

**EFFECTS OF ENGLISH LANGUAGE PROFICIENCY ON
PERFORMANCE OF PHYSICS IN NATIONAL
EXAMINATION IN WEST POKOT COUNTY IN KENYA**

BY

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DECLARATION

This research project is my original work and has never been submitted for degree award in any other University.

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DEDICATION

To my parents who have endlessly and tirelessly given me wholesome support in everything I do in my life.

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LIST OF ACCRONYMS

ASAL	Arid and Semi-Arid Land
BICS	Basic Interpersonal Conversation Skills
CALP	Cognitive Academic Language Proficiency
ELP	English Language Proficiency
EU	European Union
FGM	Female Genital Mutilation
IQ	Intelligent Quotient
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KICD	Kenya Institute of Curriculum Development
KNEC	Kenya National Examination Council
LOI	Language of Instruction
MDGs	Millennium Development Goals
MST	Mathematics Science and Technology
OECD	Organization for Economic Cooperation and Development
PISA	Programme for International Student Assessment
SACMEQ	Southern Africa Consortium for Monitoring Educational Quality
SMASSE	Strengthening of Mathematics and Science in Secondary Education
SPSS	Statistical Package for Social Science
UNESCO	United Nations Educational, Scientific and Cultural Organization

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ABSTRACT

In Kenya, English is the medium of instruction in schools and the official language of the country. English which is the Language of Instruction (LOI) in all schools in Kenya has been considered to have an influence on the overall academic performance of the learner. Physics being one of the science subjects offered in our secondary schools has not eluded the problem of uneven performance in national examinations. More so gendered patterns in performance in national examinations in various subjects have been observed. The study sought to determine the effects of English language proficiency on academic performance of Physics subject in national examination in West Pokot County of Kenya. The objectives of the study were, firstly, to determine the influence of English language proficiency on students' academic performance in Physics subject in West Pokot County. Secondly, determine the variation in performance of male and female students in English language in West Pokot County. Lastly, determine the variation in academic performance of male and female students in Physics in West Pokot County.

The study used a descriptive sample survey design. The study sample comprised of four schools that have been offering Kenya Certificate of Secondary Education examination for the last 26 years. The four schools were sampled from the target population of 38 secondary schools offering both Physics and English. The study utilized secondary data of mean performances in KCSE Physics and English where they were collected in form of mean scores for both boys and girls in West Pokot County. A score sheet was used as the data collection instrument. The data variables in the score sheet include the English mean score, Physics mean score, and overall schools mean score and the school category. To ensure validity and reliability of data collection method the official mean scores data from the Kenya National Examination Council (KNEC) were used. The data was analyzed using SPSS version 17 by obtaining the correlations and the degree of relationship between the variables English Language Proficiency KCSE mean score and Physics performance KCSE mean score for sampled schools English and Physics mean scores and t-test technique to test the difference of the performances.

The study found that there exist a positive correlation between English and Physics; similarly there exists a positive correlation between English and Physics and the overall performance.

The study utilized t-test to assess whether the means of two groups are statistically different from each other. The study indicates that there was no significant influence of English Language Proficiency on academic performance in Physics at the national examination. This implies that English language has no influence on Physics performance. Furthermore, there is no difference in the English Language proficiency between the male and female students at national examinations. However, there is difference by gender in Physics performance at the national examinations in West Pokot County.

The study recommends that gendered profiling of subjects should be discouraged in the society since the study indicates that both male and female students can perform well in both science and languages literacy. More so all learners should be able to consider all subjects as equal. The study recommends that further study to be undertaken to ascertain the difference in performance in Physics between male and female students.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Language is an integral part of culture, and the words that we have and how we use them reflect our values and belief system (Rosenthal, 1996). English is among the major languages with an important role in the world. English language plays an important role in pursuit of knowledge. The English language is a native language in numerous developed countries such as the United Kingdom and the United States and it is regarded as the international language in the world. In Kenya, English language is one of the languages spoken by its people and it is the official language apart from the Kiswahili. According to Chang B.M (2011), English language has major role in Asia, that is, English as a way of speeding up national development, English as a way of understanding other cultures and English as a tool for international communication. In Kenya English is the language of big business, education and government. Teaching of English in Kenyan education system is advantageous since it is a medium that facilitates communication with outside world. It is the main medium of instruction in the education system.

The Kenyan and British governments have both initially invested heavily in English with the end result being building of English supremacy at the expense of other Kenyan languages. Ogola (2003), states that the sociolinguistic situation in Kenya is triglossic in the following order; English is top of the rank as the official language; Kiswahili is in the middle of the rank as the co-official language, while at the base are the local languages or the mother tongues. Most of Kenyan languages have no written material, have never been standardized and have no orthography. With approximately a quarter of the Kenyan population understanding English well, majority of the population remains disadvantaged. In this view, therefore, English has been considered to perpetuate the class divide in Kenyan society. This is in contrary to the language policy in Kenya with the objectives of national integration and social integration.

English language proficiency is presumed to be one important contributor to the unexplained variance of the differences in academic achievement. Kenya like other multilingual communities globally has not eluded the problem of language of education. The Language of Instruction (LOI) since independence has always been English. Performance of students in their academic achievement in national examinations, for many years has always been directed to be a result of proficiency of the Language of Instruction which is English among other factors. Adriaan (2008) asserts that many of the performance problems at the secondary school level have their roots from the primary level of education. This is due to less effective strategies for teaching languages to pupils who enter primary schools. This poses a challenge, because English is the medium of instruction and plays a key role in understanding the content of any subject taught in the curriculum.

To achieve Vision 2030 in Kenya a lot of emphasis has been put on academic achievement in science subjects in our schools. Among the three subjects Chemistry, Biology and Physics, it is the latter subject that has always been considered most challenging. Physics subject is designed to offer varied experiences to the learner. The experiences are meant to lead to an all round mental, social and moral development of the learner. Its emphasis is not only the understanding of the fundamental scientific concept and principles, but also the experimental approach of investigation. The experimental approach should prepare the learner to present scientific concepts and ideas in the modern technology.

According to Kessler and Quinn (1980), there is a correlation between language learning and students' ability to hypothesize in science. Two linguistic perspectives can make the positive interactions of cognitive functioning and language development more fully operative. Freeman and Taylor (2006) Oral communication in science has many valuable effects on the learning and thinking process. It is a means to offer support to the students, to build understanding in science and to ensure that learning is meaningful and relevant. During teaching of science, teachers convey the ideas of science by trying their best to explain the concepts and operations clearly, to make use of metaphors, to use demonstrations and practical work to flesh out abstractions, to utilize projects and discussions for involving students in the subject matter.

Physics like any other science subject is compulsory in the secondary school curriculum in form one and two but majority of the students do not select Physics in Form Three. Majority of the students consider the concepts involved as too abstract to understand and the content taught too difficult to learn. Majority of the students in Kenyan secondary schools have inadequate knowledge and understanding of Physics concepts and principles (SMASSE, 2001). Despite the fact that very few students are opting for Physics as their science subject choice it is a requirement for many vocational and technical courses in universities and other tertiary institutions. There is need to enhance students' achievement and motivation to learn the subject. The performance in Physics is below the expectations that Kenya would require to actualize her goal of industrialization and becoming a middle level income country by the year 2030.

1.2 Statement of the Problem

The study was to determine what effects does proficiency in English which is the language of instruction has on the academic performance in Physics at form four in West Pokot County of Kenya. West Pokot County is among the ASAL profiled counties in Kenya. ASAL counties experience a myriad of challenges hence classified as among the marginalized counties. The social, cultural, political and economic factors driving educational marginalization includes; Socio-cultural alienation, adherence to retrogressive practices like FGM, socio-economic returns, language of education and political isolation. Some of the social challenges faced by children in the arid areas are: poor communication, vast distances to schools, low literate communities, lack of social role models, lower valuation of girls education, and limitations of basic schooling resources like teachers. Key unifying factor to these challenges is the language of education in learning institutions.

Past analysis of performance in the national examination indicates significant lower academic performance for arid areas. However, schools in West Pokot County post impressive results in KCSE examinations despite severe drought and hard economic challenges facing the region. Previous press release of results by education cabinet secretary has always decried the poor performance of languages in the whole country. Most students from rural primary schools have a poor background of the subject hence they are less proficient. English being the medium of instruction plays a key role in understanding the content of any subject taught

in the curriculum. The students may lack the cognitive academic language proficiency hence difficulty in comprehending many concepts in Physics. Learners' proficiency in the instructional language and the role of language in concept formation suggests that the teachers' instructional language similarly needs to be appropriate to the learning context and the learners' linguistic levels.

1.3 Research Questions.

- a. What is the influence of English Language Proficiency on students' academic performance in Physics subject in West Pokot County?
- b. Does English Language Proficiency vary with gender in public secondary schools in West Pokot County?
- c. Is variation in English Language Proficiency by gender affecting the performance in Physics subject examination in public secondary schools in West Pokot County?

1.4 Research Objectives.

1.4.1 General Objective

To determine the role of English Language Proficiency in Physics performance at the National examinations of Kenya.

1.4.2 Specific Objectives

- a. To determine the influence of English language proficiency on students' academic performance in Physics subject in West Pokot County.
- b. To determine the variation in performance of male and female students in English language in West Pokot County.
- c. To determine the variation in performance of male and female students in Physics performance in West Pokot County.

1.5 Research Hypothesis

To achieve the objectives of this study, the following null hypothesis were tested at a significance level of alpha 0.05:

Ho: There is no significant influence of English Language Proficiency on academic performance in Physics at the national examination.

Ho: There is no difference in the English Language proficiency between the male and female students at national examinations in West Pokot County.

Ho: There is no difference by gender in Physics performance at the national examinations in West Pokot County.

1.6 Justification of the Study

The study on English language proficiency is essential since English language is predominant in the field of politics, religion, education, science and technology. English language proficiency is a pre requisite to entry of most Kenyan institutions and also a medium of instruction in all levels of education as well as the language of most textbooks. It is through the vehicle of English language that student access knowledge in other subjects hence it's a critical aspect in Kenyan education system.

Physics is among the many subjects offered in Kenyan education curriculum. Physics is the mother of the other sciences. A learner who has studied the subject and conceptualized on how the various laws/principles work, has the distinct advantage to be able to understand other subjects in a much clearer manner. How to understand these laws and apply them in real life is the principle that we need so as to achieve the Vision 2030 goal of being an industrialized country by 2030. Therefore, the findings of this research will ensure that all the stakeholders in education sector in Kenya understands relationship between ELP and Physics performance in national examinations and tests in Kenya secondary schools where most students do not have English as their first language.

1.7 Study Area

West Pokot County is one of the 14 Counties in the Rift Valley region in Kenya. It is situated in the north rift along Kenya's Western boundary with Uganda border. It borders Turkana

County to the North and North East, Trans Nzoia County to the South, Elgeyo Marakwet County and Baringo County to the South East and east. The County lies within Longitudes 34° 47' and 35° 49' East and Latitude 10° and 20° North. The County covers an area of approximately 9,169.4 km² stretching a distance of 132 km from North to South. Topographically, the Northern and North Eastern parts are the dry plains, with an altitude of less than 900 m above sea level. On the Southeastern part are Cherangani Hills with an altitude of 3,370 m above sea level. The main forests in the county are found in Cherangani Hills. The gazetted forest, which forms part of the Cherangani Hills in Lelan, covers an area of 20,857 ha. The un-gazetted forest covers 15,719 ha and consists of rain forests blocks scattered all over the county.

The main rivers in the county are Suam, Kerio, Weiwei and Muruny. Cherangani Hills are the main source of Muruny and Weiwei rivers, while Mt Elgon is the main source of river Suam. River Muruny, Kerio and Weiwei drain northwards into Lake Turkana, while other small rivers join and drain into River Nzoia which in turn drains into Lake Victoria. River Suam drains into Turkwel dam that generates hydro-electric power. The county has a bimodal type of rainfall. The long rains fall between April and August while the short rains fall between October and February. The lowlands receive 600 mm per annum while the highlands receive 1,600 mm per annum. The county also experience great variations in temperature with the lowlands experiencing temperatures of up to 30⁰ C and the highlands experiencing moderate temperatures of 15⁰ C.

The county has a total of 503 primary schools, 50 secondary schools and 479 ECD centres. There are 11 tertiary institutions which cater for both primary and secondary graduates. The secondary school enrolment stands at 15,550 while there are 57,782 children under the secondary school age bracket as per the 2012 population projections. Therefore, secondary school enrolment stands at 27 percent. The county has four sub counties namely; West Pokot, Pokot Central, Pokot North and Pokot South, 13 divisions, 61 locations and 222 sub locations. The specific area of study is West Pokot County which has 50 secondary schools with approximately 350 graduate teachers. In 2013 national examination KCSE 750 students enrolled for Physics subject. The County had a performance index in Physics 2013 KCSE of 6.1247 and in 2012 a mean score of 6.3395. This shows a decline in performance index. This performance has been attributed to many factors among them is learners' and instructors' proficiency in language of instruction

1.8 Operational Definitions

Language Proficiency It is represented by the mean scores attained by schools in English subject for the last 26 years.

Academic achievement means how a student performs in school and is measured by scores and school mean grades attained.

Language of Instruction refers to English the preferred instructional language in many classrooms in Kenya.

English Language Learner describes any student who is a non-native English speaker and who is in the process of acquiring the English language.

Primary language: The language first learned by a student.

Cognitive Academic language proficiency (CALP); it is the proficiency required in language development for solving academic problems

Basic Interpersonal Conversation Skills (BICS); it is basic proficiency required in language development for normal conversations.

National Examinations this is an exam done after one completes four years of study in secondary school in Kenya. It is administered nationally by a national body i.e Kenya National Examination Council (KNEC)

Instructors; Teachers of Physics in secondary schools in West Pokot County.

CHAPTER TWO

2.0 LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Introduction

The chapter presented a critical review of the available literature on the subject of research by focusing on language policy in Kenya, English language proficiency in Kenya and its effects on human growth and learning, there was a further review of performance of Physics subject globally and locally and some of the factors affecting its performance. There was a literature review of performance of both the English and Physics subject in terms of gender. Furthermore, the section presented the conceptual framework.

English which is the Language of Instruction (LOI) in all schools in Kenya has been considered to have an influence on the overall academic performance of the learner. Physics being one of the science subjects in our secondary schools has not eluded the problem of uneven performance in national examinations and there are many factors that influence its performance in national examinations. The chapter presents a critical review of existing literature on the English and Physics performance locally and globally.

2.2 Literature Review

2.2.1 Language Policy

Language Policy is what a government does either officially through legislation, court decisions or policy to determine how languages are used, cultivate language skills needed to meet national priorities or to establish the rights of individuals or groups to use and maintain languages. Many countries have a language policy designed to favour or discourage the use of a particular language or set of languages. National language policies can either mitigate or exacerbate some of the factors that will encourage extinction or usage of some of the languages.

According to Wardhaugh (2010), English is a West Germanic language that was first spoken in early medieval England and is now a global lingua franca. It is an official language of

almost 60 sovereign states, the most commonly spoken language in the United Kingdom, the United States, Canada, Australia, Ireland, and New Zealand, and a widely spoken language in countries in the Caribbean, Africa, and South Asia (Crystal 2003). It is the third most common native language in the world, after Mandarin and Spanish. It is widely learned as a second language and is an official language of the United Nations, of the European Union, and of many other world and regional international organizations.

English has ceased to be an "English language" in the sense of belonging only to people who are ethnically English (Romaine 1999). Use of English is growing country by country internally and for international communication. Most people learn English for practical rather than ideological reasons. According to Mazrui and Mazrui, (1998) many speakers of English in Africa have become part of an "Afro-Saxon" language community that unites Africans from different countries.

The colonial language policy in Kenya is important putting into consideration that it impacted greatly on post-colonial language policy. When Kenya attained self-rule in 1963, English was declared the official language. It was to be used in all important governmental sectors, education inclusive. In a 1964 survey, Kenya Education Commission found that, in the interest of the citizens, it would be useful to have a trilingual approach to education where the mother tongue was to be used in verbal communication especially in rural areas while English and Kiswahili were to be used in instruction from lower primary to the university (Wendo 2009). Furthermore, Kiswahili was seen as the appropriate language for the Pan-Africanism dream (Mazrui and Mazrui 1996). Unlike English, however, the language was not anchored in to the school curriculum, and for a long time, it remained an optional subject. Ogechi and Ogechi, (2002), assert that while barely a quarter of the Kenyan population can adequately use English, it remains the advantaged official language and the medium of instruction in the education system.

In 1981, the Mackay Commission recommended 8 years of primary school, 4 years of secondary school and 4 years of university education. It passed that English remains the language of instruction, while Kiswahili was made a compulsory subject in both primary and secondary education. This policy was also followed by the production of Kiswahili books to meet the increased demands of both students and teachers. Njoroge, (1990), explains that the Mackay

Commission further advised that the mother tongue be used in lower grades of primary schools, in areas where this was possible.

Furthermore, English is the world's most widely used language in newspaper publishing, book publishing, international telecommunications, scientific publishing, international trade, mass entertainment, and diplomacy. English is, by international treaty, the basis for the required controlled natural languages Seas-peak and Airs-peak used as international languages of seafaring and aviation. English has replaced German as the dominant language of scientific research (Gordin 2015). It achieved parity with French as a language of diplomacy at the Treaty of Versailles negotiations in 1919. By the time of the foundation of the United Nations at the end of World War II, English had become pre-eminent and is now the main worldwide language of diplomacy and international relations. It is one of six official languages of the United Nations. According to United Nations (2008), many other worldwide international organizations, including the International Olympic Committee, specify English as a working language or official language of the organization.

2.2.2 Language Proficiency

Language proficiency is the ability of an individual to speak or perform in an acquired language. Cummins (1984), Lack of English proficiency is commonly regarded by policy makers and educators as the major cause of language minority students' academic failure in English only programs. Thus, it is assumed that students require bilingual instruction only until they have become proficient in English. Logically, after students have become "proficient in English", any difficulties they might encounter in an English only program cannot be attributed to lack of English proficiency.

Vinke and Jochems (1993), indicate that the lower the level of English proficiency, the more important it becomes in defining academic achievements, while Barker (1988) indicates that while students may be able to speak English, they still do not operate at maximum capacity because of the language barrier. In Kenya, English, though a second language to most students and their teachers is used as the instructional language in schools and universities. Students' success in school depends upon their being proficient in LOI. The LOI plays a crucial role in learning, as Malekela (2003) argues, if the learner is handicapped in LOI then

learning may not take place as the as the instructor and the learner will not be communicating. English language proficiency is presumed to be one important contributor to the unexplained variance of the differences in academic achievement between Hispanic English language learners and native English language speaking students (Canale, 1981; Cummins, 1981, 1991). Data from other studies (Anderson & Anderson, 1970) have shown a relationship between English reading and writing and academic achievement. Educational and linguistic theorists (Cummins, 1980; Krashen, 1976, 1981, 1982; and Krashen et al., 1979) suggest that in the case of Hispanic English language learners, these students may become quite proficient in the grammar, vocabulary and sentence structure of the English language, but may lack the necessary cognitive academic language proficiency to learn the subject matter that is presented to them in science classrooms. In other words, these students may be proficient in their English communication skills but may not have the cognitive academic language proficiency (CALP) required for learning science or other academic subject matter. The cognitive-academic language proficiency (CALP) concept is related to literacy skills in the first or second language and according to Cummins, requires both higher levels of language and cognitive processes in order to develop the language proficiency needed for success and achievement in school.

According to a World Bank study (Glewwe, 2004), an economist at Stanford University and other researchers, pupils in Kenya fail to perform well in KCPE. The study that was partly carried in 300 schools in Busia District noted low achieving pupils eventually dropped out of school or performed poorly in KCPE. The researchers said most of the pupils who repeated classes or dropped out of school were weak in English, the Language of Instruction. Studies by Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) indicated many pupils have problem in using textbooks. It is not necessarily due to low IQ but because of their limited capacity to read textbooks written in English. Heavily disadvantaged learners are those in rural areas and urban slums where children rarely use English until they go to school. Studies in Tanzania shows that most students have low levels of English Language Proficiency (ELP). Mvungi (1982) and Osbiston (1980) argue that proficiency in LOI is an important factor in education performance and that lack of proficiency in English would result in poor performance in academic subjects in their national examinations.

2.2.3 Influence of English language proficiency on Physics performance

Physics is a body of knowledge about the physical environment. It employs a systematic scientific methodology of study to arouse learners' way of reasoning and create positive attitude. Physics subject is designed to offer varied experiences to the learner. The experiences are meant to lead to an all-round mental, social and moral development of the learner. According to Kenya Institute of Curriculum Development (KICD), the Physics syllabus ensures appropriate balance in the development of cognitive, psychomotor and affective skills of the learner.

According to the Kenya National Examinations Council (KNEC), Physics is clustered with biology and chemistry. However, students must select and pursue at least two science subjects at Form Three and Four (KNEC, 2005). Majority of the students opt for a combination of chemistry and biology due to subject clustering system which does not favour Physics. Most students consider the concepts involved in the study of Physics to be too abstract and difficult to understand. This may account for the current low students' achievement, motivation and enrolment in the subject. Performance in Physics has been low and many students shun the subject (Njoroge G.N, Prof. Changeiywo et al, 2014) Several studies have investigated the causes of the poor state of Physics performance and low student enrolment. Some of the causes cited include low motivation to learn Physics, poor teaching approaches, poor content mastery by teachers, teachers and learners language use, negative attitude towards the subject, inadequate instructional materials (SMASSE, 1998).

In Kenyan secondary schools, Physics has the image of the most difficult school subject, one that only high achievers have the courage to register for in national examinations (Oyoo, 2008). Despite the generally higher academic ability of the students who register for Physics, it remains the subject where the outcome has been consistently and persistently lowest compared to other science subjects, biology and chemistry.

Many of the problems confronting society currently, such as global warming, terrorism, genetic modification, global market competition, energy and population crises, ethical issues involving biotechnology among other critical issues, require Physics knowledge, if they are to

be dealt with rationally (Safeer and Keenan, 2005; UNESCO, 2010). Having a better understanding of Physics and technology, and better technical problem-solving skills will enable people to meet the challenges and demands of the work place (Effandi and Zanaton, 2006; Porter, Ketels and Delgado, 2007). A country requires scientifically and technically literate citizenry to advance her national development agenda. Hence, the need to structure secondary school Physics learning in line with the twenty first century skills (Pacific Policy Research Center, 2010). The twenty first century skills include creativity and innovativeness, critical thinking and problem solving, communication and collaboration, information, media and technology, life and career skills among others.

Amos and Quinn (1997) states that weak English proficiency translates into weak understanding of the subject content which, together with poor writing skills simply exacerbates the potential for failure as they are trapped in a vicious cycle of inadequacy. Language proficiency entails the four core skills; writing, reading, listening and speaking, the ability to read rapidly and understand content is critical for cognitive understanding. Vygotsky (1962) argued that there is a relationship between language of instruction and performance. Obameata (1970) wrote that “unless a child can acquire facility in the second language where it is the official language, he is inevitably retarded in reasoning as well as attainment.

Proficiency in writing, comprehending, listening and speaking scientific concepts is a crucial tool in ensuring that Physics subject is well understood. Physics is a more practical subject but it is always embedded in conversation or discussion of ideas since the learner and the teacher always talk during teaching and learning process. This shows that language proficiency a major role in its understanding. According to Cummins (1980 and 1984), English language proficiency can be categorized into two different skills; BICS (Basic Interpersonal Conversational Skills) which is relatively undemanding and context embedded where there is continuous rapid feedback and CALP (Cognitive Academic Language Proficiency) which is a cognitive academic language and is cognitively demanding. CALP ensures that the learner can conceptualize the content of the subject. The need for learners’ proficiency in the instructional language and the role of language in concept formation shows that the teachers’ instructional language similarly needs to be appropriate to the learning context and the learners’ linguistic levels. Science teachers’ classroom talk (instructional

language) should not only be recognized to be of vital importance to student learning of scientific concepts but to also be on equal footing to practical work in Physics.

English language proficiency is presumed to be one important contributor to the unexplained variance of the differences in academic achievement between Hispanic English language learners and native English language speaking students (Canale, 1981; Cummins, 1981, 1991). According to Cummins, high order English language proficiency or cognitive academic language proficiency enables the student to learn in a context, which relies heavily on oral explanation of abstract or decontextualized ideas. This is often the context in which high school science is taught, with unfamiliar events or topics being described to students with little or no opportunity to negotiate shared meaning (Rosenthal, 1996). It has been stated (Chamot and O'Malley, 1986; Cummins, 1982; and Rosenthal, 1996), that students who have not yet developed higher order English language proficiency or cognitive academic language proficiency will be at a disadvantage in such settings.

Many rural teachers themselves may have low levels of English proficiency and many operate only at the literal level. Although they are required to teach in English, they teach in the vernacular and hand out summaries and notes in English which the students are required to rote learn (Jackson, 2000). Unless teacher English language proficiency improves, this situation is unlikely to improve as students have little to learn from their teachers. On average, while it is possible to become reasonably proficient in social conversation (BICS) in about two years, it takes five to seven years to become competent in verbal-academic skills (CALP) (Cummins, 1984).

2.2.4 Gender performance in English language and Physics

Gender is the range of characteristics pertaining to, and differentiating between, masculinity and femininity. The characteristics may include biological sex (i.e. the state of being male, female or intersex), sex-based structures (including gender roles and other social roles), or gender identity (Udry, J. November 1994). According to MDGs, gender equality is strongly linked to education. The Dakar Framework for Action (2000) set out ambitious goals: to eliminate gender disparities in primary and secondary education by 2005, and to achieve gender equality in education by 2015. At school level there has gender disparities in terms of

performances, in some instances boys tend to perform better in some curriculum subjects and vice versa. Access to education is also biased in some areas due to gender orientations.

According to Lynch K. and Feeley M. (2009), Gender inequalities persist in education in terms of subject preferences and performance, and in cultural aspects of the education and training experience. According to Lynch K. and Feeley M. (2009), Mathematics, Science and Technology (MST) courses are predominantly male in profile and courses with a care bias are disproportionately female. Both cultural and organizational factors contribute to these gendered choices. Gendered identities are dynamic and contested. They are created and recreated anew in group settings, including educational settings. There is a slight average performance gap in the EU in favour of boys and men in mathematics, science and technology (MST) although in some countries this gap no longer exists and women outperform men in the sciences in many countries.

There is considerable evidence that there is a masculinized culture in MST courses in further and higher education, and within related occupations. This discourages many women from specializing in these fields. The lack of welcome for women (and at times the open rejection of them) in fields, such as mathematics, engineering, construction and technology, is a disincentive for women to enter these occupations; lack of academic or technical skills is not the major reason women do not pursue MST careers. Boys' performance in literacy is significantly lower than that of girls and literacy standards in general are falling throughout the EU. Boys are also more likely to leave school early. It is boys from working class backgrounds in all ethnic groups and minority groups who are the most likely to have literacy difficulties and to leave school early (Lynch K. and Feeley M. 2009).

Assessment of performance and progress in European education and training systems since 2000 shows that although some gender differences in attainment remain, there are also changes (CEC, 2008). Overall, girls have higher rates of graduation at secondary level; advanced research degrees are the only sector of education where men are numerically dominant (Smyth 2007). If success is measured in terms of attainment rather than participation and retention, there are also important gender gaps: boys perform noticeably less well at reading, and are more likely to be defined as having special educational needs.

While girls perform somewhat less well at mathematics and sciences than boys (and there are within-country differences here) and are, on average, underrepresented among math, science and technology students and graduates, the gap between female and male school performance is smaller in mathematics than in reading (Smyth 2007). According to Organization for Economic Cooperation and Development (OECD, 2009) findings from Programme for International Student Assessment (PISA) in relation to science, it showed little or "no difference in average science performance" between girls and boys, with girls outperforming boys in 12 countries and boys scoring marginally higher than girls in 8 countries.

Despite the progress in MST, generally there is a worrying decline in reading literacy. Both of these areas contain gendered inequities with males showing a small advantage in MST, and a widening gap developing in favour of girls in the achievement of literacy. In some instances there is no much gap between the gender, according to psychological research on male and female abilities in mathematics and science shows that there are no differences in overall aptitude for these subjects (Spelke, 2005). Despite girls' equal abilities and good performances, in 22 out of 30 OECD countries (including Germany, UK and the Netherlands) males were significantly more assured about their abilities in sciences than were females, who generally reported a lower "self-concept" regarding science (OECD, 2007). These attitudinal factors are seen as exercising influence on whether or not students choose to pursue further studies or a career in mathematics or science. A number of studies have shown that teachers' and parents' gender-stereotyped behavior and expectations can undermine girls' confidence in their science abilities and eventually discourage them from choosing mathematics/science-related courses in secondary school (Eccles and Wigfield, 2002; Turner et al., 2004). Studies from Canada suggest that attitudes to science in particular are strongly influenced by parental perceptions and assumptions that tend to be highly gendered (Crowley et al, 2001). Both mothers and fathers were found to give preferential treatment to their male children in the development of scientific language, thinking and activities.

The PISA 2000 made a detailed study of reading performance, both PISA 2003 and PISA 2006 gathered data to update progress on reading. Girls generally outperformed boys in reading literacy in all OECD countries in PISA 2006. Girls outscored boys in reading literacy

by at least 50 points in 12 OECD countries. This indicates that girls tend to perform better than boys in languages as compared to the boys who tend to perform well in sciences than girls. The Canadian Council on Learning's investigation of gender differences in reading achievement (of 13 year olds) suggest that reading attitudes and behaviour are highly gendered; on average, girls do more non-assigned reading, reading for enjoyment or reading for general interest than boys. And boys, on average, reported regarding reading as a feminine activity and not valuing it as much as girls. According to Canadian Council on Learning (2009), boys' attitudes negatively impact on their subsequent involvement in reading and their scores in reading assessments.

Physics as a science subject has always been perceived to be a difficult subject because of its abstract nature (Adeyemo, 2010). Physics is a subject students usually performed poorly in all level of the educational system. As observed by Akanbi (2003) that the trend in the enrolment and performance of secondary school students in science subjects, especially Physics assumed threatening and frightening dimension. Wambugu, Changeiywo and Ndiritu (2013) posited that there is gender disparity in student performance in Physics in favour of male students in Kenya schools. Aina (2013) submitted that male students performed better than female among college of education students in Nigeria. Battal (2013) disclosed that females showed a higher reading ability and culture in their academic performance than the males. However, the findings of Adeniran (1993) and Olanipekun (2013) keenly signified that male students performed better than female students when the teaching-learning process involves reading and verbal instructions. Low proficiency in English language has to a very large extent resulted in under-achievement among Nigeria senior secondary school students and those at the higher institutions (Olanipekun,2012).

2.3 Conceptual Framework

Acquisition of linguistic knowledge has a significant effect on students' learning effectiveness. Obameata (1973) contended that "an aspect of linguistic problem in Nigeria is that students find it difficult to understand instructions accompanying tests". English Language is the pivot through all other subjects revolves, it is highly essential for schools to emphasize the use of both social conversation skills (BICS) and verbal-academic skills

(CALP). Language proficiency skills can be conceptualized along two continuums according to Cummins (1984).

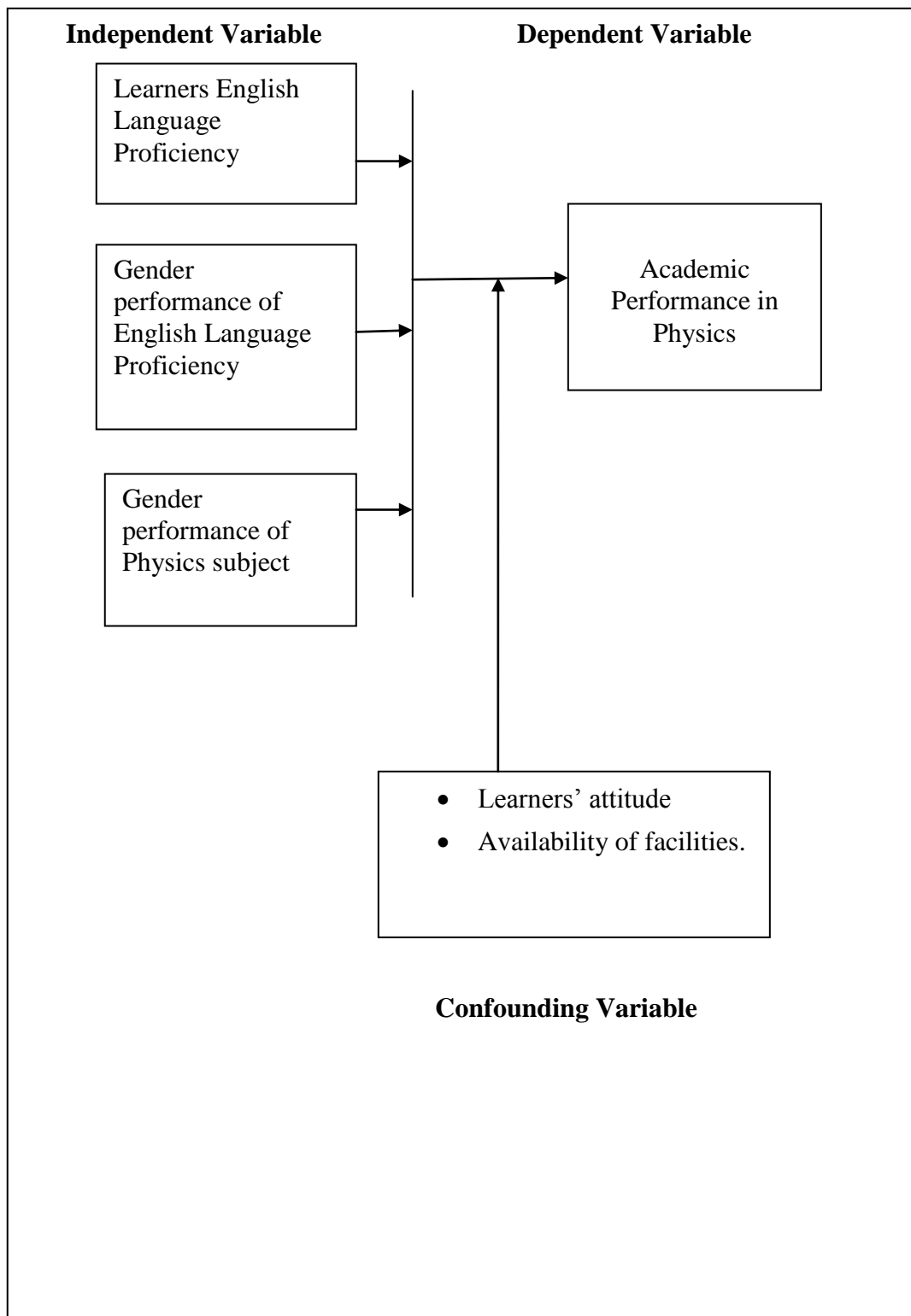


Figure 2.1 : Conceptual framework

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This section provides an overall plan used to carry out the research; it presents a key methodological issue that was followed to conduct the research. The chapter describes the research design, target population, sample and sampling design, data collection instruments, data collection procedures and data analysis procedures used in the study.

3.2 Research Study Design

The study used a sample survey design where four schools were sampled from the target population of 38 schools in West Pokot County. The target population comprised of schools that had been offering both English and Physics at the KCSE examination. The four sample schools were selected considering the fact that they had been offering KCSE examination since the inception of KCSE examination in 1989 up to 2014. The study used the 26 data values of KCSE examination English mean scores and Physics mean scores from the four sampled schools.

The data collected comprised of KCSE examination individual school mean scores in Physics, English and overall from the four sampled schools consisting of two boys' and two girls' schools since inception of KCSE examination in 1989. The study adopted the correlation type of statistical analysis where Schools' Physics KCSE mean score and English Language KCSE mean score were correlated by determining their Pearson correlation coefficient. The whole Physics mean scores from the four schools were correlated with the whole English mean scores from the four schools. This analysis would provide the relationship existing between English language performance and Physics performance.

The study further used t-test analysis of comparing means at significance level of 95% so that it can determine if there exists significant difference in performance between male and female students in both English language and Physics performance at KCSE examination.

The English and Physics KCSE examination mean scores since inception of the KCSE examination constituted the quantitative data since they were expressed in numerical form for analysis.

3.3 Data Types and Sources

The study to determine the effect of English language Proficiency on academic performance of Physics in KCSE examination had English language school mean scores and Physics school mean scores as its independent and dependent variables respectively. The English language mean score represented language proficiency while the Physics mean score represented the academic performance in Physics subject in KCSE examination mean score. The English language mean scores were provided per school per year since 1989 the inception of KCSE examination, similarly the Physics mean scores were provided per school per year since 1989 the inception of KCSE examination.

The schools were further categorized according to gender so that the difference in performance in English language and Physics could be determined among the male and female students. The girls performances in English language and Physics subjects in KCSE examination were captured by obtaining their schools mean scores for the period 1989 – 2014, similarly boys mean scores in KCSE examination in English language and Physics subject were captured for the same period 1989 – 2014.

The quantitative data collected were from secondary sources. The secondary sources included the sampled boys' schools and girls' schools, the schools mean scores in English language and Physics subjects. The data were of secondary nature since the mean scores were from the past KCSE examination results of the two subjects from each school sampled. The data comprised of individual school mean scores since the inception of KCSE examination in 1989. The mean scores represented the performances in English language and Physics subjects as provided by the examining body KNEC since 1989

3.4 Data Collection.

3.4.1 Pilot Survey

Pilot survey was conducted before a complete survey to test the effectiveness of the research methodology. Pilot survey helped in determining the correct population, target population and sample size for the study as well as determining if the data collection instrument and procedures are effective. The study undertook a pilot survey to determine the number of schools that has been offering both English and Physics KCSE examination since its inception in 1989.

The study target population comprised of the 38 public secondary schools that have been offering Physics and English as an examinable subject in West Pokot County. The schools comprised of the 11 boys, 13 girls and 14 mixed public secondary schools in West Pokot County. The study sample size comprised of only those schools that had been offering KCSE examination in English language and Physics subjects since 1989 when KSCE examination was introduced in Kenya. The study found out that only four schools consisting of two boys secondary schools and two girls secondary schools had been offering KCSE examination in English and Physics since its introduction in 1989.

The pilot study also ensured that the data collection instrument, the score sheet was able to collect all the required data variables in the study. The instrument consisted of the year of examination, English mean score, Physics mean score, overall mean score, school name and the school category. The school means scores for Physics and English were obtained from school records which had been provided and validated by the KNEC. The instrument was up to date and deemed to capture all the required variables for the study (see appendix VI).

3.4.2 Target Population and Sample Size

The population of the study consisted of the public schools in Kenya but only those schools which were identified in the pilot survey as offering English and Physics at the KCSE examination level in West Pokot County. They were considered to be useful thus constituting the target population. A list of the 38 schools was constructed and therefore represented the sampling frame (see table 3.1). The target population was made up of boys' schools, girls' schools and mixed schools. Boys' secondary schools represented 29% (11 schools) of the

target population, girls secondary schools represented 34% (13 schools) of the target population while the mixed schools represented 36% (14 schools) of the target population.

The study sample constituted those secondary schools that had been offering both English and Physics as examinable subject at national examination since KCSE examination was introduced as national examination in 1989. The KCSE Mean scores in English language and Physics for the past 26 years were collected from four public secondary schools in West Pokot County. The four selected schools consisted of two boys' and two girls' secondary schools. The mixed schools did not fit into the sample size since there was no mixed school in the list of target population that had met the sample size condition. According to the pilot survey no mixed school had been offering KCSE examination in English language and Physics subject since the inception of KCSE examination in 1989. Most mixed schools were introduced as early as 2000 hence did not meet the sample size determination criteria. The schools were selected from registered public schools in West Pokot County. The four sampled schools represented 11% of the target population of the study.

The table below shows the number of schools per Sub County in West Pokot County and their gender categories.

Table 3.1: Sampling Frame

Sub-County	School Category	No. of schools	No. of schools offering Physics and English KCSE	No of schools selected (schools offering Physics and English KCSE since inception of KCSE examination)
West Pokot	Boys	7	6	2
	Girls	10	7	2
	Mixed	7	6	-
Pokot North	Boys	1	1	-
	Girls	2	2	-
	Mixed	2	2	-
Pokot South	Boys	1	1	-
	Girls	1	1	-

	Mixed	4	3	-
Pokot Central	Boys	3	3	-
	Girls	4	3	-
	Mixed	5	3	-
Total		48	38	4

3.4.3 Data Collection Instruments

The research instrument used in this study was a score sheet. The score sheet was designed to collect the required data variables for the study. The data collected in the instrument consisted of years of KCSE national examination administration (1989-2014), School English mean scores for 26 years, school Physics mean scores for 26 years, school overall mean scores for 26 years, name of the school and the school category in terms of gender. The data was recorded according to each sampled school. The score sheet used in the study was able to capture all the required data variables required for the study and it was simple to administer to the each sampled schools.

To ensure validity and reliability of data collected the official school mean scores provided to schools from the Kenya National Examination Council (KNEC) were used by the study. The study utilized only the official KCSE examination mean scores for English language, Physics subject and overall means for the four sampled secondary schools. The data collection instrument used in the study is attached at the appendix of this document.

3.4.4 Data collection Procedure

Prior to collecting data, necessary authorization documents for data collection were obtained from the University of Nairobi, Department of Psychology and subsequently the County Director of Education West Pokot County. Upon getting clearance, the trained research assistants were able to visit the sampled two girls' secondary schools and two boys' secondary schools in West Pokot County. The purpose of the study was explained to the school administrations and more so the data that is required from the sampled schools in the study.

The school administration provided the valid school mean scores for the English language, Physics subject and overall mean scores for the period 1989 – 2014. The mean scores collected comprised of the school mean scores per the two subjects per year since 1989 -2014 as well as the overall mean scores for the school for the same period. The data were entered into the score sheet accordingly.

3.5 Data Processing and Analysis Techniques.

3.5.1 Data Processing

The data collected in the four score sheets were received from the research assistants and entered into an excel sheet. The excel sheet had five columns with the first column having list of years of KCSE administration (1989-2014), second column had English mean scores for schools for the last 26 years, third column had Physics mean scores for the 26 years, third column had overall mean scores for 26 years, fourth column had the name of the school and last column had the school category by gender. The total values entered in the excel sheet were 104 representing the KCSE examination English mean scores from the four schools as well as 104 values representing the KCSE examination Physics mean scores.

The data entered in the score sheets were cross checked to determine if there was any missing mean score value. The KCSE examination mean scores collected were rounded off to four significant figures. The data were saved as a joint excel data file comprising of the mean scores from the four schools. The data entered was then imported to the statistical analysis software SPSS version 17 for analysis as per the objectives of the study.

3.5.2 Data Analysis Techniques

The analysis techniques used in this study were the descriptive statistics, scatter plot, Pearson Product Moment correlation (PPMC), regression analysis and t-test technique. The data were analyzed using descriptive statistics where the mean scores of whole girls' schools and boys' schools in English and Physics KCSE examination performances were determined. Frequency distributions were used also to provide performances distributions by gender for English language performance and Physics performance. Furthermore, scatter plots were used to determine the relationship or association between the English language performance and Physics performance for the period 1989-2014. The data were analyzed as per the objectives in the study.

3.5.2.1 Determining the Relationship between English Proficiency and Physics Performance at KCSE examination.

The average of mean scores and their standard deviations of the English language and Physics subjects among the male and female students were determined. A scatter plot was used to determine the association between independent variable (English mean score) and the dependent variable (Physics mean score). The scatter plot indicated whether the association or the relationship between two variables is positive correlation or negative correlation.

Furthermore, Pearson Product Moment Coefficient was obtained. The Pearson Product-moment correlation coefficient measured the strength of the linear relationship between the independent variable, English language mean score and the dependent variable, Physics mean score. Pearson's coefficient 'r' ranged from -1 to +1 whereby -1 indicated a perfect negative linear correlation whereas +1 indicated a perfect positive correlation.

More so regression analysis techniques were used to determine whether a linear relationship existed between the English language mean scores and Physics mean scores. This explained the relative contribution of the English language performance to the total variance in the Physics performance.

3.5.2.2 Determining the Variation in Performance of male and female students in English language.

The average values of means and standard deviations of the male and female mean scores in English language were determined. t-tests were carried out to assess whether the means of two groups are statistically different from each other. The study adopted a paired sample t-test to determine if there is significant difference in performance in English language between the male and female students. The null hypotheses were tested at a significance level of alpha 0.05.

3.5.3.3 Determining the Variation in Performance of male and female students in Physics performance.

The study used descriptive statistics to determine the means and standard deviations of Physics mean scores by gender. Furthermore the maximum and minimum values of the mean

scores were obtained to determine the minimum or maximum value of mean score in Physics attained by male and female. The t-tests were carried out to assess whether the means of the male and female mean scores in KCSE examination in Physics are statistically different from each other at significant level of alpha 0.05.

The study adopted a paired sample t-test to determine if there is significant difference in performance in KCSE examination in Physics between the male and female students. The study sought to determine if the P-value of the t-test was greater or less than alpha 0.05. This would inform the study whether to reject or accept the null hypothesis.

CHAPTER FOUR

4.0 PRESENTATION, INTERPRETATION AND ANALYSIS OF DATA

4.1 Introduction

This chapter discussed the findings obtained from the secondary instrument used in the study. It discussed the findings according to the study objectives, that is, relationship between English language mean scores and Physics mean scores, English performance by gender and the effect of this variation on Physics performance. In order to simplify the discussions, the researcher provided tables and graphs that summarize the findings of the study.

4.2 English Language Proficiency and Physics Performance

The study utilized secondary data of school mean scores in English language and Physics subjects obtained from four schools in West Pokot County. The sampled schools had been offering English and Physics KCSE examination since its inception in 1989. The schools comprised of two girls schools and two boys schools. The descriptive characteristics of the data are detailed in the tables below:

Table 4.1: KCSE examination means scores for both boys and girls

	Mean	Std. Deviation	N
English mean score	5.3602	1.3300	104
Physics mean score	5.2449	1.8205	104
Overall mean score	6.0276	1.5200	104

The table 4.1 above indicates that the KCSE candidates in West Pokot County performed better in English subject than Physics subject. The English subject outperformed the Physics subject by a minimal score of 0.1153. The KCSE overall mean grade exceeded the KCSE mean grades of both English and Physics subjects.

Table 4.2: KCSE examination mean scores for boys

	N	Minimum	Maximum	Mean	Std. Deviation
English_mean	52	2.10	9.33	5.3140	1.5276
Physics_mean	52	2.03	9.77	5.7189	2.0010
Overall_score	52	3.43	9.95	6.2934	1.6615

The table 4.2 above indicated that boys performed better in KCSE examination in Physics compared to KCSE examination in English language. KCSE examination in English performance of boys was below the overall average performance in English as indicated in table 4.1. However, the KCSE examination performance of boys in Physics was above the overall performance in Physics as indicated in table 4.1. Overall KCSE examination performance of boys was better than the general performance of both girls and boys in West Pokot County.

Table 4.3: KCSE examination mean scores for girls

	N	Minimum	Maximum	Mean	Std. Deviation
English_mean	52	3.50	7.91	5.4064	1.1112
Physics_mean	52	2.14	8.93	4.7709	1.4938
Overall_score	52	1.50	8.36	5.7618	1.3272

Table 4.3 above indicated that girls performed better in KCSE examination in English language than KCSE examination in Physics. Moreover, performance of girls in KCSE examination in English language was above overall average performance in English while that of Physics is below the overall average performance as shown in table 4.1.

4.3 Gender comparison of English Language and Physics KCSE performance.

The study explored the KCSE examination in English language, Physics and overall performance among the girls and boys in West Pokot County. The table below showed the

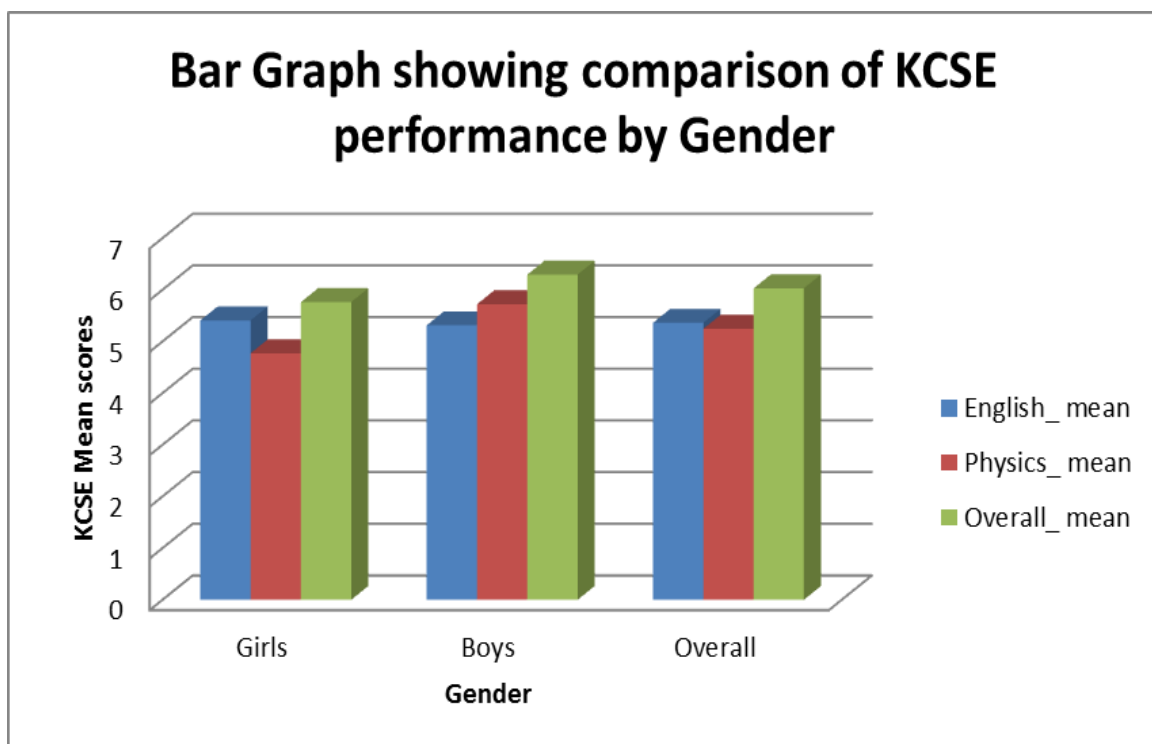
comparison of mean scores of girls and boys in English language and Physics at KCSE level, more so, it showed the overall comparison in KCSE performance.

Table 4.4: English and Physics KCSE examination mean scores by gender

	Girls	Boys	Overall
English_mean	5.4064	5.3104	5.3602
Physics_mean	4.7709	5.7189	5.2449
Overall_score	5.7616	6.2934	6.0276

The figure 4.1 below showed the comparison of English and Physics performance based on gender. It indicated that girls performed better than boys in English than Physics while boys performed better than girls in Physics. Furthermore, English language subject was performed well by all students than Physics subject at KCSE examination. In overall KCSE examination performance for the period under study, boys outperformed the girls.

Figure 4.1: Comparison of English and Physics KCSE performance by gender



4.4 Relationship between KCSE performance in English and Physics.

A scatter plot revealed the relationships between or association between two variables, English language performance and Physics performance. The study used a scatter plot of the independent variable and dependent variable. The KCSE English language performance represented the independent variable while KCSE Physics performance represented the dependent variable. The scatter plot below showed that variables have a positive correlation.

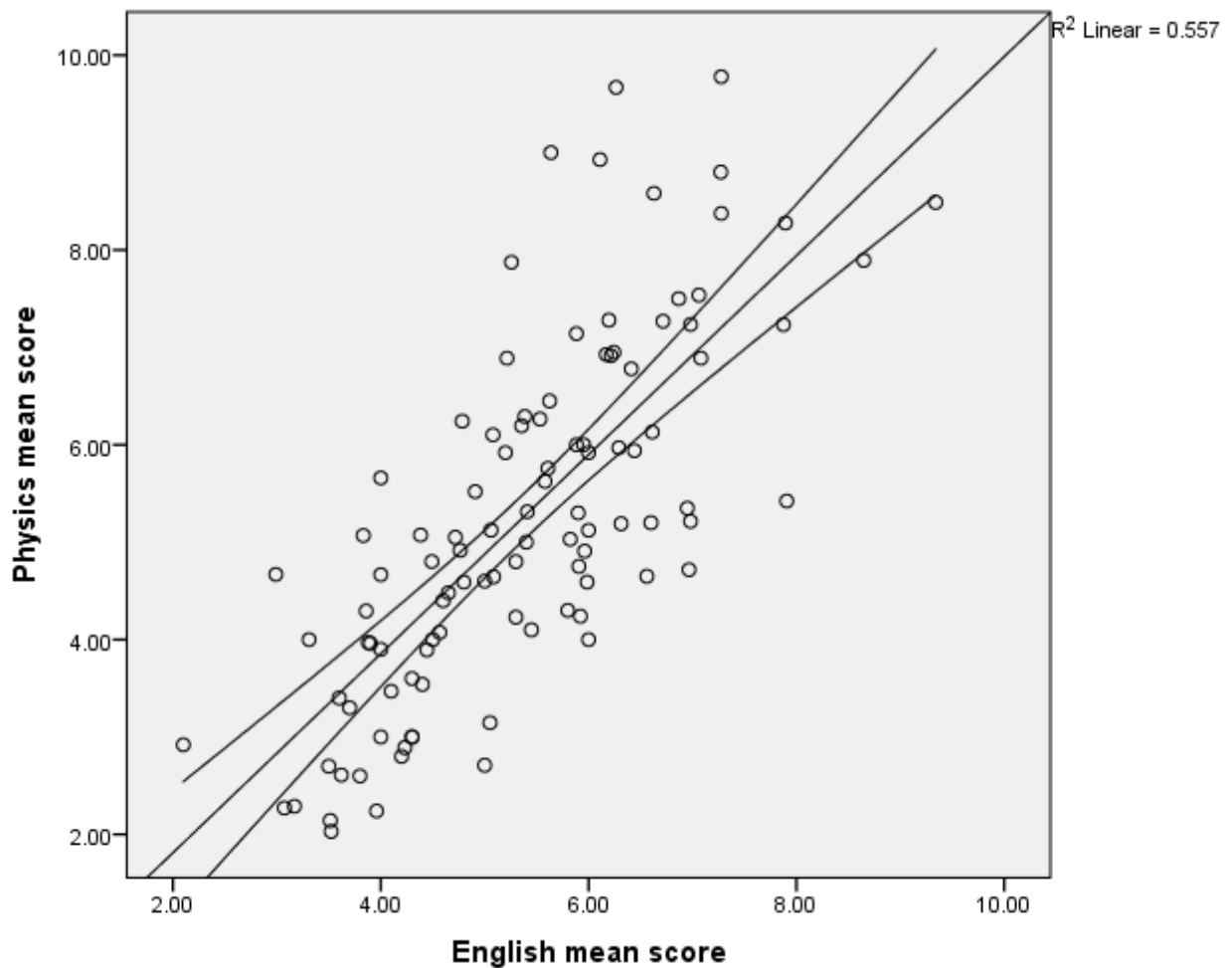


Figure 4.1: Scatter plot of Physics mean score and English mean score

The figure 4.2 above depicted an increase in English language means score caused an increase in Physics means score. A line of best fit is a line that best represents the data on a scatter plot and it gives the direction of an association between two variables. R-squared is a statistical measure of how close the data were to the fitted regression line. R² linear equal to 55.7% indicated that 55.7% of the Physics mean score variation was explained by a linear

model. Hence, 55.7% indicated that the model explained (accounted) 55.7% of the variability of the Physics mean score around its mean. Generally, the higher the R-squared, the better the model fitted the data.

A correlation statistical technique was used to show whether and how strongly the pairs of the variables are related. In the study, the correlation explained how much the variation in KCSE English language performance is related to the KCSE performance in Physics. Correlation was represented by a coefficient that described the degree of relationship between the two variables. The study indicated that there existed a positive correlation between English language performance and Physics performance; similarly there existed a positive correlation between English and Physics performance and the overall performance.

Table 4.5: Correlation of KCSE English, Physics and Overall mean score

	English mean score	Physics mean score	Overall mean score
English mean score			
Pearson Correlation	1	0.747**	0.785**
Sig. (2-tailed)		0.000	0.000
Physics mean score			
Pearson Correlation	0.747**	1	0.844**
Sig. (2-tailed)	0.000		0.000
Overall mean score			
Pearson Correlation	0.785**	0.844**	1
Sig. (2-tailed)	0.000	0.000	

N = 104

** . Correlation is significant at the 0.01 level (2-tailed).

The Pearson Product-moment correlation coefficient measured strength of the linear relationship between the variables, English Language and Physics performance. Pearson's coefficient 'r' ranged from -1 to +1 whereby -1 indicated a perfect negative linear correlation whereas +1 indicated a perfect positive correlation.

From table 4.5 above the correlation between English language mean score (independent variable) and Physics mean score (dependent mean score) was 0.747. This indicated a fairly perfect positive Pearson coefficient hence changes in English language performance were strongly correlated to changes in Physics performance.

The significant value (2-tailed) of the correlations was 0.000 which was less than 0.05. This indicated that there was a statistically significant correlation between the English language performance and Physics performance. As a result an increase or decrease in one variable significantly relate to increase or decrease in the other variable. The study concluded that there was statistically significant correlation between English language performance and Physics performance.

4.5 Correlation between English Language and Physics performance .

The study conducted a significance test to determine the probability that the observed correlation was a real one and not a chance occurred. The study tested the mutually exclusive hypotheses, the null hypothesis and alternative hypothesis. The following null hypotheses were tested at a significance level of alpha 0.05:

H₀: There was no significant influence of English Language Proficiency on academic performance in Physics at the national examination in West Pokot County.

H₀: There was no difference in the English Language proficiency between the male and female students at national examinations in West Pokot County.

H₀: There was no difference by gender in Physics performance at the national examinations in West Pokot County.

The study utilized t-test to assess whether the means of two groups were statistically different from each other. The analysis was appropriate since the study compared means of two groups. The study adopted a paired sample t-test since the values for each sample were collected from the same school (that is, each school gave us two values, KCSE English Mean score and KCSE Physics Mean score)

Table 4.6: t-test of performance in English and Physics

	Mean	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)
English_mean - Physics_mean	0.1153	1.2117	0.1188	0.970	103	0.334

Significant at 0.05

As shown in table 4.6 above the P- value was 0.334 which was greater than the 0.05. In this case we failed to reject the **H₀** (There is no significant influence of English Language Proficiency on academic performance in Physics at the national examination).

This implied that there was no statistically significant influence of English Language Proficiency on academic performance in Physics at the national examination. The implication of this was that English language has no influence on Physics.

Table 4.7: t-test of performance in English based on gender

	Mean	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)
English_mean boys - English_mean girls	-0.0924	1.0050	0.1393	-0.663	51	0.510

Significant at 0.05

From table 4.7 above the p-value was 0.510 which was greater than 0.05. As a result we failed to reject the **H₀** (There was no difference in the English Language proficiency between the male and female students at national examinations in West Pokot County). This implied that there was no statistical difference in English Language proficiency between male and female students at national examination in West Pokot County.

This implied that there was no significant difference between academic performance of male and female students' in English language KCSE examination.

Table 4.8: t-test of performance in Physics based on gender

	Mean	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)
Physics_mean boys - Physics_mean girls	0.9480	1.2918	0.1791	5.292	51	0.000

From table 4.8 above the P-Value was 0.000 which was less than 0.05. Hence the study rejected the **H₀** (There was no difference by gender in Physics performance at the national examinations in West Pokot County). This implied that there was statistically significant difference in Physics performance between male and female students at national examination in West Pokot County.

Furthermore the study undertook a regression analysis to determine the overall fit (variance explained) of the model and the relative contribution of the predictor to the total variance explained. The study utilized Physics mean score as the dependent variable while English language mean score was the independent variable. The scatter plot obtained indicated that the English Language performance and Physics performance had a linear relationship.

Table 4.9 below represented the model summary which was used to determine how well a regression model fitted the data.

Table 4.9: Model summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.747	0.557	0.553	1.217

R value represented the measure of the quality of the prediction of the dependent variable. A value of 0.747, in this case, indicated a good level of prediction. This implied that English language performance adequately predicted the performance in Physics in KCSE examination. The R square value 0.557 indicated that the English language performance explained 55.7% of the variability of the Physics performance.

The *F*-ratio in the ANOVA table below tested whether the overall regression model was a good fit for the data. The table shows that the independent variable (English language mean score) statistically significantly predicted the dependent variable (Physics mean score), $F(1, 102) = 128.403$, $p(0.000) < 0.0005$, this implied that the regression model was a good fit of the data.

Table 4.10: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	190.258	1	190.258	128.403	0.000
Residual	151.136	102	1.482		
Total	341.394	103			

The independent variable is English mean score; dependent variable is the Physics mean score

Table 4.1: Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
English mean score	1.022	0.090	0.747	11.331	0.000
(Constant)	-0.232	0.498		-0.466	0.642

The general form of the linear regression equation to predict the Physics means score (dependent variable) from the English mean score (independent variable) was:

$$Y = B_0 + B_1 X + E$$

Where *Y* was the dependent variable (Physics mean score), *X* was the independent variable (English language Mean score), while the model parameter B_0 was the constant, B_1 was the regression coefficient, the unmeasured variable *E* represented the residual error.

$$\text{Physics Mean score (dependent variable)} = -0.232 + (1.022 \times \text{English mean score})$$

The regression coefficient was positive (1.022) with $p\text{-value } 0.000 < 0.05$, this indicated that increase in English language mean score resulted in increase in Physics mean score and we

can conclude that the coefficient is statistically significantly different to 0 since the P value was less than 0.05.

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This study investigated the effects of English language proficiency on performance of Physics in national examination in West Pokot County in Kenya. Specifically, the study sought to determine the influence of English language proficiency on students' academic performance in Physics subject in West Pokot County, determine the variation in performance of male and female students in English language in West Pokot County and determine the variation in performance of male and female students in Physics performance in West Pokot County. The secondary data were gathered through the use of a researcher-made score sheet, which were filled by various school administrators. The study used KCSE Physics and English language mean scores from four boys and girls schools.

5.2 Summary of study findings

On the basis of the data gathered in relation to the statement of the problem, the following were the significant findings:

The study indicated that the KCSE candidates in West Pokot County were performing better in English language subject than Physics subject. Generally, the English language subject outperformed the Physics subject by a score of 0.1153 for the last 26 years since KCSE was introduced in Kenyan education system.

The study further indicated that boys performed better in KCSE Physics compared to KCSE English while the girls performed better in KCSE English language than KCSE Physics. Generally, boys outperformed the girls in the whole KCSE performance with English as a subject being performed well by all students than Physics subject at KCSE examination.

The study indicated that there existed a positive correlation between English (independent variable) and Physics (dependent variable), that is, an increase in the independent variable leads to an equal increase in the dependent variable. Similarly, there existed a positive correlation between English Language and Physics and the overall performance. This showed that when a student performs well in English and Physics subject they will eventually perform better in the overall mean grade.

The correlation between English mean score (independent variable) and Physics mean score (dependent mean score) was 0.747. This indicated a fairly perfect positive Pearson coefficient hence changes in independent variable were strongly correlated to changes in dependent variable. More so, the correlation coefficients between English subject and overall grade, Physics subject and overall grade were fairly perfectly positive. This indicated that good performance in Physics and English subject reflects better performance in overall grade attained by the student.

The finding of this study indicated that there was no significant influence of English Language Proficiency on academic performance in Physics at the national examination

Furthermore, there was no difference in the English Language proficiency between the male and female students at KCSE examinations in West Pokot County. This implied that there was no statistical difference in English Language proficiency between male and female students at KCSE examination in West Pokot County. This showed that there was no significant difference between academic performance of male and female students' in English language at the national examinations.

There was difference by gender in Physics performance at the KCSE examinations in West Pokot County. This implied that there was statistically significant difference in Physics performance between male and female students at national examination in West Pokot County.

5.3 Conclusion of the study

On the basis of the above summary of findings in this study, this research came up with the following conclusions:

The finding of this study indicated that there was no significant influence of English language on students' academic performance in Physics. This shows that English subject as a language of instruction in schools has no influence on Physics performance. This is in contrary with the submission of Aina, J.K (2013) that student who had problem in communication skill may likely not do well academically. The finding is also in contrast to findings by Abubakar, B. (2005), that English language has effects on all the other subjects of the curriculum at the secondary school level because it is the only language of instruction.

There had been gender stereotyping in terms of academic abilities between male and female students. Many scholars believed that male performed better than female in some courses while in others female can do better. According to Lynch K. and Feeley M. (2009), Mathematics, Science and Technology (MST) courses are predominantly male in profile and courses with a care bias are disproportionately female. There is a masculinized culture in MST courses in further and higher education, and within related occupations while boys' performance in literacy is significantly lower than that of girls. The study indicated that there was no significant difference in performance between male and female students in English language while there was significant difference in Physics performance. The finding opposed several earlier findings that have unfolded the females to be the best in English language than the male students while it supported the notion that male students always perform better in science related courses.

In light of the above summary of findings, it is clear that understanding and comprehension of English should not be yardstick for conceptualization of science literacy. Many countries do not utilize English as a language of instruction but they still prosper and advance in Mathematics, Science and Technology related activities.

5.4 Recommendations

The findings of the study as well as the literature reviewed helped the study prepare the following recommendations. Gendered profiling of subjects should be discouraged in the society since the study indicates that both male and female students can perform well in both science and languages literacy. More so all learners should be able to consider all subjects as equal. They must be encouraged and motivated to take learning of languages and science subjects important.

The study recommends that further study to be undertaken to ascertain the difference in performance in Physics between male and female students. Furthermore a research may be undertaken to determine why there is no significant difference in performance between male and female despite the obvious notion in the society.

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APPENDICES

APPENDIX I

LOCATION OF STUDY AREA



APPENDIX II:

INTRODUCTION LETTERS TO INSTITUTIONS

REPUBLIC OF KENYA



MINISTRY OF EDUCATION, SCIENCE & TECHNOLOGY
STATE DEPARTMENT OF EDUCATION

-Email: elimu|cdwestpokot@education.go.ke
Web: www.education.go.ke
-cdwestpokot@yahoo.com.
When replying please quote date & Ref.

COUNTY EDUCATION OFFICE
WEST POKOT COUNTY
P.O. BOX 17
KAPENGURIA.

11th September, 2015

REF: WPC/EDUC/ADM/15/20/VOL.1/28

Chemiron Edwin Kimutai
University of Nairobi
P.o. Box 30197
NAIROBI.

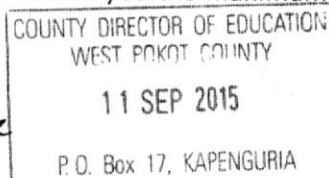
RE: RESEARCH AUTHORITY

Following your authorization from the Department of Psychology , I hereby permit you to carry out research on "**Effect of English language Proficiency on Performance of Physics in National examination in West Pokot County**".

Through this letter, all principals and public administration officers are kindly requested to accord you the maximum support.


(N.O. AYAH)

**FOR COUNTY DIRECTOR OF EDUCATION
WEST POKOT COUNTY.**





UNIVERSITY OF NAIROBI
FACULTY OF ARTS
DEPARTMENT OF PSYCHOLOGY

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P.O. BOX 30197
NAIROBI
KENYA

September 02, 2015

TO WHOM IT MAY CONCERN

RE: CHEMIRON EDWIN KIMUTAI – E58/64125/2013

The above named is a student in the Department of Psychology studying Masters Psychology in M.Ed of Arts in counseling Psychology programme at the University of Nairobi. He is doing a research on "*Effects of English Language Proficiency on Performance of Physics in National examination in West Pokot County in KENYA*". The requirement of this course is that the student conducts research and collects data in the field on the topic area.

In order to fulfill this requirement, I would like to re-affirm that the said student is a registered student and is intending to go and carry out field work. Any assistance accorded to him will be highly appreciated.

Should there be any queries do not hesitate to contact the Chair of the Department of Psychology, University of Nairobi.

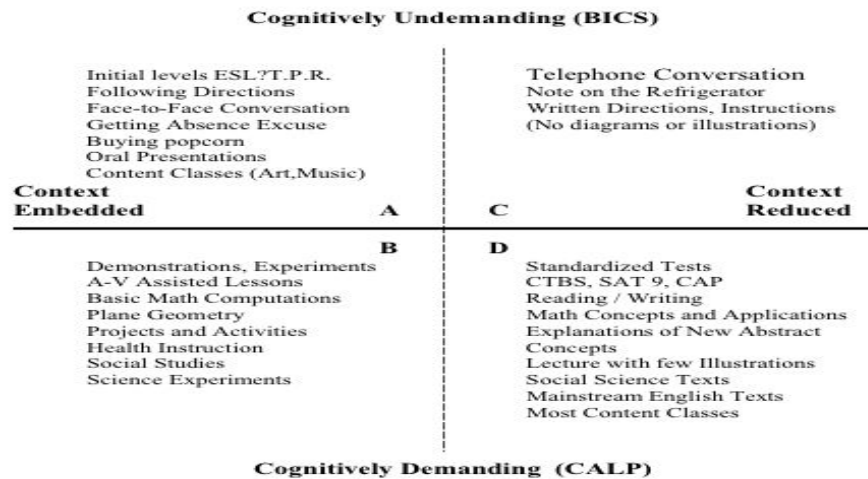
The stamp is circular with the text "DEPARTMENT OF PSYCHOLOGY" at the top and "UNIVERSITY OF NAIROBI" at the bottom. The date "2nd Sep 15" is written in the center. A handwritten signature is written over the stamp.

Dr. Karen Odhiambo
A.G Chairman,
Department of Psychology

APPENDIX III

A PHOTO INDICATING THE FOUR QUADRANTS OF CUMMINS

Illustration of Dr. Jim Cummins' Grid (4 Quadrants)



All of the activities above the solid black line (included in quadrants A and C) fall into the category that Dr. Cummins calls Basic Interpersonal Communicative Skills or BICS. As you can see the activities in quadrant A are context rich (as indicated by being left of the dotted line). In quadrant A you receive context clues to help with understanding. In quadrant C, you receive less or none of the context clues to help you (as indicated by being right of the dotted line). However none of the activities in either A or C are cognitively demanding.

SOURCE: Adapted from Cummins, J. (1980). *The construct of language proficiency in bilingual education.*

APPENDIX IV

DATA COLLECTION INSTRUMENT

Year	English_mean score	Physics_mean score	Overall_score	School_name	School_category
1989					
1990					
1991					
1992					
1993					
1994					
1995					
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