of attainment of learning goals. Assessments also are used to identify individual student weaknesses and strengths so that educators can provide specialized academic support educational programming, or social services. In addition, assessments are developed by a wide array of groups and individuals, including teachers, district administrators universities, private companies, state departments of education, and groups that include a combination of these individuals and institutions (Yambi, & Yambi, 2020). Assessment is important because it drives students learning (Brown 1990). Whether we like it or not, most students tend to focus their energies on the best or most expeditious way to pass their 'tests.' Based on this knowledge, we can use our assessment strategies to manipulate the kinds of learning that takes place. For example, assessment strategies that focus predominantly on recall of knowledge will likely promote superficial learning. The BECE and WASSCE are purely based on recall abilities of the students.

Grading

According to Hogan (2007) and Magno and Ouano (2010), grading implies (a) combining several assessments, (b) translating the result into some type of scale that has evaluative meaning, and (c) reporting the result in a formal

way. From this definition, we can clearly say that grading is more than quantitative values as many may see it; rather, it is a process. Grades are frequently misunderstood as scores. However, it must be clarified that scores make up the grades. Grades are the ones written in the report cards of students which is a compilation of students' progress and achievement all throughout a quarter, a trimester, a semester or a school year. Grades are symbols used to convey the overall performance or achievement of a student and they are frequently used for summative assessments of students. Take for instance, the BECE and WASSCE as requirement for end of a school year. To arrive at grades, a rater must be able to combine scores from these different sets of requirements and compute or translate them according to the assigned weights or percentages. Then, he or she should also be able to design effective ways on how he or she can communicate it with students, parents, administrators and others who are concerned. The grading systems adopted for the BECE and WASSCE in Ghana has been explained in table 1 above.

Basic Education Certificate Examination

This examination is both for certification and selection into Senior High Schools and Technical Institutes in Ghana. The result of the examination is based on Continuous Assessment and the external examination. The Continuous Assessment forms 30% whilst the external examination forms 70% of the total assessment. Candidates in the third year of Junior High Schools approved by the Ghana Education Service are eligible to register to take part in this examination. The date for writing this examination varies but mostly it is written in June each year nationwide. Registration for the examination is done electronically in October/November each year. Statement of Entries, CDs

together with the registration fees should reach the appropriate Office of the Council by specified dates that will be determined by the Council from year to year. Subjects for the examination are English Language, Mathematics, Integrated Science, Social Studies, Ghanaian Language and Culture, Religious and Moral Education, Basic Design and Technology, Information and Communication Technology and French (optional). Candidates are graded based on their performance in the external examination (objective and written) and Continuous (Internal) Assessment marks provided by the schools. A nine-point numerical scale is used in grading the candidates with Grade 1 denoting the highest performance and Grade 9 the lowest. The results of the examination are released in August to enable successful and qualified candidates enter Senior High Schools and Technical Institutes at the beginning of the academic year. The results lists are sent to the participating schools, whilst each candidate receives a statement of results through his/her school. Candidates can also check their results online with an access card at www.waecgh.org. (WAEC, 2021).

West African Senior School Certificate Examination

The West African Senior School Certificate Examination (WASSCE) is administered to school candidates in the third year of Senior High School and to private candidates. The examination is for both selection to tertiary institutions and for certification. The examination is conducted twice a year - May / June for school candidates only and in September / October for private candidates. The entry period is September to November, and it lasts for six weeks. School authorities are expected to register their candidates and upload their entry data on- line. Continuous Assessment Scores are however received from the schools on CDs. Other details of the entry procedure are provided in

Notes for the Guidance of Schools which are supplied together with the entry documents. The completed entry documents, together with evidence of payment of registration fees at a designated bank are expected to be submitted to the Council's Office located in the region of the school. The registration, however, is strictly online for private candidates. The core subjects for the examination include, English Language, Mathematics (core), Integrated Science, Social Studies. In addition, In addition to the Core Subjects, each candidate must choose one of the options under one of the programmes and must enter and sit for three or four Elective Subjects from the Option of his/her choice. Available programmes are, General Science, Agriculture, General Arts, Business, Visual Arts, Home Economics, and Technical Programme. The results of the examination are released in July to enable successful and qualified candidates enter tertiary institutions at the beginning of the academic year. The results lists are sent to the participating schools. Candidates can also check their results online with an access card at www.waecgh.org. (WAEC, 2021)

Validity and Reliability

One greatest significant psychometric properties of measures are validity. An overall evaluative evaluation of the degree to which empirical data and theoretical rationales support the suitability and appropriateness of interpretations and actions based on test scores or other modalities of assessment, according to Messick (1989; 1995). As a result, validity and reliability principles relate to all sorts of evaluations which issue points established on perceived behavior consistency (Messick, 1989, 1995).

Nature of Validity

Nitko (1996, p. 36) defined validity as the soundness of the interpretations and usage of students' assessment results. Validity focuses on the interpretation and use of the results rather than the test instrument. Proof must be shown to show whether the explanations and applications are suitable. When considering the term validity in reference to testing and assessment, five points should be notice, according to Nitko (2004).

Validity relates to the suitability of how an assessment technique's outcome is interpreted and used for a certain set of people, not to the procedure itself. For the sake of convenience, we sometimes refer to the validity of a test, but it is more accurate to refer to the interpretation and application of the results (Nitko, 2004).

Validity is considered in terms of degree; it is not an all-or-nothing proposition. As a result, we should refrain from categorizing assessment results as legitimate or incorrect. The easiest mode to consider about validity is to consider about it in terms of degrees, such as low, moderate, and high validity (Nitko, 2004).

Validity is usually tied to a certain application or explanation for a specific group of examinees. In this way, no single judgment is appropriate for all uses. For example, an English test result may have high validity for showing reading ability, poor validity for demonstrating writing mastery, intermediate validity for predicting future English course achievement, and virtually no validity for predicting Science achievement. The English test may have a high validity for class five kids but a low validity for class six students when indicating computational skill. As a result, when assessing or describing validity, it's

important to think about how the results will be explained or used. An assessment results are never simply valid; they have varying degrees of validity depending on the explanation being made (Nitko, 2004).

Validity entails a broad evaluative assessment. Validity is defined as a measure of how well explanations and usages of assessment results are supported by proof, as well as the consequences of those interpretations and uses. There are numerous methods for gathering evidence to support or refute the validity of an explanation or application of assessment results. The criteria go beyond five evidences that could be used to assess the validity of a certain application or interpretation. These forms of evidence are based on the following: content of test, processes of response, internal structure, linkages with other variables, and testing results. As a result, validation may include looking at the relationship between particular items and test scores, as well as the repercussions of using and interpreting assessment data (Nitko, 2004).

Validity Evidence

In the literature, three main types of validity evidence have been identified: content-related, construct-related and criterion-related evidence.

Content-related validity evidence.

The fundamental goal of content validation is to see if an item accurately represents a given achievement area of a psychological construct. Since the validity of a classroom assessment's outcomes is heavily influenced by how well the assessment samples the learning objectives (Nitko & Brookhart, 2007). The test items should sufficiently sample the area of concern in content validation. This can be accomplished through obviously outlining the most essential learning objectives and confirming that the assessment technique adequately

samples them. The tasks included in an assessment, according to Nitko and Brookhart, should reveal the relevant content and learning objectives established in the school's curriculum framework. Again, they stated that the evaluation topic should be extremely valuable or significant to students' future learning or life skills.

According to Airasian (2005), test items should fit course objectives, instruction, and mirror proper sample of instructional resources to ensure content validity. The components must be divided evenly among the curriculum's subject and things thought in class by the teacher. The test creator needs to ensure the content being assessed is closely related to crucial learning objectives. The items are then compared to the test specifications table to control the content validity of the test. The amount of content validity in a test may also be assessed by test specialists or judges.

According to Amedahe and Asamoah-Gyimah (2013), In order to observe the content validity of a given test, individual should first establish the content domain. They went on to say that in order to achieve the above, the test creator should think about content matter of the subject and the kind of learning goal they want learners to achieve. They went on to say that in order to achieve the above, the test creator must take into account the subject matter-content as well as the type of learning goal that students are expected to attain. Curriculum and teaching influence the domain of accomplishment tasks in classroom assessments. To ensure content validity of teacher-made assessments, Amedahe and Asamoah-Gyimah noted that the field of instructionally pertinent tasks to be utilized to measure student's accomplishment must be obviously described.

According to Notar, Zuelke, Wilson, and Yunker (2004), the best way to ensure content validity for exams made by teachers is to create specification table. The specification table will guarantee whether the tested content matches the content considered. The table of test specifications, according to Miller, Linn, and Gronlund (2009), Teacher-created tests generate marks that reflect on thought topics and learning targets which the test creator wishes to achieve. This enables the test developer to recognize the learning target at all Bloom's Taxonomy level. In practice, the content of examinations has the greatest impact on the learning tactics used by pupils. Students may aim to utilize surface learning tactics while still receiving good scores if the content validity of a test is very low by reason of the test developer incapacity to build items from significant domains. Most learners' poor performance in external examinations may be related to their familiarity with low content validity tests, which do not force learners to use effective learning tactics in their preparations.

Construct-related Evidence of Validity

Construct validity refers to the degree to which a measure exactly measures what it promises to measure (Gall et al., 2007). The number of sales made by an individual in a month, for example, might be a reasonable metric of work success. If an employer believes sales performance to be a critical component of work success, then measuring that attribute and making used of the findings to take a decision is a valid use of the data. Equally, shoe size is not a reliable determinant of job performance. Predicting future work performance using shoe size would be an erroneous use of the obtained scores since there is no predicted association among shoe size and work performance. It’s one thing to have a consistent (replicable) measurement of shoe size; but, getting a reliable

score does not always mean it is being used appropriately. Both construct validity characteristics are convergent and discriminant validity (Messick, 1989; 1995). The degree to which scores on one measure show a great, average, or minimal association with scores on another test trying to assess equal or comparable constructs is referred to as convergent validity (Messick, 1989; 1995). Convergent validity data might be obtained by correlating the findings on both measures, which could be used to assess the new measures' overall validity (Messick, 1989; 1995). Contrary, discriminant validity is the degree to which test results may be used to make decisions.

To evaluate construct validity, existing theoretical and observed facts on the interested construct should be examined. Theory and empirical findings which are predicted may be evaluated in research with the measure, and the results can be used to decide if the measure has acceptable validity or not. Repeated testing and empirical research are the most common ways to assess construct validity. Construct validity would be established if professionals in their area always use a measure and are able to implicitly assess and comprehend the results in terms of theory and predictions (Messick, 1989). However, it is a fact that human error (measurement error) has played a role, such that findings made by researcher which appear to be proof of construct validity are really the result of error. Indication which seems to show that a measure has low construct validity, on the other hand, might be attributable to human error. To guarantee trust in, and good use of test scores, several types of validity evidence, similar to reliability should attained to ensure sureness in, and proper use of test scores, should be gathered.

Criterion-related Validity

Criteria-related validity is utilized when the outcomes of a measure are been associated to a criterion (Messick, 1995). As an example, the Graduate Record Examination (GRE) would be considered to have excellent criterion-related validity if students who did well on the GRE in graduate school had higher grade-point averages than students who scored badly on the GRE. To put it another way, people's GRE scores could predict their upcoming graduate school achievement.

Subject to the time period among the administrations of the measures, criterion-related validity estimates can be generated one of two methods. For instance, swimming ability and swimming, itself, and also BECE against WASSCE accomplishment (Allen & Yen, 1979). Predictive validity is the capability to forecast future behavior based on the findings of a test (Allen & Yen, 1979). A predictive validity estimation for the WASSCE would be created by conducting Mock exam to a group of SHS students and later compare to their WASSCE achievement. A predictive validity coefficient would arise from the correlation between students' Mock scores (the predictor) and their criterion scores (WASSCE). In certain circumstances, the criterion and the predictor are assessed simultaneously, and this is considered as a concurrent validity. Concurrent validity evidence would be provided by correlating these scores, indicating if the new, more efficient predictor should be adopted. A larger correlation value (e.g., r =.70) indicates significant criterion-related validity, whereas correlations at or near 0 imply no criterion-related validity.

Predictive Validity

The ability for an assessment result to predict future performance in a similar construct is termed as predictive validity (Brown & Coughlin, 2007). Thus, the ability of operationalization measurements to predict other measures of the same construct that will be measured at another time (DeVellis, 2011). The correlation coefficients for predictive validation studies are likely to be lower due to the passage of time. Simple correlation coefficients are used to measure both types of validity (Gonnela and Rothstein, 2000). Assessment is neither valid nor invalid; somewhat, they have more or less evidence to backing or deny a particular interpretation. Validity is handled as a hypothesis, with data collected and assembled to support or refute the suggested hypothesis using theory, reasoning, and the scientific method at a specific point in time, score interpretations. Results and reasoning are combined to form advantages and disadvantages arguments for a particular explanation of assessment data. Predictive validity, according to Gonnela and Rothstein (2004), is an assessment of the accuracy with which a test predicts future achievement.

A statistically significant association among test scores and the criterion used to measure validity is required for a test to have predictive validity. Test results are collected first in a predictive validity research, and then the criterion measure is calculated. Here's one example that's a little different: Students take exams, and their test scores are subsequently linked to their first-year work performance scores after they have taken the examinations for a year (Al-Shoree, 1995). Additional applicable case is SAT scores, which are verified by comparing them to the test takers first-year college grade point average after a year (or more) has elapsed. As a result, predictive validity offers extra valuable

information regarding the test's validity since it is truer to the real-world situations in which it will be used. After all, most testing is done in order to learn anything about future behavior.

GRE results are frequently reviewed throughout the admittances process for potential graduate students, according to Daniel (2011), and there have been various reviews of the GRE's predictive validity for graduate school achievement in graduate psychology. His study's purpose was to explore if the Advanced Psychology of GRE Test might predict learners' grades in certain graduate courses. 236 graduate students in professional psychology programs had their academic records examined. Higher GRE scores were found to be associated with higher marks in a variety of courses. These data imply that, in some situations, Advanced Psychology of GRE test scores are linked to later success in graduate psychology courses.

The greatest prevalent application of predictive validity is in the selection of university students. In order to locate the brightest and most motivated students, most institutions use high school grade point averages to determine learners to enroll. This technique is based on the idea that a high-school student with a good grade point average would succeed in university. Predictive validity is most commonly used in the university admissions process. In an attempt to locate the sunniest and most motivated learners, most institutions use high school grade point averages to pick which learners to enroll. The primary assumption in this procedure is that a high-school student with a high-grade point average will do well in university (Owoyomi 2000).

Hundreds of researches have been conducted to examine the predictive validity of this method. To do this, a researcher compares the grades earned

after studies of year one to the high school grade point averages (Powell, 2010). A great relationship implies the selection technique functioned well, while a small relationship suggests that the approach is inconsistent. The majority of research reveal a substantial association among the two, and the method's predictive validity is high, though not perfect. This is reasonable on the surface; formerly brilliant students may well follow lousy company friends and waste valuable time following first-year courses. In the relative freedom of the university atmosphere, however, underachieving college students often become dedicated, hardworking students (Moghaddam, 2010).

Conditions for Predictability

Validity is frequently evaluated in conjunction with reliability, which intends to determine the amount of consistency of results produced by measures. Early definitions of test validity included the amount of association among the test and a criterion. Test reliability and the criterion provides an upper limit on the conceivable connection among them, (validity coefficient). Indeed, this mirrors the fact that reliability entails the absence of random error, and random mistakes are unrelated. Theoretically, the lower the random error in the variables, the greater the potential association among them (West & McCracken, 1998). Second, a test is unable to have great validity without also having great reliability, according to this definition. However, the meaning of validity has grown well further than the initial definition, and the traditional association among reliability and validity no longer holds true for other definitions of reliability and validity.

Faleye and Folabi (1998) claim that for reliability and validity to hold, an examination should generate reliable results and not be meaningfully

impacted by outside circumstances. They again claim that, the greatest essential attribute of a test is validity, and as such a valid test must measure what it claims to assess. Appropriate safeguards must be considered. The term psychometrics refers to how psychological tests are described typically in academic endeavor. A steady flow of facts concerning pupils' improvement or probable explanations for their lack of development is required for effective education. Teachers are expected to be competent to teach as well as construct accurate and effective assessment instruments to measure students' academic success after completing their training (Giacomini and White, 2006).

On scientific grounds, enquiries about the suitability of an examination as a measure of the attributes it's supposed to examine can be answered by evaluating psychometric proof (Messic, 1980). Because all psychological measurements are imperfect. It's uncommon to build up a reliable examination perfectly. In this case, reliability refers to the amount to which these faults are apparent. For one to launch the degree of relationship among a predictor and criterion, examination is considered to be trustworthy if the results of examinees might be recreated by writing the similar examination again under comparable conditions. As a result, the predictor and criterion must be sensibly trustworthy (Crockers & Algina, 1986)

Content validity of a test is determined by looking at how well the test items fit the content, abilities, and performances being assessed. The test items provide a sample of material, abilities, and performances, and the test creator must make sure the sample is reflective of the contents, abilities, and behaviors being assessed. The test scores are used to make assumptions around the students' competence and knowledge of the materials delivered in class. As a

result, it's critical that the test has a sufficient amount of content validity (Ganskyet al., 2001).

Uniformity of the test and the test items are termed as reliability. The test creators should consider whether learners who took the same test at different occasions would get the same results. The majority of methods for determining test reliability entail the use of statistical algorithms or extensive computations. Split half reliability, on the other hand, is a straightforward approach to evaluate test reliability. In this method, the entire exam is divided into two parts, and the results of the students from the two exams are associated using statistical tests such as Pearson correlation. By dividing the test into two halves, the odd-numbered items can be placed in one side and the even-numbered objects in the other. The correlation coefficient is used as a dependability indicator, and each student's results on the two halves are correlated. Because the purpose is to make two identical test forms, any other approach that creates two similar halves is appropriate (Othuon, 1994).

The reliability of a test might range from 0.00 (no reliability) to 1.00 (perfect reliability). The reliability of commercial tests is expected to be in the moderate to high range. The quality of the test items is only one aspect that influences test reliability. The length of the test is one of the most important factors. Shorter exams are less reliable than longer tests since longer examinations offer an additional consistent sample of learners' talents whiles shorter tests tolerate for greater chance of guesswork (Graham and Whittaker, 2005).

Why Predictability of Academic Achievement

The phrase 'academic achievement' has been defined as a student's current scholastic position (Adeyemi, 2008). This denotes a person's ability to exhibit the intellectual abilities. Daniel and Schouten, (1970) as well as Owoyomi, (2000) maintained that, the grades earned from a program or a collection of programs could indicate a student's academic success. Predicting a student's academic success is crucial for academic institutions as strategic plans may be developed to improve or monitor a student's achievement throughout their time at the institution (Zaidah & Daliela, 2007).

Predictability of exams can be used to identify students that will succeed in future academic efforts' (Omirin & Ale 2008). It also helps pupils prepare for their final exams. Exam predictions are intended to demonstrate how well students have grasped their teachers' teachings (Omirin & Ale, 2008). Prediction tests are used by teachers to assess how pupils are developing and where they are having trouble. This data enables them to make appropriate educational modifications, like remedies, experimenting with other teaching styles, or posing more practice chances. These undertakings have the potential to lead to Predicting individual student performance, which is of great relevance in the corporate sector when deciding who to recruit and promote.

Students are the primary output of universities. Students can either continue on to a postgraduate program or work in industry, government, or the private sector after graduation. Daliela and Zaidah (2007). Consequently, the student's success is vital to the supply chain's success. As a result, universities use predictive assessments to make conclusions about a candidate's academic ability. Acceptance exams is being used as instruments for forecasting academic

achievement and, eventually, determining admission into educational programs for this purpose.

Exam predictive validity can also be used to explain why people do or do not do a given action and to offer techniques for modifying that behavior, according to Azjen and Fishbein (1980) and Lutz (1980). (1975). According to Daniel and Schouten (1970), it is possible to predict the outcome of a future examination with a considerable degree of accuracy based on the outcomes of prior examinations.

Predictive exams are used to figure out how likely each student is to meet a certain criterion on the end-of-year testing. Information is utilized to predict future performance in each of these cases. Previous work experience, interviews, academic training, references, personality and intelligence tests are some of the factors considered while making a hiring decision (Kuncel, Hezlett, and Ones, 2001).

Reliability

The consistency of an assessment's outcomes is referred to as reliability. If the same evaluation process is utilized with the unchanged group at different times and the results are relatively comparable, one can say that the results are highly reliability from one occasion to the next (Lord & Novick, 1968; Allen & Yen, 1979.). The reliability is determined using the true score theory of measurement, which we already discussed. The consistency of scores meant to mirror a stable attribute (IQ) may be connected to assist clarify the measure's reliability by means of assuming examinations assess a true score alongside with error. If genuine scores are determined just by measurement, correlations across several administrations would have to be perfect in order to be regarded

credible. Measurement would be worthless if the real score was not expected to be achieved in the first place, then only an evaluation of error would be achieved. In traditional test theory, true measurements of true score reliability are never attained; instead, true score reliability estimations are produced depending on the shared variance of obtained scores (DeVellis, 2003 & Frisbie, 2005). A reliability estimates of 0.65 is regarded high (Cronbach, 1951) and shows that actual score accounts for 65 percent of the obtained score, with error accounting for the remaining 35 percent, and so on. The proportion of the obtained score that accurately mirrors the true score increases as the size of the correlation rises (Frisbie, 2005).

Inter-rater Reliability

Cohen, (1960) argued that, Inter-Rater Reliability is established after several raters' ratings on same measures agree or are repeatable, Take, for example, research that used observation to evaluate children's violent behavior toward dolls. A set of criteria describing what constitutes aggressive behavior is created, and different raters are taught to apply the measures. Reliability estimate is generated among the degree of agreement or shared variation between Rater Y's scores and Rater Z's scores in order to establish whether the two raters are utilizing the measures in the same way and rating their observations equally. If the rating scale is continuous, Pearson's r should be calculated to evaluate if the ratings collected by diverse raters have a logical order and are distributed regularly. Spearman's r with a correlation coefficient starting from -1 to +1, should be computed if the observational rating scale is only ordinal and the scores are not regularly distributed.

In research investigations where clarifications are necessary in assign scores, having more than one rater/observer will boost generalization of the findings if the raters establish satisfactory agreement. Because human error is always a factor in measurement, researchers can look at inter-rater reliability estimates to determine if the same ideas are being assessed by diverse people and if the allocated scores are repeatable when several raters/observers are used (Cohen, 1960).

Internal Consistency Reliability

Internal consistency reliability can be made in a single testing setting, avoiding many of the issues that same reliability estimates, such as test-retest reliability, have with repeated testing (Allen & Yen, 1979). The split-halves reliability estimate is the most often used method of calculating internal consistency reliability, and it is most usually stated using Cronbach's coefficient alpha (1951). Kuder-Richardson's (KR20) analysis is the best choice if the test results are dichotomous (Cortina, 1993; DeVellis, 2003).

When utilizing the split-halves approach to assess internal consistency reliability, the measure is shared into two halves aiming at making all halves parallel (Allen & Yen, 1979). According to them, the data collected on both sides should take the same actual score and error variance so that all becomes parallel. Because the two tests are rarely completely parallel, some effort must be done to make the split portions of the measure as similar as possible. The true score for each half of a measure that is essentially identical will be the same, but the error variances will be uneven, and so the computed scores will vary through an additive constant (Allen & Yen, 1979). After the measure is delivered to a pilot group, the matched random subsets approach, in which items

are matched based on comparable degrees of difficulty, can make even more explicit attempts at making the measures equivalent. Whatever method is used, some effort must be put into consideration to put the split-halves parallel, if this effort is made, the two halves are likely to meet the criterion for being deemed substantially equal (Allen & Yen, 1979; Crocker & Algina, 1986).

The Spearman-Brown formula may be used to calculate the overall test's internal consistency reliability estimate if the two sides of the test are genuinely parallel. Longer tests provide minor overestimates of genuine reliability (i.e., upper-bound estimations of reliability) as compared to shorter tests (Cronbach, 1951). If the halves are virtually equal, coefficient can be used to evaluate the complete test's internal consistency reliability. In essence, the two sides of the test are mirror images of one another; consequently, if coefficient alpha generates a high value (.70) the whole test/internal measure's consistency reliability is high. However, with low values, the whole test's internal consistency reliability is low or bad (Cronbach, 1951).

The split halves internal consistency reliability estimate, like most statistical approaches, has several drawbacks. Splitting a measure into equivalent halves can be tough, if not impossible, at times.

Parallel- and alternate-forms Reliability

Although internal consistency reliability and parallel and alternate form's reliability appear to be similar at first look, there is a substantial difference between the two. Internal consistency is when elements from a sole measure taps equal construct. Parallel-forms reliability, alternatively, compares scores from dual tests that are exactly parallel (Crocker & Algina, 1986; DeVellis, 2003). Strong, positive correlations (e.g., r =.70) among the scores on

the two different parallel tests imply good parallel form reliability estimations. Alternate form's reliability estimates, on the other hand, compare scores from a different version of a similar measure that claims to access a similar fundamental construct as the one under investigation (Allen & Yen, 1979; DeVellis, 2003). Strong positive correlations are predicted when establishing good alternate form reliability, just as they were with the previous reliability estimates described (Crocker & Algina, 1986).

In some circumstances, given the preceding definition of parallel forms reliability, finding a measure which may be considered as a parallel form of the measure being reviewed or produced may be difficult. Each item within each test must have an equivalent association with the hidden variable and have an equal level of error to conform to the rigorous parallel test assumptions (DeVellis, 2003). Getting equal tests that satisfy these assumptions is clearly difficult. As a result, academics and practitioners routinely employ various forms of reliability estimates when evaluating test score reliability.

Each estimate has its own set of reasons and sources of error, as the explanation of the several types of reliability estimates reveals (DeVellis, 2003). As a result, numerous methods of reliability evidence must be examined in a way to determine whether the test results are reliable. Academics and practitioners will be able to see how the test and latent variable function in different contexts (different items) within the same persons based on each estimate. Taking into consideration as much as measurement error is likely by generating a detailed justification of reliability using several types of reliability estimates would boost confidence in the conclusions reached and actions made

as a result of those findings. As a result, if possible, obtaining various sources of test score reliability data is beneficial.

As previously stated, test scores can be credible but not genuine. A test, for example, may regularly yield the same score for the same person over time. However, if the examinee's test does not accurately measure the latent variable that it claims to measure, the test is invalidated, and any judgments, or conclusions formed from the test findings are based on inaccurate data.

Conceptual Frame Work

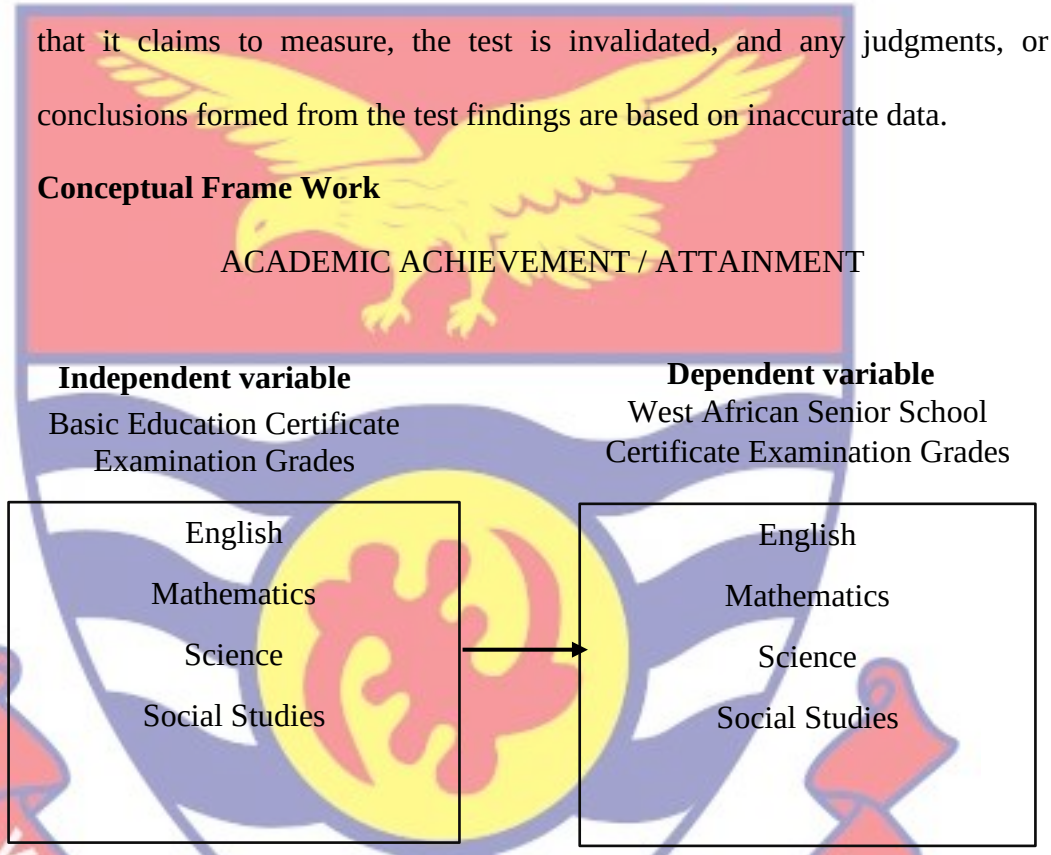


Figure1- Conceptual Framework

Source: Researcher's own framework

This section presents a conceptual framework for this work's treatment of the idea of predictive validity. Figure 1 depicts the relationship between students' BECE and WASSCE academic achievements. It displays that student's academic achievement in WASSCE is related to the independent variable which is student's academic achievement in BECE. Figure 1 shows that student's academic achievement in BECE is related to student's academic achievement in WASSCE such that if student's achievement in BECE is high,

then their achievements in WASSCE is likely to be high and if achievements in BECE are low, then achievements in WASSCE is likely to be low. Geiser and Santelics (2007), Staffolani and Bratti (2002), Adeyemi (2008), and McDonald et al (2001) are among the researchers who have found that previous performance influences future performance.

Empirical Review

Student's Achievement on BECE English Language as a Predictor of Student's Achievement on WASSCE English Language.

Jia, Niemi, and Haiwen (2007) conducted a study in a huge urban school district to demonstrate the predictive validity of an English language arts (ELA) performance assessment (PA) given in Grades 2–9. To discriminate between individual and aggregated explanatory variables, they used hierarchical linear modeling (HLM). Based on 5,427 pupils in a sub-sample. Students' scores on 2001 ELA PA were found to be predictive of their likelihood of passing the California High School Exit Exam (CAHSEE), and there was also a substantial association among ELA performance evaluation and other standardized tests.

Wilson (2016) explored on the relationship between students from the outer circle against the expanding circle in terms of achievement (as expressed through mean test scores in English language). The study adopted a correlational research design with a sample size of 374 students. The study found no statistical significance difference among testes from outer circle against the expanding circle in terms of achievement (as expressed through mean test scores).

Cathy Lee (2013) looked at the relationship between the test of English as a foreign language (TOEFL), the outcomes of the international English

language testing system (IELTS), and the academic success of international master's students. The goal of the study was to examine whether IELTS and the TOEFL are related to academic success as measured by the final GPA. International graduate students who graduated between 2006 and 2011 were included in the data sample, which came from three Midwestern colleges. A total of 793 student records were used in this study (35.7 percent were female and 65.3 percent were male). In terms of academic accomplishment, the study found no significant variance among TOEFL and IELTS scores.

Olanipekun (2013), assessed students' English language entry qualifications and student's academic achievement in general English in Kwara state institutes of education. The researcher used a descriptive survey to investigate English language and student's academic achievement in General English at Kwara State, Nigeria's colleges of education. The research included a total of 188 participants. The findings revealed an association among students' English language admission qualifications and their academic achievement in General English.

Mahmoud (2014), did a meta-analytic review of the predictive validity of the TOEFL scores on GPA. Many studies looking at the association among international students' TOEFL scores and academic achievement have come up with conflicting results. The researcher did a meta-analysis on existing studies concentrating on international students' TOEFL scores and academic success as measured by GPA in order to determine this association. The findings revealed a statistically significant and favorable association among TOEFL scores and GPA for overseas students.

Student's Achievement on BECE Mathematics as a Predictor of Student's Achievement on WASSCE Mathematics.

Faleye (2015), explored into the association among students' achievement in entry examination and students' mathematics achievement in College of Education (CoE). Students from the College of Education in Southwestern Nigeria made up the majority of the population. The study used a purposefully selected sample of 276 CoE students. Data was obtained from students' records at two distinct colleges of education from the 2010/2011 to 2012/2013 sessions, including their admission qualification, age, sex, and semester results in Mathematics. The most reliable predictor of college achievement was determined to be the Unified Tertiary Matriculation Examination (UTME). The findings also revealed that there is no link between students' success on the entrance exam and their mathematics proficiency on the CoE. Finally, neither the entry qualification nor the result on the entry examination could predict mathematical performance in the CoE on its own.

In Gombe State, Nigeria, Babalola and Hashimu (2020) considered the predictive validity of continuous assessment scores on students' achievement on the JSCE in Mathematics. The study sampled 538 pupils from a population of 152,124. The researchers wanted to discover if there was any association among continuous assessment scores and JSCE Mathematics results, and found a modest positive association between CA scores and JSCE in Mathematics in the 2014/2015 and 2016/2017 academic sessions, but a very weak negative association between CA scores and JSCE in the 2015/2016 academic session. For the 2014/2015 and 2016/2017 academic years, CA scores might be used to

predict students' JSCE Mathematics achievement, but not for the 2015/2016 academic year.

Umar and Lawal (2017) investigated the gender differences and association among JSCE and SSCE results in mathematics among secondary school students. For the investigations, a total of 21,487 secondary school pupils (14,347 males and 7,140 females) were considered. 378 students were chosen using a proportionate stratified random sampling method. Data was collected from students who took the JSCE in 2012/2013 and the SSCE in 2014/2015. Hypotheses were developed and evaluated at a significance level of 0.05. Findings from the study review that the difference in mean scores among the JSCE and the SSCE was not significant.

Ajao and Awogbemi (2012), In contrast to the premise that there is no link between WAEC and NECO mathematics outcomes in the schools, the study discovered a significant positive association among mathematics in all of the selected schools.

By associating the state math exam and assessing the consideration and specificity of the CBM in predicting success on the state test, O'SHEA (2014) explored the predictive validity of curriculum-based measures on third-grade mathematics performance. CBM math and reading had a positive association and predictive relationship in the Oregon statewide benchmark assessment in mathematics at the third-grade level.

Matawal (2013), conducted a study on the association among students' mathematical achievements in SSCE and the Remedial Sciences program at the University of Jos in Nigeria. The research was carried out as a result of the relevance of mathematics in nation-building and widespread interest in the

topic. The significance of the associations was tested with Karl Pearson correlation coefficient (r). The study discovered that male students' relationships were significant, whereas female students' relationships were not significant.

Badru (2015) on another study for predicting academic success in Mathematics for JSS Students Using Cognitive Style and techniques in Problem-Solving. The study found that, there was no significant association among students' cognitive style and problem-solving technique.

To gather information on students' capabilities and readiness for employment as well as further studies at the next level of education, O'kwu and Orum (2013) used the JSSCE Results as Predictors of Students' achievement in Mathematics at the SSSCE in Benue State, Nigeria. The survey included 4698 JSS graduates from the years 2000, 2001, 2002, 2003, and 2004, as well as SSS graduates from the years 2003, 2004, 2005, 2006, and 2007. At each stage of their secondary school, the records of their final evaluations were examined. The study found a significant association among overall JSCE scores and the SSCE.

Senyefia (2017) found that, there was no substantial difference among the WASSCE and Mock grades, according to the report. The WASSCE predictive power of Mock Core Mathematics was found to be 92 percent. With a prediction power of 90%, there was no significant difference among BECE and WASSCE grades. However, the study discovered a considerable disparity in BECE and Mock Mathematics grades.

Student's Achievement on BECE Integrated Science as a Predictor of Student's Achievement on WASSCE Integrated Science

Babatunde, Chukuwuemeka, Abdulrahim, and Adai (2019) investigated Academic Achievement of Direct-Entry and Non-Direct Entry (Pre-NCE) Science Students in the Niger State College of Education, Minna, Nigeria: Implications for Educational Administrators. Students from 2008/2009 academic sessions made up the study's population. During the years of study, 1110 people were admitted to the institution. The study used a three-year track of academic achievement ratings of 372 students in chosen school of sciences courses. The results indicated that there is a significant difference in the mean scores of academic accomplishments of Direct Entry and Non-direct entry students.

According to Opara, Ijeoma, and Uchechi's research (2017). In Aba Metropolis in Abia State, Nigeria, the study looked into JSCE as a predictor of SSCE in Chemistry, Biology, and Physics. The study used a correlational design. The data was gathered using the 2011 JSCE Basic Science results as well as the SSCE Physics, Chemistry, and Biology results. The findings demonstrated that in the Senior School Certificate Examination, JSCE Basic Science substantially predicted Physics, Chemistry, and Biology. Basic Science and Physics had a low prognosis, Basic Science and Chemistry had a moderate prediction, and Basic Science and Biology had a high prediction.

The Prediction of Biology Academic achievement among Public SSS Students in Kwara State, Nigeria (Hajia, Yagana & Hauwa, 2018). Their research looked at the factors that influence academic achievement in biology among public SSS students in Nigeria's Kwara State. This study employed a

survey and a correlational research approach. According to the study's findings, there is a significant association between instructor qualification and experience and student academic achievement. It was also shown that there was a strong association among physical amenities and academic success among pupils. School libraries have a moderately favorable association with students' academic achievement, while school laboratories have a high positive association with students' academic achievement.

In order to find an alternative to multiple selection examinations, Achor, aligba, and omananyi (2010) conducted another study at Benue State University, Makurdi, Nigeria, on the predictive power of two selected examination scores on SSCE results of pre-degree science students. Only 380 of the 1240 applicants who applied for the 2007/2008 session of the Preliminary Science program were accepted. This study looked at three standard examination outcomes in Mathematics and Physics. The results of the three examinations were combined and analyzed. The examinations were deemed reliable and valid because they were designed by specialists, exposed to the proper testing conditions, and had a track record of high quality. Preliminary and UME Mathematics did not substantially predict SSCE Mathematics, according to multiple regression analysis. SSCE Physics was strongly predicted by Prelim Physics and UME Physics, whereas SSCE Mathematics was not.

Jamil and Zumuk (2015) looked into the effects of screening exams in Nigeria to see if they might be utilized to predict students' overall success. The goal of the study was to see whether there were any significant differences among the two groups of candidates admitted to science, vocational, and technical education programs with and without the screening examination. The

data was gathered from over 4000 students' results that had been accepted by the academic board, with a sample taken from only candidates who had complete results. The findings demonstrated a statistically significant difference in achievement among the two groups in the Technical Education Program. However, there was no statistically significant difference among the groups in the Science Education Program (Agricultural Science Education Program, and Home Economics Education Program)

Damaturu, Babalola (2015) conducted a study to determine the correlation among entry qualification and achievement in ‘A' level chemistry. The predictor was the grade gained in chemistry at the WAEC or NEC and the criterion was the grade received in the short-structured exam conducted at the conclusion of Basic 1. The Pearson Product Moment Correlation Coefficient (R) indicated a negative correlation from the data analyzed. The study found no association between students' performance in 'A' level chemistry and their admission grade (O' level chemistry) in the Basic program, according to the data.

Edokpayi and Suleiman (2011) explored in a case study among selected secondary schools in Zaria metropolitan in order to estimate the impact of the JSC integrated science examinations on students' achievement in the SSC examinations. From the demographic, a stratified random selection approach was employed to choose 200 students as sample for the study. The data was collected using an inventory, which was then evaluated using the z-test and correlation analysis. Among the chosen Secondary schools in Zaria metropolis, pupils' academic success in integrated science in the JSC tests was a poor predictor of subsequent accomplishment in chemistry in the SSC examination.

Student's Achievement on BECE Social Studies as a Predictor of Student's Achievement on WASSCE Social Studies

Nuruddeen, Badu, and Emeka (2015) evaluated the predictive validity of year one GPA and final-degree classification among Management and Social Sciences students. The year one GPA and final degree categorization of management and social science students in Nigerian institutions were studied using an ex-post facto study approach (a quasi-experimental method). The graduates' year one GPA and final degree classification were acquired from their records and analyzed using Pearson correlation analysis to evaluate the strength of relationships. Hypothesis 1 was rejected, but Hypothesis 2 was accepted, meaning that while there was a strong but negative association between years one GPA and final degree classification among social science graduates, there was no such association among students in social science courses.

Student's Achievement in BECE as a Predictor of student's Overall Achievement on WASSCE

Abdulaziz (2019) published a study on the Predictive Validity of English Proficiency and Standardized Tests for Saudi Medical Students' Biology achievement. The goal of the study was to see if Saudi admission requirements could predict student achievement in an introductory biology course. The research looks into whether a combination of the Scholastic Achievement Admission Test (SAAT), General Aptitude Test (GAT) and the students' English ability may accurately predict student success in a biology class. The study looked at the admissions criteria and biology course grades of 250 male students. The findings show that admission requirements are important

predictors, although with a 26.6 percent variance. The findings also suggest that the SAAT and GAT are the least accurate predictors.

Politylo (2015) conducted research into the predictive validity of three number sense tests. The study also intended to determine which combination of measures, as determined by the Test of Early Mathematics Ability, best predicted later mathematics achievement (TEMA-3). At the start of kindergarten, participants were given number sense tests, and at the end of kindergarten, they were given the TEMA-3. Although each number sense test's predictive validity was established, statistically, no number sense measure occurred as the best predictor of eventual mathematics achievement.

Afolabi and Faleye (1998) conducted another study on the predictive validity of the Osun State JSCE and SSCE. The study's goal was to examine if there was an association among students' overall JCSE achievement and their achievement in the SSCE. The findings revealed that the Osun State JSCE is a poor predictor of students' achievement in SSCE. JSCE English language and Mathematics, on the other hand, were found to have a higher capacity for predicting achievement in SSCE English language and other disciplines.

Silvanus and Okechukwa (2013) conducted another study on the predictive validity of the NECO JSCE on students' achievement in the NECO SSCE. The predictor and criteria variables were correlated using correlation and regression approaches. The data revealed that there is a low, positive, but significant association among students' performance in the NECO-JSCE and the NECO SSCE. In all, Mathematics performance in the JSCE was found to be more predictive of SSCE performance than other subjects. In terms of predicting

students' achievement in geography, social studies had the least predictive power.

Adeyemi (2008) investigated the predictive power of the JSCE in predicting students' achievement in the SSCE in Ondo State. The study concluded that JSC examinations were found to be a good predictor of SSC exam results.

Another study, the Predictive Validity of Ume Scores to Students' Academic Achievement in Federal University of Technology, Yola, was done as a result of a lot of noise in the air over the authenticity of UME scores for admission into Nigerian Tertiary Institutions. The goal was to see if the University Matriculation Examination (UME) scores were predictive of students' academic progress at the Federal University of Technology, Yola. The study's estimated population was two thousand five hundred (2500) 100-level students, from whom a sample of 468 (468) was obtained using stratified and purposive random sampling. The data revealed that UME scores and First Year Grade Point Average (FGPA) have a substantial association, indicating that UME is a strong predictor of students' academic progress at FUT-Yola.

Othuon and Lucas (1994) investigated the predictive validity of the Kenya Certificate of Primary Education (KCPE) with the purpose of identifying the extent to which KCPE predicts secondary school achievement. The analysis employed data from the 1991 KCSE for 781 examinees in the sample. The examinees in the sample had their KCSE records matched with their 1987 KCPE records. A moderate linear association was discovered between KCPE and KCSE. The predictive validity did not differ considerably amongst the schools. Only age had a significant impact on the KCPE

Internal examinations in Kenyan secondary schools were evaluated by Ochieng (2012) for their predictive validity. The study's goal was to discover if there was an association among performance on internal summative tests and performance on external public national exams in Kenyan secondary schools. The findings concluded that there was a significant association among external public summative examination scores and internal summative examination scores, with mathematics serving as a key predictor of student achievement, and that achievement in the internal summative examination for year one students could not be used to predict achievement in the external summative examination. The most relevant predictor was year four achievement, followed by year three achievement, and finally year two achievement.

A meta-analysis of the predictive validity of the Scholastic Aptitude Test (SAT) and American College Testing (ACT) scores for college GPA was conducted as a result of disagreements arising from other sources (researchers) about the useful information derived from the SAT and ACT examinations on students' academic success (Curabay, 2016). The purpose of this research was to see whether the SAT and ACT exams have significant predictive validity for college success by this researcher. The majority of the research were found between 1990 and 2016 in the Academic Search Complete and ERIC databases. From 48 investigations, a total of 60 effect sizes were collected. The study discovered a strong link between exam performance and college achievement.

Eunice (2018) evaluated the validity of elementary school examinations as a predictor of secondary school test scores between Kenyan public secondary school students. The goal of this study was to examine if the KCPE might predict KCSE results among students in Kenya's Kisii Central Sub-public

county's secondary schools. A total of 1,391 students were sampled using saturated sampling, which included all KCSE candidates whose KCPE scores were available in each sampled school. The researchers used data from the same students' 2006 KCPE and 2010 KCSE results. Correlations and regression analysis were used to assess it statistically. Between the KCPE and KCSE scores, there was a substantial positive association among the scores

Ibrahim (2017) looked at the validity of standard-setting methods: public examinations for long-term national development. The goal of the study was to check the validity of the standard-setting process for determining the grade assigned in public exams. These were done in order to establish a standard approach for public examinations. As a result, the research clarified several ideas and provided a brief overview of existing criteria and norms against which quality is measured using a grading system. According to the findings, grade-fixing marks differed from topic to subject and year to year. Also, when the duration and content of their courses change, the identical cut-off grades for individuals seeking admission to different higher institutions are incorrect. It was determined that the standard-setting and grade-awarding system is appropriate for identifying applicants and their level of achievement in Senior Secondary Certificate Examination disciplines.

Are the entrance criteria still relevant? A study of entry qualifications and academic performance of architecture students in Nigerian universities (Abimbola, 2016). Due to recent debates about the relevance of these prerequisites to students' academic achievement after admission, the study was conducted to examine whether the prerequisite for admission into higher education in Nigeria meets the criteria set by the National Universities

Commission (NUC) for architecture students. Suggestions that university students' performance does not always mirror their pre-admission academic performance prompted this. As a result, the association between the scores of architecture students in some entrance required subjects (mathematics and physics) - the two essential courses for the study of architecture in Nigerian institutions – is examined in this research. The research employs a mix of primary and secondary data. The information was gathered through a literature review, archival retrieval of student data, and interactions with course tutors and students. This study discovered that, with the exception of the first and second semesters of the first year of architectural studies, there was no association between entrance qualifications and student academic achievement. Female students, on the other hand, outperformed their male counterparts in all semesters.

(Adejoke, Temitayo, & Mabayoje, 2018) carried out a study to assess the impact of student results in the post-JAMB examination on their academic achievement at Tai Solarin University of Education as a result of the public uproar for and against the introduction of Post-UTME in Nigerian universities. The findings indicated that there is a statistically significant difference among male and female students' academic performance at Tai Solarin University of Education and that there is a substantial difference between students' UME scores and their post-UTME screening test scores.

Another study on the predictive validity of UTME scores on university students' final degree results in Nigeria was conducted by (Olalere & Boluwalife, 2014). The study made use of previously acquired data from the University's registry's examinations and read section. The study's findings

revealed that UTME scores are crucial in determining intellect development and achievement in final year grade point results.

Kpe-Nobana and Nduka (2019) did a study to see how well public examinations (WASSCE, UTME, and Post-UTME) might predict university Algebra performance among undergraduate students in the department of computer science. The study included a total of 67 students. The data was analyzed using regression analysis. The data revealed, among other things, that all three public examinations accurately predicted students' university Algebra achievement. When compared to the UTME and Post-UTME, the WASSCE showed the best predictive power.

Karakaya and Tavşancil (2008) studied on the Predictive Validity of the University Student Selection Examination to investigate the predictive validity of the 2003 University Student Selection Examination. The survey included a total of 2103 students from various programs. The student affairs information centers at institutions provided the data for the dependent variables in this study. The Student Selection and Placement Center provided data on independent variables as well (OSYM). The data was analyzed using stepwise regression analysis. The YEP, which is used to put students in agricultural engineering, civil engineering, and social studies education programs, has been shown to be a good predictor of their FGPA.

Chapter Summary

The review of literature relating to the topic was the focus of this chapter. Predictive validity of BECE result on students' academic achievement on WASSCE result. The review was done under three themes, thus, theoretical, conceptual review and empirical review. The theoretical review discussed the

theories related to the topic and how these theories explain the present study. In the conceptual review, the concepts in this study were discussed whereas in the empirical review, previous literature related to the study were examined. The gaps in literature that were found were related to lack of related research in the setting of this study, inability of related research to incorporate two different external examinations and the GES concerns as to whether BECE and WASSCE results are true reflections of students

CHAPTER THREE

RESEARCH METHODS

Introduction

The purpose of the study is, predicting students' academic achievement in West African secondary school certificate examinations from achievement in basic school certificate examinations. The research methodologies utilized in the study are described in this chapter, which includes the research design, sampling techniques and procedures, population definition, and instruments. It also goes through the data sources, including data gathering methods, ethical considerations, and data handling procedures.

Research Design

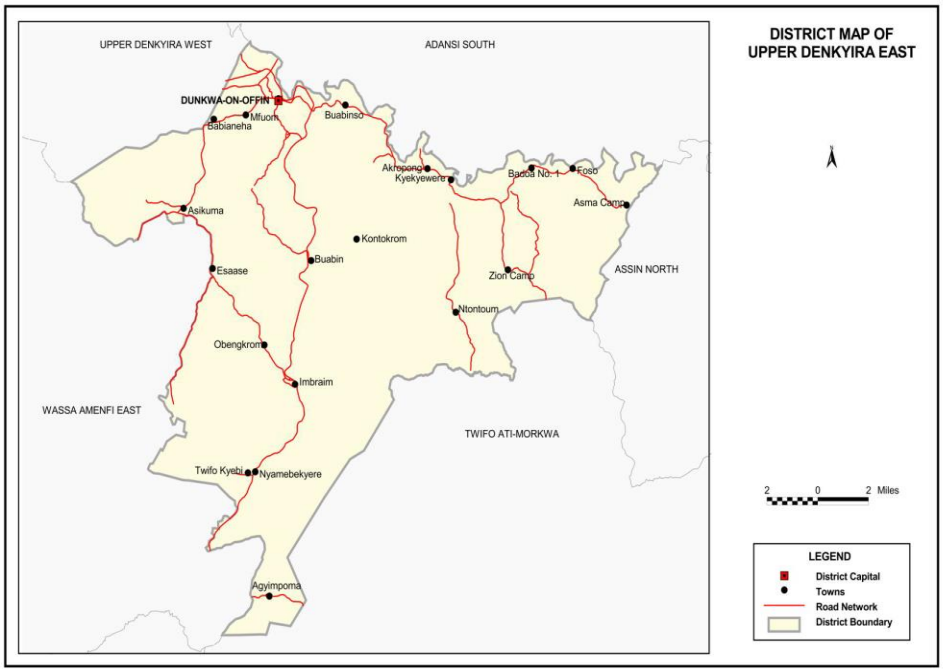
Research design is a systematic plan to investigate a scientific subject or the basic structure of a study, as well as the nature of the hypothesis and the variables involved in the investigation (Gay, 1992). Research design, according to Mouton (2001), is a scheme for how individual wishes to do research. It establishes a set of guidelines for the conduct of any investigation. As a result, it mirrors the strategy for gathering and analyzing data related to a specific concept. The research design for a given study is determined by the study's objectives (Cohen, Manion, & Morrison, 2004). This study adopted an Ex post facto research design. This design is a substitute for true experimental research and can be used to test hypotheses about cause-and-effect or correlational relationships, where it is not practical or ethical to apply a true experimental, or even a quasi-experimental, design. Kerlinger and Rint (1986) explained that in the context of social science research an ex post facto investigation seeks to reveal possible relationships by observing an existing condition or state of

affairs and searching back in time for plausible contributing factors. Ex post facto research uses data already collected, but not necessarily amassed for research purposes. Ex post facto literally means from *what is done afterwards*. Cohen, Manion, and Morison (2000) noted that instead of taking groups that are equivalent and subjecting them to different treatments to determine differences in the dependent variables, an ex post facto experiment begins with groups that are already different in some respect and searches in retrospect for factors that brought about those differences. The Ex Post Facto design suits this study in the sense that the data used for the present study were the results already obtained by the participants during their BECE and WASSCE.

Study Area

The research was carried out at the Upper Denkyira East Municipal Assembly in Ghana's Central Region. The Municipality of Upper Denkyira was established in 2007 by Lawmaking Instrument (LI 1877), and it was inaugurated in February 2008. It is located between 5° 30' and 6° 02' north latitude and 1° W and 2° W longitude of the Greenwich Meridian. It is surrounded on the north by Adansi South, the east by Assin North Municipality, the west by Atti-Morkwa District, and the north-west by Upper Denkyira West District. The Upper Denkyira East Municipality has an entire land area of 501.9 square kilometers, accounting for nearly 17% of the Central Region's total land area. Dunkwa-On-Offin is the administrative capital. From the 2010 Population and Housing Census, the population of Upper Denkyira East Municipality is 72,810, accounting for 3.3 percent of the region's total population. Number of Males constitute 49.2 percent of the population, while number of females constitute 50.8 percent. The population of the Municipality is rural to the tune of 50%.

The sex ratio in the municipality is 96.7. The population of the municipality is young (37.9%), indicating a large base population pyramid that tapers off with a limited proportion of old people (6.6 percent). The Municipality's total age dependence ratio is 74.2. There are 338 educational institutions in the municipality, including 126 nurseries/kindergartens, 132 primary schools, 77 JHS, and three SHS. With this many schools, around 87 percent of the population lives within 5 kilometers of a primary school (ghanadistricts.com, 13/11/2013).



Source: Ghana Statistical Service, GIS

Figure 2- District Map of Upper Denkyira East Municipal

Target Population

The empirical units employed in the study, such as people, things, or occurrences, are termed as the target population. The researcher's target population is the group in whom he or she is most interested (Kothari, 2004).

All Senior High School (SHS) students in Upper Denkyira East Municipality, a total of 5,567 pupils, will constitute the target population for this study.

Accessible Population

Korthari (2004) postulated that an accessible population is the study population to whom the researcher would draw conclusions on. In the present study, the accessible population was the entire students from the two public SHS who participated in 2016 B.E.C.E and sat for their 2019 WASSCE in Upper Denkyira East Municipality constituting 766 students. The target population as well as the two selected were chosen out of convenience as the researcher is closer the population and this will facilitate the data collection.

Sampling Procedure

Amedahe (2000) defines sampling as the procedure for taking a subset of a population to signify the whole population. Sarantakos (1998) defines a sample as a subsection of the general population that has been properly chosen. Sampling procedures and processes are the methods used to choose a sample from the target population. The participants for the study were chosen using a multi-stage random sampling process. Multistage sampling is the sampling plans that are carried out in stages, or shifting from a broad to a narrow sample unit, with each stage using smaller and smaller sampling units. A sample of primary units is chosen first, followed by a sample of secondary units within each primary unit in a two-stage sampling strategy (Burns & Grove 2001). There are total of two (2) public S.H.S in Upper Denkyira East Municipality. Namely, Boa-amponsem S.H.S and Dunkwa Secondary Technical S.H.S.

Stage1

Purposive sampling was used to choose the two public S.H.S from Upper Denkyira East Municipal (Boa-amponsem and Dunkwa secondary Technical SHS) for credibility of data. The population as well as the two selected were chosen out of convenience as the researcher is closer the population and this will facilitate the data collection.

Stage 2

Purposive sampling was again used to choose students who participated in both B.E.C.E 2016 and WASSCE 2019 within the two schools. Those students were considered for the study because the study is more precisely to investigate the relationship between results of the same group of students at different examinations on the same subject area. Purposive sampling is a technique in which specific settings, people, or events are purposely chosen to provide rich data that cannot be gathered through other means (Maxwell, 1996). It occurs when a researcher decides to include occurrences or individuals in a sample because they warrant an inclusion.

Stage 3

The total number of pupils from each school's population was determined and allocated via proportionate sampling. Since the number of students in each school was not even, the proportionate allocation method was employed to ensure that pupils chosen from each school mirrored the entire number of students in that school's population. The researcher made use of student result broad sheet in order to obtain the accessible population of each

school (421 and 345) for Boa-amponsem SHS (BOASS) and Dunkwa Sec Tech SHS (D' Sec Tech) respectively.

To allocate a proportion for BOASS, total number for each school was added to get a total of 766. Then number of BOASS students (421) was multiply by the sample size for the study (300) to get 126300 and later divided by total student (766) to obtain a portion of 165 for BOASS. Again, to allocate a proportion for D' Sec Tech, total number for each school was added to get a total of 766. Then number of D' Sec Tech students (345) was multiplied by the sample size for the study (300) to get 103500 and later divided by total student (766) to obtain a portion of 135 for D' Sec Tech.

Stage 4

To choose student responses from each school, simple random sampling techniques, most notably the lottery method, were used. Students wrote their names on pieces of paper, folded them up, and placed them in a container. This was done for each school separately. The folded paper slips were thoroughly mixed, and a random number of slips was chosen. Students choose till the essential number from each school was reached. A total of 300 pupils were chosen for the study. This method was employed to ensure that all students had the same chance of being chosen and to assist prevent biases in the respondents' selection.

Sample Size

Ultimately, a total of 300 students from the two public SHS were considered for the study. The sample size for student from the two chosen schools was determined by Gill et al (2010) sampling table. According to them, a sample size of 260 respondents out of an estimated population of 800 is

representative enough for a study on a confidence level of 95% margin of error. Hence, a sample of three hundred (300) students out of a population of 766 was good for a meaningful generalization. The details of the participants from each school are shown in Table 2.

Table 2– *Sampling Distribution of Student*

School (S.H.S)	Accessible population	Sample size
Boa-amponsem	421	165
Dunkwa Secondary Technical	345	135
Total	**766**	**300**

Source: Field survey, Aboagye (2020).

Data Collection Instruments

Data collection is the systematic process of collecting and analyzing data on variables of interest in order to answer research questions, test hypotheses, and assess outcomes (Kabar, 2016). The study used student's inventory containing BECE and WASSCE result as a direct source of data. Students' grades in the four core subjects in the school curriculum for the 2016 BECE as well as students' grades in the same core subject for the 2019 WASSCE were sought in the inventory. The grades were obtained from students' official result slip produced and release by the WAEC to the various schools. The subjects were chosen in accordance with Ghana's national education policy, which considers these subjects to be core subjects for both junior and senior high school pupils.

Ethical Consideration

An introductory letter was supplied by the University of Cape Coast's department of education and psychology in order to collect data for the study. The Institutional Review Board (IRB) at the University of Cape Coast once again provided ethical approval in order to acquire permission from the two schools where the study was conducted. Due to the sensitive nature of the topic, the consent of the various headmasters was sought for the conduct of the study in the schools. Also, other school administrators including academic Departmental heads consent was sought for support and collaboration. On the subject of confidentiality, an effort was made to inform the various head teachers to provide student's results representing their names by codes such that no one known to them would have access to their identity and the information provided. Headteachers were also assured that the information they provided would not be revealed to any other third party.

Data Collection Procedure

The ethical norms were considered during data gathering because the study concerns student results. The data was collected over the course of three weeks, from September 3rd to September 25th, 2020. Before the data was collected, I served a copy of an application letter with an attached copies of ethical clearance from the IRB and an introductory letter from the Department of Educational and psychology to the various head masters of the selected schools to seek permission to collect data for the study. The researcher encouraged head masters of all schools to provide honest documents on students' because the research is for academic objectives and will be beneficial to schools and students.

Data Processing and Analysis

Data analysis provided me with figures and facts that allowed me to assess outcomes and make statements about the study's findings. The achievement level of students in the 2016 BECE and the 2019 WASSCE result were considered when analyzing the data for this study. In computing student's achievements in the examinations, students' grades were transformed from ordinal data to continuous data through secondary analysis. The grades, ordinal, was converted to continuous variable by adding up of the Stan nine grades. The grades were weighted 9 to 1 from best to least (Adeyemi, 2008). In this regard, A1=9, B2 = 8, C3 = 7, C4 = 6, C5 = 5, C6 = 4, D7 = 3, E8 = 2 and F9 = 1 for the WASSCE result. The BECE grades was also weighted as 1=9, 2=8, 3=7, 4=6, 5=5, 6=4, 7=3, 8=2 and 9=1.

Simple linear regression was used to analyze hypotheses one to four and multiple regression was used to analyze hypothesis five, all at 0.05 level of significance. This is applicable when both variables are continuous in nature. Assumption also includes (a) both variables must be random. None of the values are predetermined. (b) both variables should have a linear relationship. (c) The probability distribution of both variables is normal. The study satisfied all the above assumptions (Asamoah, 2014).

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The purpose of the study was to investigate the predictive validity of student's academic achievements on BECE and WASSCE results in Upper Denkyira East Municipality. This chapter discusses the data collected and how it was interpreted. The findings are presented in the form of tables for ease of interpretation and comprehension.

Analysis of data on research hypotheses

Simple linear and multiple regression was used for the prediction of criterion (dependent variable) from predictors (independent variable). The Simple linear and multiple regression model was selected because both variables are continuous in nature.

Hypothesis 1

The achievement of student's BECE English Language is not significant predictor of student's achievement on WACCE English language in Upper Denkyira East Municipality.

The research hypothesis sought to find out the predictive value among students' academic achievement in BECE English language and students' achievement in WASSCE English language in Upper Denkyira East Municipality. The result of the simple linear regression of student's achievement on BECE English language and WASSCE English language is presented in table 3.

Table 3- ***Impact of independent variable (BECE English) on the dependable variable (WASSCE English).***

				Std. Error	Change Statistics				
Model	R	R^2	Adjusted R^2	of the Estimate	R^2 Change	F Change	df1	df2	Sig. F Change
1	.001[a]	.000	-.003	1.40556	.000	.000	1	298	.984

a. Predictors: (Constant), BEG Source: Field study (Aboagye, 2020)

Table 3 shows the impact of the independent variable (BECE English) on the dependent variable (WASSCE English). Result from table 3 indicates that there is no significant relationship between students' academic achievement on BECE and WASSCE in English Language, *(p =.984 , R= 0.001)*. Hence, results in BECE English Language does not predict results in WACCSE English Language. The result of the adjusted R^2= 0.000 indicate that 0.0% of the variance in student achievement on WASSCE English language is explained by student achievement on BECE English Language.

Hypothesis 2

The achievement of student's BECE Mathematics is not significant predictor of student's achievement on WACCE Mathematics in Upper Denkyira East Municipality.

The research hypothesis sought to find out the predictive value between students' academic achievement in BECE Mathematics and students' achievement in WASSCE Mathematics in Upper Denkyira East Municipality. The result of the simple linear regression of student's achievement on BECE Mathematics and WASSCE Mathematics is presented in Table 4.

Table 4- ***Impact of Independent Variable (BECE Mathematics) on the Dependable Variable (WASSCE Mathematics).***

					Change Statistics				
Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	R^2 Change	F Change	df1	df2	Sig. F Change
1	.126[a]	.016	.013	1.86737	.013	4.798	1	298	.069

a. Predictors: (Constant), BECE Mathematics

Table 4 shows the analysis of the contribution of the independent variable (BECE Mathematics) on the dependent variable (WASSCE Mathematics). Result from table 4 indicates that there is no significant relationship between students' academic achievement on BECE and WASSCE in Mathematics, *(p= .07, R= 0.126)*. This implies results in BECE Mathematics does not predict results in WASSCE Mathematics. The result that R^2= .013 indicate that 1% of the variance in student achievement on WASSCE Mathematics is explained by student achievement on BECE mathematics.

Hypothesis 3

The achievement of student's BECE Integrated Science is not significant predictor of student's achievement on WACCE Integrated Science in Upper Denkyira East Municipality.

The research hypothesis sought to find out the predictive value between students' academic achievement in BECE Integrated Science and students' achievement in WASSCE Integrated Science in Upper Denkyira East Municipality.

The result of the simple linear regression of student's achievement on BECE Integrated Science and WASSCE Integrated Science is presented in table 9.

Table 5- ***Impact of Independent Variable (BECE Integrated Science) on the Dependable variable (WASSCE Integrated Science).***

					Change Statistics				
Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	R^2 Change	F Change	df1	df2	Sig. F Change
1	.24[a]	.001	-.003	1.64881	.001	.169	1	298	.681

a. Predictors: (Constant), BECE Integrated Science

Table 5 shows the analysis of the contribution of the independent variable (BECE Integrated Science) on the dependent variable (WASSCE Integrated Science). Result from table 5 indicates that the model is not significant *(p=.681, R= .001).* This implies that the results students obtain in BECE Integrated Science does not predict the results they will achieve in WASSCE Integrated science. The result that R^2= 0.001 indicate that 0.1% of the variance in student achievement on WASSCE Integrated Science is explained by student achievement on BECE Integrated Science.

Hypothesis 4

The achievement of student's BECE Social Studies is not significant predictor of student's achievement on WACCE Social Studies in Upper Denkyira East Municipality.

The research hypothesis sought to find out the predictive value between students' academic achievement in BECE Social Studies and students' achievement in WASSCE Social Studies in Upper Denkyira East Municipality.

The result of the simple linear regression of student's achievement on BECE Social Studies and WASSCE Social Studies is presented in table 12.

Table 6- ***Impact of Independent Variable (BECE Social Studies) on the Dependable variable (WASSCE Social Studies).***

				Std. Error of	Change Statistics				
Model	R	R^2	Adjusted R^2	the Estimate	R^2 Change	F Change	df1	df2	Sig. F Change
1	.047[a]	.002	-.001	1.87227	.002	.658	1	298	.418

a. Predictors: (Constant), BECE Social Studies

Table 6 shows the analysis of the contribution of the independent variable (BECE Social Studies) on the dependent variable (WASSCE Social Studies). Result from table 6 depicts that the model is not significant *(p = .418, R= 0.047).* This implies that results in BECE Social Studies does not predict results in WASSCE Social Studies. The result that R^2= 0.002 indicate that 0.2% of the variance in student achievement on WASSCE Social Studies is explained by student achievement on BECE Social Studies.

Discussion

The achievement of student's BECE English Language as a predictor of student's achievement on WACCE English language in Upper Denkyira East Municipality.

The research hypothesis sought to investigate the predictive strength on student's academic achievement in BECE English Language on students' achievement in WASSCE English Language for Boa-amponsem SHS and Dunkwa SHTS in Upper Denkyira East Municipality.

The results from table 3 indicated that student's academic achievement in BECE English Language is not a significant predictor of their achievement in WASSCE English Language. This further means that the results students

obtain in BECE English Language does not determine the results students will achieve in WASSCE English Language.

The findings from this current study are in consistent with the findings of Wilson (2016), who's study concluded that there are no statistically significant differences among tastes from the outer circle against the expanding circle in terms of achievement (as expressed through mean test scores). Findings by Wilson and findings of this current study was consistent, that both studies adopted correlational research design.

However, the findings of this current study are contrary to Mahmoud (2014), who used meta-analytic techniques to look at the predictive validity of TOEFL scores on GPA and discovered a statistically significant link between overseas students' TOEFL scores and their GPA. The inconsistency between the current study and that of Mahmoud might have been the differences in the nature of the studies. Mahmoud (2014) meta-analysis was generated from 40 studies of existing findings which might have already yielded many significant relationships among the variables used in the studies whiles this current study sought to investigate the relationship between student achievement in BECE and WASSCE therefore resulting in different findings.

The achievement on student's BECE Mathematics as a predictor of student's achievement on WACCE Mathematics in Upper Denkyira East Municipality.

The research hypothesis sought to investigate the predictive strength on student's academic achievement in BECE Mathematics on students' achievement in WASSCE Mathematics for Boa-amponsem SHS and Dunkwa SHTS in Upper Denkyira East Municipality.

The results from table 4 indicated that student's academic achievement in BECE Mathematics is not a significant predictor of student's achievement in WASSCE Mathematics. This result is of a view that mathematics achievement in BECE cannot determine the mathematics results people get in WASSCE.

This current study agrees with findings made by Umar and Lawal (2017). They discovered no statistical significance in the outcomes of the JSCE and the SSCE in mathematics among secondary school students in Gombe state. This current study again confirms the findings of Senyefia, (2017), who investigated the validity of mathematics mock results of students in WASSCE and BECE in Ghana and found no significant relationship between the BECE and WASSCE grades in Core Mathematics. Findings from Umar and Lawal agreed to the findings of this study in that measures considered for all studies were two external examinations.

However, findings of this current study are not in consonance with the findings made by O'kwu and Orum (2013), that the relationship between student's achievement in JSCE and SSCE results in mathematics found a significant and positive relationship. Findings from the various studies contribute greatly to this current study, though were not the same study but similar to the current study and their findings reported no statistically significant predictions therefore confirming that insignificant relationship is only not limited to BECE and WASSCE achievement on Mathematics but can be found in other related variables like JSCE and SSCE scores.

However, findings from other researchers were contrary to the findings of this study but may be due to differences in study area and differences in sample size used for the study.

The achievement on student's BECE Integrated Science as a predictor of student's achievement on WACCE Integrated Science in Upper Denkyira East Municipality.

The research hypothesis sought to investigate the predictive strength on student's academic achievement in BECE Integrated Science on students' achievement in WASSCE Integrated Science for Boa-amponsem SHS and Dunkwa SHTS in Upper Denkyira East Municipality.

From table 5, the results indicated that student's academic achievement in BECE Integrated Science is not a significant predictor of their achievement in WASSCE Integrated. The meaning of this finding is that BECE integrated science results is not similar to WASSCE integrated science results.

The findings from this current were in corroboration with the findings' of Edokpayi and Suleiman (2011), who found that students' academic achievement in integrated science in the Junior Secondary School Certificate (JSC) examinations was a poor predictor of later achievement in chemistry in the Senior Secondary School Certificate (SCE) examinations among the selected Secondary schools in Zaria metropolis.

Again, the findings of this study are comparable to those of Babalola, (2015), who found a negative association between entry qualification and performance in 'A' level chemistry at Yobe State University, Damaturu's School of Basic and Remedial Studies. Findings from Babalola was in consonance to the findings of this current study, that the same subject area were considered for the study.

However, the findings of this study differ from those of Babatunde, Chukuwuemeka, Abdulrahim, and Idai (2019), who found a significant

relationship between scores of academic achievements of Direct Entry and Non-direct entry (Pre-NCE) and NCE I, NCE II, and NCE III) students in the school of sciences at the Niger State College of Education, Minna. The difference among the findings of Babatunde, Chukuwuemeka, Abdulrahim and Adai (2019) and this current study is clearly obvious, in that, they used a sample size of 437 which is different from a sample size of 300 student's used for the current study. Again, scores of student's achievements used for their study as the independent variable were scores of both Direct and Non-Direct entries of 437 student's which seems to be two different examinations scores altogether used against NCE scores (Dependable variable) while this current study sought to use a single examination score (BECE) as the independent variable against WASSCE sores (Dependent variable) of the same student's.

The achievement on student's BECE Social Studies as a predictor of student's achievement on WACCE Social Studies in Upper Denkyira East Municipality.

The research hypothesis sought to investigate the predictive strength on student's academic achievement in BECE Social Studies on students' achievement in WASSCE Social Studies for Boa-amponsem SHS and Dunkwa SHTS in Upper Denkyira East Municipality.

The results from Tables 6 indicated that student's academic achievement in BECE Social Studies is not a significant predictor of their achievement in WASSCE Social Studies. This implies that results on social studies examination in BECE does not determine results students will obtain on the social studies examination in WASSCE.

The findings from this current study are in consonance with the findings of Nuruddeen, Badu, and Emeka (2015), who found no statistically significant

relationship between year one GPA and final-degree classification among Management and Social Sciences students. Again, the current study findings back up Silvanus and Okechukwa's (2013) findings, which looked into the Predictive Validity of NECO JSCE on Students' Achievement in NECO SSCE and discovered that Social Studies had the least predictive power in predicting students' achievement in geography.

Chapter Summary

The study's findings were discussed in this chapter. Five researched hypotheses were tested and discussed.

From research hypotheses 1, the study found that students' academic achievement in BECE English language was not statistically significant predictor of students' achievement in WASSCE English language.

From research hypotheses 2, the study found that students' academic achievement in BECE Mathematics was not statistically significant predictor of students' achievement in WASSCE Mathematics.

From research hypotheses 3**,** the study found that students' academic achievement in BECE Integrated Science was not statistically significant predicted of students' achievement in WASSCE Integrated Science.

Finally, from research hypotheses 4, the study found that students' academic achievement in BECE Social Studies was not statistically significant predictor of students' achievement in WASSCE Social Studies.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter contains the study's summary, key findings based on the study's results, the study's conclusion based on the researchers' experience, and finally, the study's recommendations and suggestions for further research that should be adopted by the relevant authorities and any interested individual based on the study's findings.

Summary

This present study was to investigate the predictive strength of student's academic achievement in BECE on their achievement on WASSCE for Upper Denkyira East Municipality. Student's academic achievement in BECE was considered as an independent (predictive) variable and student's academic achievement in WASSCE considered as dependent (criterion) variable for the study. The study explored a correlation design. The correlation design was used to determine the nature and degree of the relationship between the two variables (thus, student's achievement in BECE and WASSCE). The population for the study included all Senior High Secondary School student in Upper Denkyira East Municipality. Multi-stage random sampling technique was used to select 300 students for the study through purposive, proportionate and simple random sampling. The main instrument used for data collection for the study was student's inventory. Simple linear regression was used to test for hypotheses one to four whiles hypotheses five was tested by multiple regression, all at 0.05 level of significance.

Key Findings

1. It was found that student's achievement of BECE English Language was not a significant predictor of student's achievement in WASSCE English Language.
2. Student's achievement of BECE Mathematics was not a significant predictor of student's achievement in WASSCE Mathematics.
3. The findings revealed that student's achievement of BECE Integrated Science was not a significant predictor of student's achievement in WASSCE Integrated Science.
4 The result on student's achievement of BECE Social Studies was not a significant predictor of student's achievement in WASSCE Social Studies.

Conclusions

Based on the findings of the current study, it can be concluded that the results students obtained in the core subject of the BECE does not determine the results they achieve in their WASSCE. If this is the case, less attention should be placed on students BECE results when making decisions about activities such as programme to read, optional courses to be taken and extra-curricular activities to be engaged in by students in the Senior High Schools.

Recommendations

Based on the above findings and conclusion, the following recommendations are made:

1. Ghana education service, through school administrators should motivate teachers at both JHS and SHS to adopt innovative

methods and skills during teaching and learning process to help student attained mastery on subjects with minimum competency.

2. Also, in making decisions related to selecting students for different roles within the school based on the WASSCE performance, less attention should be placed on their achievement in BECE.

Suggestions for Further Research

Based on the findings of this study further research can be done to determine the factors contributing to poor predictive values of students' achievement on BECE and WASSCE results. Again, further research can be conducted by other researchers for two or more different year groups on the same two external examinations to determine the predictive strength. In addition, further research could be conducted by researchers on all subjects written under BECE and WASSCE level.

Once, the study was conducted at the Upper Denkyira East Municipality, it is suggested that further studies could be conducted on a larger scale or nationwide to make generalization of the findings.

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APPENDICES

Appendix A

DUNKWA SECONDARY TECHNICAL SENIOR HIGH SCHOOL				
STUDENTS BECE AND WASSCE RESULTS (2016 – 2019 – YEAR GROUP)				
	SUBJECT			
	ENG LANG	MATHS	INT. SCI.	SOC. STUD

STUDENTS	BECE	WASS	BECE	WASS.	BECE	WASS.	BECE	WASS.
1	4	D7	6	C6	6	D7	5	F9
2	6	C4	8	C6	6	C5	6	C4
3	4	C6	5	D7	4	C6	4	E8
4	2	C5	5	D7	4	C6	4	C6
5	5	C6	5	C6	5	C5	4	F9
6	7	C4	3	C6	4	C6	3	C6
7	2	C4	4	C6	3	C6	5	E8
8	4	E8	6	D7	4	C6	6	F9
9	3	B3	3	C4	3	C5	3	C5
10	5	C5	4	C6	5	C6	6	C6
11	4	C6	5	C5	5	C6	5	C6
12	3	C6	1	C6	1	C6	3	C6
13	4	C5	4	B3	3	C6	4	E8
14	5	D7	6	C5	4	C6	4	E8
15	5	C4	3	B3	3	C4	4	D7
16	1	C6	1	C5	2	C5	3	C6
17	4	C4	5	C5	4	C6	3	C5
18	5	C6	5	C5	5	D7	4	C6
19	5	C5	4	A1	5	B3	6	A1
20	1	C4	3	B3	3	C5	3	C4
21	5	C5	3	B3	3	C6	2	C4
22	4	C4	4	C5	4	C4	5	B3
23	4	D7	5	C6	4	C6	4	D7
24	3	C6	5	C6	4	D7	3	C6
25	3	E8	5	C5	4	C6	5	C6
26	3	C6	4	C6	3	D7	4	C6
27	5	F9	3	D7	5	C6	3	D7
28	5	D7	3	C6	3	C6	3	C5
29	3	E8	3	C6	5	C6	2	C4
30	4	F9	4	E8	3	C5	3	C6
31	2	F9	4	F9	3	C6	2	C6
32	5	F9	5	C6	5	C6	5	C6
33	2	D7	2	C5	4	C5	2	C4
34	3	D7	3	C5	5	C6	3	B3
35	4	C6	4	E8	4	B3	4	B3
36	2	F9	2	F9	1	D7	3	F9
37	3	C6	2	D7	3	C5	4	D7
38	3	D7	4	C6	4	C4	4	C4
39	4	F9	1	C5	4	B3	2	C5
40	5	D7	5	B3	6	B3	3	B3
41	4	C6	2	C4	2	B3	3	B3
42	4	F9	4	C5	6	B3	2	C4
43	1	D7	3	C4	4	B3	3	A1
44	4	C6	3	B2	1	B2	5	B2
45	6	F9	5	D7	5	C6	5	C6
46	3	F9	4	E8	4	C6	4	E8

47	2	C6	2	A1	2	B3	2	B3
48	4	F9	2	E8	3	C6	3	C5
49	3	C6	4	B3	4	B3	4	B3
50	2	C6	6	C6	3	C5	1	D7
51	3	D7	2	C6	2	D7	3	C4
52	1	C6	4	D7	4	C6	4	C6
53	4	C5	4	B3	6	C6	4	B3
54	5	C6	5	C6	4	E8	4	B3
55	2	C6	2	C5	1	C6	3	B2
56	3	C6	2	B3	3	C6	4	B3
57	3	C6	5	C5	3	F9	4	D7
58	4	C6	4	D7	4	E8	4	D7
59	6	C6	5	E8	5	D7	5	D7
60	3	C5	3	D7	4	C5	2	C6
61	5	C6	5	C4	5	C5	5	C4
62	3	C6	3	C5	4	D7	3	C4
63	4	C6	1	C6	3	C6	3	C4
64	2	E8	2	D7	2	F9	4	F9
65	5	C6	5	C6	4	D7	5	C6
66	2	C4	2	C6	1	E8	3	C6
67	3	C6	4	D7	5	E8	1	E8
68	4	E8	6	E8	5	E8	5	F9
69	3	D7	3	D7	4	C6	3	C5
70	5	C6	5	E8	5	E8	5	C6
71	5	C6	5	C6	6	D7	3	C6
72	4	E8	2	D7	3	E8	4	E8
73	1	D7	4	C6	4	D7	3	C6
74	5	C5	5	E8	5	F9	2	F9
75	2	C4	3	C6	1	B3	2	B3
76	2	E8	4	C6	3	E8	2	E8
77	3	D7	4	D7	3	E8	1	C4
78	4	C5	5	D7	3	D7	4	C5
79	3	D7	5	E8	4	D7	3	C6
80	1	D7	3	C5	3	B3	4	C6
81	2	E8	2	C6	3	D7	1	E8
82	4	C6	2	C6	4	C6	4	E8
83	4	C6	4	B3	6	C5	3	D7
84	2	C6	3	B3	4	C4	2	B3
85	4	C6	4	C6	3	C5	2	D7
86	1	D7	2	D7	2	C6	4	E8
87	2	C6	2	C4	1	C4	3	C5
88	3	C6	3	C5	2	C6	4	C5
89	2	C4	4	C5	4	C5	3	C4
90	6	C5	4	C6	6	C4	3	C5
91	4	C5	2	B3	4	C5	4	C6
92	3	C6	4	C4	2	C4	2	B3
93	4	C6	4	C6	4	C4	4	D7
94	2	C6	3	B3	3	B3	2	C5

95	5	C6	5	B3	5	C5	6	C4
96	2	C4	3	B3	4	C4	3	B3
97	3	E8	3	E8	3	D7	3	F9
98	2	C6	3	D7	1	D7	2	F9
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BOA – AMPONSEM SENIOR HIGH SECONDARY SCHOOL								
STUDENTS BECE AND WASSCE RESULTS								
STUDENTS	SUBJECT							
	ENG LANG		MATHS		INT. SCI.		SOC. STUD	
	BECE	WASS	BECE	WASS.	BECE	WASS.	BECE	WASS.
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5	1	C5	3	C4	1	C5	4	C4
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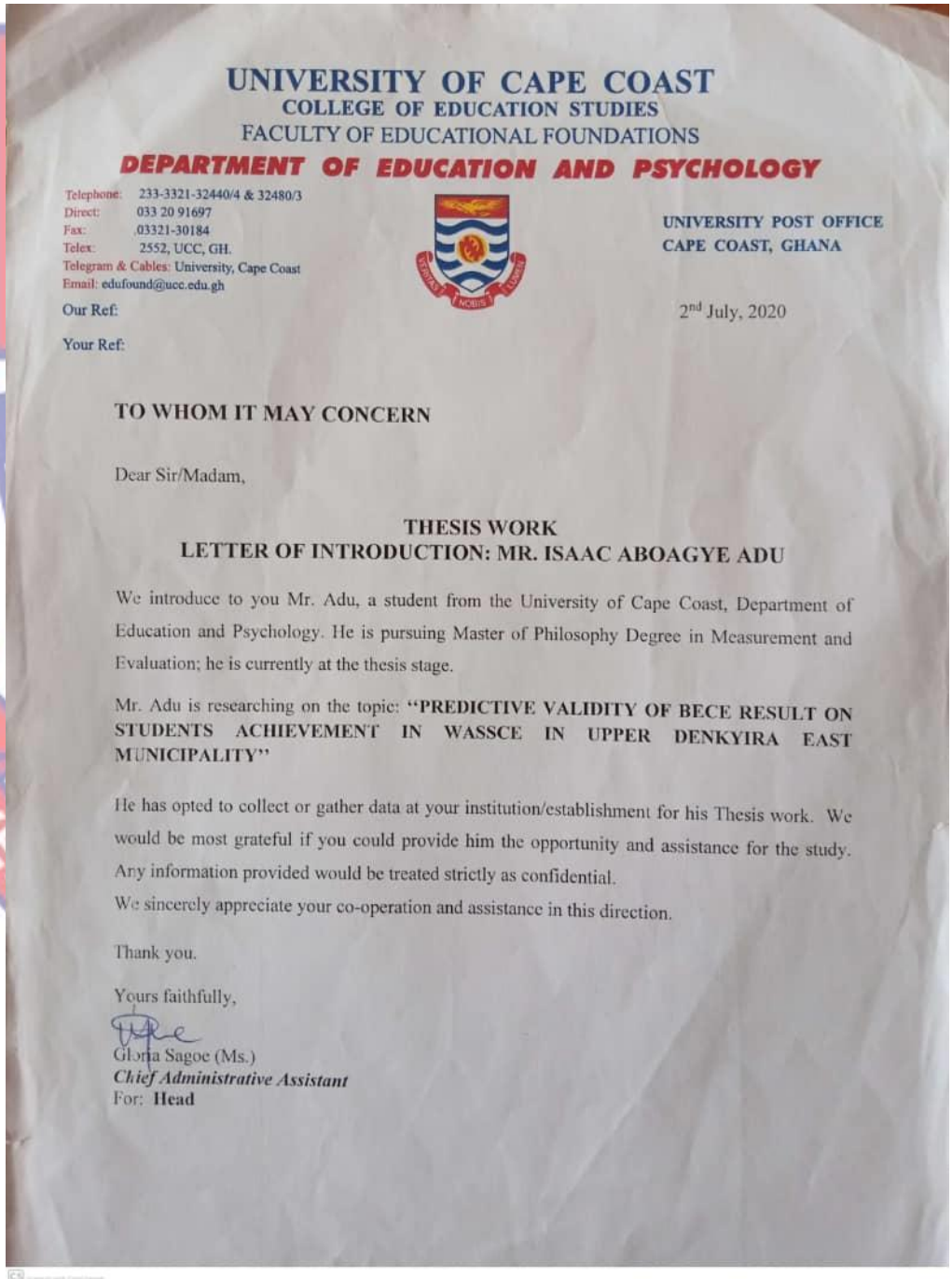
Appendix B

INTRODUCTORY LETTER



UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS
DEPARTMENT OF EDUCATION AND PSYCHOLOGY

Telephone: 233-3321-32440/4 & 32480/3
Direct: 033 20 91697
Fax: 03321-30184
Telex: 2552, UCC, GH.
Telegram & Cables: University, Cape Coast
Email: edufound@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

2nd July, 2020

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

THESIS WORK
LETTER OF INTRODUCTION: MR. ISAAC ABOAGYE ADU

We introduce to you Mr. Adu, a student from the University of Cape Coast, Department of Education and Psychology. He is pursuing Master of Philosophy Degree in Measurement and Evaluation; he is currently at the thesis stage.

Mr. Adu is researching on the topic: **"PREDICTIVE VALIDITY OF BECE RESULT ON STUDENTS ACHIEVEMENT IN WASSCE IN UPPER DENKYIRA EAST MUNICIPALITY"**

He has opted to collect or gather data at your institution/establishment for his Thesis work. We would be most grateful if you could provide him the opportunity and assistance for the study. Any information provided would be treated strictly as confidential.

We sincerely appreciate your co-operation and assistance in this direction.

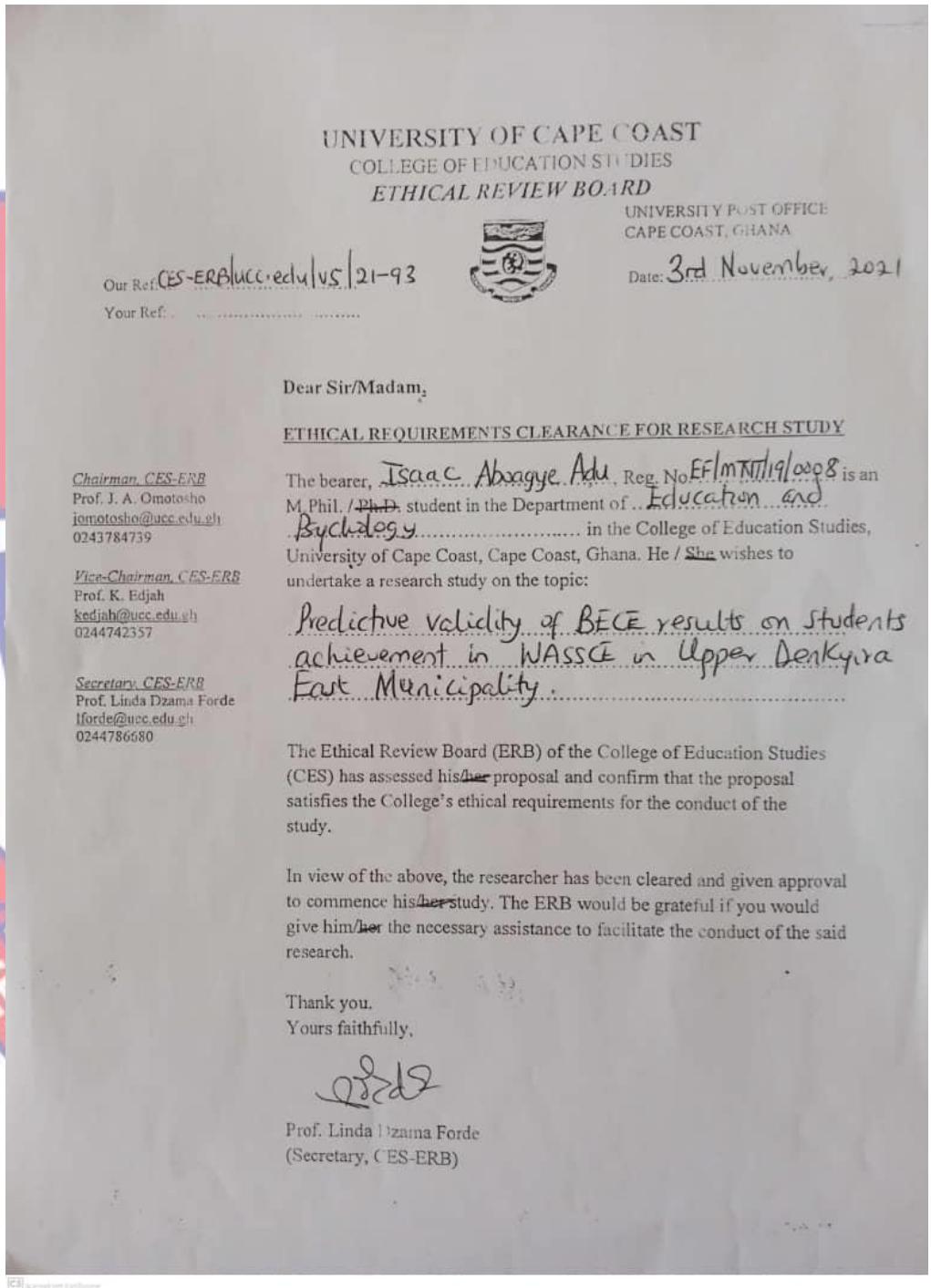
Thank you.

Yours faithfully,

Gloria Sagoe (Ms.)
Chief Administrative Assistant
For: **Head**

Appendix C

ETHICAL CLEARANCE



UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD
UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: CES-ERB/ucc.edu/05/21-93
Your Ref: .....
Date: 3rd November, 2021

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

The bearer, Isaac Abagye Adu, Reg. No. EF/MTT/19/0008 is an M.Phil. / ~~Ph.D.~~ student in the Department of Education and Psychology in the College of Education Studies, University of Cape Coast, Cape Coast, Ghana. He / ~~She~~ wishes to undertake a research study on the topic:

Predictive validity of BECE results on students achievement in WASSCE in Upper Denkyira East Municipality.

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed his/~~her~~ proposal and confirm that the proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence his/~~her~~ study. The ERB would be grateful if you would give him/~~her~~ the necessary assistance to facilitate the conduct of the said research.

Thank you.
Yours faithfully,

Prof. Linda Dzama Forde
(Secretary, CES-ERB)

Chairman, CES-ERB
Prof. J. A. Omotosho
jomotosho@ucc.edu.gh
0243784739

Vice-Chairman, CES-ERB
Prof. K. Edjah
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Secretary, CES-ERB
Prof. Linda Dzama Forde
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