EFFECTS OF NEUROLOGICAL BIMODAL TEACHING APPROACH ON LEARNER ACHIEVEMENT, MOTIVATION AND GENDER IN WRITTEN ENGLISH LANGUAGE COMPOSITION IN COUNTY SECONDARY SCHOOLS IN RORET DIVISION, KERICHO COUNTY

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DECLARATION AND RECOMMENDATION

DECLARATION:

This thesis is my original work and has not been submitted for the award of a degree in this or any other university. All sources have been acknowledged.

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RECOMMENDATIONS:
This thesis has been submitted with our approval as university supervisors.

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DEDICATION

This thesis is dedicated to my mother, Elizabeth Barchok; and my father, Laboso Arap Barchok who ensured that I was enrolled and kept in school.

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ABSTRACT

English language plays a central role at both national and international stage for Kenyans and other world citizens who have to use it for diverse purposes. In Kenya, it is the language of instruction in educational institutions; it is one of the official languages as well as language used commonly in business. Moreover, English language is used in Kenya as a language of international relations and diplomacy. Despite its importance, the performance of students in the subject at the secondary school level has not been satisfactory. Instructional methods and approaches used in the teaching of any subject are critical for learner achievement and motivation. Apparently, the methods currently used in the teaching of the subject have not been effective in producing significantly higher achievement among learners in English language. Alternative methodologies that have shown promising results elsewhere need to be investigated. One such method is Neurological Bimodal Teaching Approach – a teaching approach which entails the use and adaptation of current knowledge about the functionality of the human brain to the teaching of a second language. This study investigated the effects on learner achievement and motivation when Neurological Bimodal Teaching approach (NBTA) is utilized in the teaching and learning of English language composition writing at the secondary school level. A quasi-experimental research design, the non-randomized Solomon 4-group, non-equivalent control group design was used. The target population for the study was 11085 secondary school learners from 12 schools in Roret Division of Bureti sub-county. The accessible population was 1215 form students from the Division. Purposive sampling was used to select the four coeducational schools for the study. This resulted into a sample size of 184 students. The four schools of the study were randomly assigned to the experimental and control groups. Two instruments were used in data collection: the English Language Writing Achievement Test (ELWAT) and the Students' Motivation Questionnaire (SMQ). Five experts of educational technology from Egerton University validated the research instruments. SMQ and ELWAT had reliability coefficients of 0.83 and 0.77 respectively. These were higher than 0.7, the threshold acceptable for social science research. The reliability of ELWAT was determined by inter-rater reliability method. The data was analysed using SPSS version 22.0 for Windows to provide both descriptive (means and standard deviations) and inferential statistics (ANOVA, t-test and ANCOVA) to test the hypotheses of the study. The level of significance for acceptance or rejection of the hypotheses was set at $\alpha = 0.05$. The findings of the study indicated that NBTA promoted higher learner achievement, higher levels of motivation and leveled off gender differences in achievement in English language as compared to the conventional teaching approaches. The findings of the study may lead to well- informed decision making at all levels of educational planning and implementation of the curriculum, especially with regard to the design of instructional strategies for English language education. Secondly, they can be useful in making decisions on the training of teachers; and finally, instructors may utilize them when making choices for classroom teaching and learning activities and techniques.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

ACTFL - The American Council on the Teaching of Foreign Languages

BBL – Brain Based Learning

CALL – Computer Assisted Language Learning

CDE - County Director of Education

DEO - District Education Officer

DFES – Department for Education and Skills

EFA - Education For All

ELT - English Language Teaching

ELWAT - English Language Writing Achievement Test

KCPE - Kenya Certificate of Primary Education

KCSE - Kenya Certificate of Secondary Education

KICD – Kenya Institute of Curriculum Development

KNEC - Kenya National Examinations Council

LTGs - Language Teaching Games

LTPs - Language Teaching Puzzles

L1- First Language

L2 – Second Language

MDG - Millennium Development Goals

NACOSTI - National Commission for Science Technology and Innovation

OFSTED - Office for Standards in Education

NLP - Neurolinguistics Programming

PWIM - Picture Word Inductive Model

SACMEQ - Southern and Eastern Africa Consortium for Monitoring Educational Quality

SLA - Second Language Acquisition

SLT - Second Language Teaching

SMQ - Students' Motivation Questionnaire

SPSS - Statistical Package for Social Sciences

TL – Target Language

UNESCO – United Nations Educational, Scientific and Cultural Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

English is one of the languages that enjoy a global spread. Barski (2013) reports that according to a study conducted by the Summer Institute for Linguistics in 1999, 27% of the world population speaks the English language in more than 60 countries across the globe, making it one of the most widely spread languages on earth. Barski further observes that people doing business across the globe communicate primarily in English, especially in the fields of engineering and business. He also observes that learning English comes with a distinct set of challenges, such as of accentuation, because people speak it in a number of different regions. Razzaque (2012) ranks English language as one of the most important languages in the world. Elaborating on some of its importance, he observes that it is the single most important language for it truly links the whole world together. Other languages may be important for their local values and culture, but arguably English is being used as a language in many parts of the world. For example, Manu (2011) states that the English language is the de facto national language of India, a country that is one of the most expansive and densely populated in the world. He further observes that almost all advertising billboards in India are in English, and that there is not a single well-paying job in the country that does not require a good understanding of the language. Higher education in India is conducted entirely in English. He cites one real life example that when the Hindustan PencilsCompany makes cheap pencils, which it sells to rural children for a rupee apiece (about 2 cents), the company prints the brand name, 'Jobber', in English. He explains that a villager has more respect for a brand that is written in English than the one written in Hindi.

According to Vygotsky (1962) language plays a central role in mental development. He argues that men have a demonstrated ingenuity in dealing with and transmitting their experiences; and that language is both the transmitter of these cultural tools and the most important of them. In addition, language is a mechanism for thinking - the most important mental tool. Vygotsky further portrays language as the means by which information is passed from one generation to another. Moreover, Vygotsky (1962) explains that, using languagr, people can think about and discuss things that have happened, will happen, and even things that might never happen; and that it is because of language that all cultures have passed on the higher mental functions that enable us to make sense of our world. UNESCO (2010) lists

the following twenty-four African countries as having adopted English as an official language: Botswana, Cameroon, Eritrea, Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mauritius, Namibia, Nigeria, Rwanda, Seychelles, Sierra Leone, Somaliland, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe. This implies that English language is the language of choice for most countries; a language that they can easily utilize for instruction, diplomacy and for transacting business among themselves.

The English language has played a central role in Kenya's social, political, economic and academic life since its introduction to the country by the British colonialists towards the beginning of the 19th century. It has since been taught to Kenyan students at all levels of education as a second language and as a medium of instruction. The Constitution of Kenya (2010) recognizes the English language as an official language in the country together with Kiswahili. The Kenya Institute of Curriculum Development (KIE) syllabus (2002) documents English language as one of the three compulsory subjects taught and examined by the Kenya National Examinations Council (KNEC) at both primary and secondary schools. All the subjects, excluding Kiswahili and any of the foreign languages learned in Kenya, are taught in English language. It is not in doubt, therefore, that performance in other subjects can be negatively or positively affected by a student's mastery of the English language. At both the national and local levels in Kenya, achievement in the English language, like in the other two compulsory subjects (Mathematics and Kiswahili), is of key interest to the government as well as other stakeholders, including educationists and linguists. This is because of the central role the language plays in the fields of education, diplomacy, and economic empowerment of the country through international trade. In the Kenyan school curriculum, the importance of English language is demonstrated by the numerous objectives of teaching the subject as stated in the secondary school syllabus. According to KIE (2002), there are ten objectives of teaching the language in Kenyan schools, including enabling the learner to listen attentively for comprehension and respond appropriately, read and analyze literary works from Kenya, East Africa, Africa and the rest of the world, and relate to the experiences in these works.

Despite the stated importance of English language in Kenya, many students do not perform well in it as demonstrated by national examinations results. Reports by the Kenya National Examinations Council (KNEC) on the performance of candidates in the English language up to as late as the year 2014 indicate poor achievement by learners. In its report on performance by candidates, The Council noted improvements in the following subjects: Mathematics,

Physics, Biology and Kiswahili and 12 other electives. On the other hand, KNEC (2011) report indicated that the subject with the highest decline was English language with a mean score of 36.42 as compared to the previous year's mean score of 38.90. The Ministry of Education (2013) attributed inadequate performance in the subject to interference in written forms by advancement in technology which has led to an emerging mobile phone text language – which is now being seen in learners' responses in national examinations as well as in their spoken English language.

Over the years, there has never been a radical positive shift nationally in students' performance in English. The MOE (2011) noted that inappropriate use of Kiswahili and English was even exhibited by senior members of the society, including top politicians, who talk *sheng* to endear themselves to the youth. This has affected performance in the two subjects. Some recent research studies across the country, including those of Ogweno (2010), Ouma (2010), and Kirui (2011) seem to confirm the same trend, with various factors being cited as responsible for the underperformance by candidates in English language. Among other factors, these studies name teaching methodologies and strategies as contributing to the inadequate performance. A KNEC (1988) report stated that public documents contained basic errors which arose from inefficient command of English language by people using it. A KNEC (2015) report illustrated in Table 1 shows below average performance in the English language by learners at the Form Four level.

Table 1:

Candidates' Overall Performance in English in KCSE Examinations for Years 2011 - 2014

Year	Paper	Candidature	Maximum Score	Mean Score	Standard Deviation
2011	1	**410,949**	60	25.73 (42.88%)	8.41
	2		80	28.53 (35.66%)	12.46
	3		60	18.60 (31.0%)	7.04
	Overall		**200**	**72.84 (36.42%)**	**25.14**
2012	1	**434,127**	60	28.88 (48.13%)	9.20
	2		80	28.77 (35.96%)	12.91
	3		60	18.11 (30.1%)	7.61
	Overall		**200**	**75.76 (37.88%)**	**27.34**
2013	1	**445,757**	60	21.67 (36.12%)	5.42
	2		80	17.98 (22.48%)	11.20
	3		60	15.30 (25.50%)	6.16
	Overall		**200**	**54.94 (27.47%)**	**20.31**
2014	1	**482,499**	60	29.02 (48.37%)	8.80
	2		80	28.70 (35.88%)	11.26
	3		60	19.97 (33.28%)	6.30
	Overall		**200**	**77.68 (38.84%)**	**24.28**

Source: KNEC (2015).

From Table 1, it can be observed that the overall performance of 77.68 (38.84%) was still below the ideal mean of 100 (50%). Based on this performance, KNEC (2015) report called for creativity and innovation in teaching and preparing candidates for examinations.

English Paper 3is one of the three papers in the English subject. The paper is taught right from form one; and is tested by KNEC at the end of the form four course. The students are tested in creativity and proper language use. It is basically a written composition paper in which the candidates are tested in a written narrative and a composition based on a literary set book. The composition based on a literary set book is meant to meet the requirements of the integration of English language and literature at the secondary schooling level. From Table 1, it can be interpreted that although there was an improvement of 4.67 points from the 2013

mean score of 15.30 (25.50%) to the 2014 mean score of 19.97 (33.28%), the performance in the paper was still below average.

In the KCSE national examination of 2015, Aduda (2015) noted that English composition had the lowest percentage score at 41.38%, meaning that most candidates did not attain half the marks. He also noted that a similar trend was witnessed in 2014 when the candidates obtained an average mean score of 41.47% in English composition. It was noted that learners were losing writing skills and the capacity to express themselves logically, which raises the debate about the ability of learners to use language constructively and effectively.

Bureti District has always attained below average results in English language achievement in the Kenya Certificate of Secondary Education (KCSE). Table 2 documents Bureti District KCSE results for English language over three years from the year 2012.

Table 2:

Bureti Sub-county KCSE Results for 2012, 2013 & 2014

Entry	**A**	**A-**	**B+**	**B**	**B-**	**C+**	**C**	**C-**	**D+**	**D**	**D-**	**E**	**Mean**	**MG**	**YEAR**
2521	0	7	15	72	118	208	252	335	327	581	382	224	4.16	D+	**2012**
2665	0	6	19	78	102	329	332	550	281	232	467	269	4.44	D +	**2013**
3128	1	10	45	114	131	157	258	307	388	809	591	317	3.93	D+	**2014**

From the Table 2, it can be seen that the Form Four candidates attained an average mean grade of D+ in KCSE for each of the years 2012, 2013, and 2014. This was a performance below average since a grade of D+ is four points in a scale of twelve. Table 2 indicates that in the year 2012, a total of 1849 candidates attained a mean grade of C minus and below. This accounted for about 73% of the total candidature of 2521 that year. On the grading scale of 12, a C minus grade is 5, which is a fail grade. In the year 2013 a total of 1799 students, accounting for a total of about 68% of the candidates in Bureti Sub-county that year failed in the English language paper. The sub-county Mean that year had an increase of 0.28 having risen from 4.16 in 2012 to 4.44 in 2013. The upward trend in the mean score was dimmed in

2014 when 2412 (77%) candidates of the Sub-county total of 3128 failed in the English language paper. That year, the sub-county Mean was a mere 3.93.

There are several reasons that have been advanced for inadequate learner performance In English language. One such reason is teacher dominance during classroom processes. Bett (2013) carried out a study on classroom interaction in English language classes in Kericho Municipality, and found that teacher-talk accounted for about 78% of classroom talk, effectively making classroom processes teacher-centred. Allen (2010) cites lack of experience, time, resources, and motivation as some of the challenges inherent in learning a language. It is prudent to explore other possible contributory factors, such as the teaching methodology.

Gender as a factor in language learning has been extensively researched on. In Kenya, female candidates did better than males in English in the exams of the year 2015 (KNEC, 2015). Girls generally did better in languages but were not as good as the boys in maths and the sciences. A large body of research has established that girls perform better than boys in language learning. For example, For example, Zembar and Blume (2001) reveal that standardized achievement tests show that females are better at spelling and perform better on tests on literacy, writing, and general knowledge. In Roret Division, girls' performance in English in the 2015 national examinations was better than that of boys with a Mean score of 39.42 and 40.29 respectively. Though the performance is low for both gender, girls posted a better performance than boys.

Another critical factor in English language learning is learner motivation. As with the gender factor in English language learning, motivation is widely research on. Most studies indicate that girls are better motivated than boys in English language learning. For example, Demir (2005) has noted that in most of the studies about attitudes towards language learning with regard to gender, it is clear that due to various beliefs, social expectancies, conditions and cultural orientations, females are more positive than males and this creates higher motivation with a better acquisition

Neurological Bimodal teaching approach is a teaching approach which involves the use and adaptation of current knowledge about the functionality of the human brain to the teaching of a second language (Nuessel & Cicogna, 1991). Danesi (1987) developed a significant, emerging conceptualization of a neurological bimodal teaching approach to language

acquisition that engages the two hemispheres of the brain. Further, he developed important practical applications of his proposal. He proposed contextualization, visualization, diversification, and personification of learning as strategies that could be utilized as a package in order to appeal to the two brain hemispheres of individual learners for improved learner achievement. The teaching approach has been applied in Canada, Iran and Italy with promising results. There was a need, therefore, to determine the success English language learners can attain when these characteristics of neurological bimodal teaching approach are applied in English language teaching and learning since these strategies enhance language learning.

1.2 Statement of the Problem

Despite English language ranking as one of the most important languages in the world, reports by the Kenya National Examinations Council indicate that students' achievement in the language over the years has been below average nationally. This is despite the fact that in Kenya, English is designated as an official language as well as the language of instruction in schools. Proficiency or otherwise in the language has far reaching implications for individuals with regard to career development and advancement. Bureti Sub-county generally posts a below average mean grade of D+, which works out as 4.18 in a scale of 12. The mean for Roret Division stood at about 3.92 with boys' mean being about 3.72 against that of girls at 4.12. This showed that the girls' performance was generally higher than that of boys. The teaching and learning of English language was still conducted using the traditional methods of teaching, such as the lecture which present language content to the learners in a non-motivating and abstract manner, making them achieve little in language learning. Neurological Bimodal teaching approach is one of the approaches of teaching which has been refined from extensive scientific research on human behaviour and learning. It is an approach which appeals to both brain hemispheres of the learner for wholesome and effective language learning. The approach is touted to be useful in the teaching of second languages to learners and has been successfully implemented in countries such as Iran, Canada and Italy with promising results. However, no study has been carried out in Bureti sub-county and specifically in Roret Division to investigate the veracity of the success of this teaching approach. This study, therefore, sought to provide data on the effects on achievement, motivation and gender in the learning of English language composition writing by learners when Neurological Bimodal teaching approach is utilized in comparison to the teaching of the language using the conventional teaching approaches.

1.3 Purpose of the Study

This study examined the effects of Neurological Bimodal Teaching approach, viz-a-viz the conventional teaching approaches, in the teaching and learning of the English language composition writing.

1.4 Objectives of the Study

The objectives of the study were:

(i) To determine if there is any difference in achievement between learners taught creative composition writing in English language using Neurological Bimodal teaching approach and those taught using the conventional approaches.

(ii) To determine if there is any difference in the level of motivation between learners taught creative composition writing in English language using Neurological Bimodal teaching approach and those taught using the conventional approaches.

(iii) To determine if there is any difference in achievement between boys and girls taught creative composition writing in English language using Neurological Bimodal teaching approach.

(iv) To determine if there is any difference in motivation to learn English language between boys and girls taught creative composition writing in English language using Neurological Bimodal teaching approach**.**

1.5 Research Hypotheses

The study was guided by the following research hypotheses:

Ho_1 There is no statistically significant difference in achievement between learners taught creative composition writing in English language using Neurological Bimodal Teaching approach and those taught using the conventional teaching approaches.

Ho_2 There is no statistically significant difference in the level of motivation between learners taught creative composition writing in English language using Neurological Bimodal Teaching approach and those taught using conventional teaching approaches.

Ho_3 There is no statistically significant difference in achievement between boys and girls taught creative composition writing in English language using Neurological Bimodal Teaching approach.

Ho_4 There is no statistically significant difference in the level of motivation between boys and girls taught creative composition writing in English language using Neurological Bimodal Teaching approach**.**

1.6 Significance of the Study

The findings of the study may lead to well- informed decision-making at all levels of educational planning and development of the curriculum. Secondly, they may provide proper guidance to education planners with regard to preparation of instructional materials. Thirdly, they may be useful in making decisions on the training of teachers; instructors may utilize them when making choices for classroom teaching activities and techniques; and finally, they may lead to improved learner performance in the English language learning during the formative and summative evaluations of learners at the secondary school level.

1.7 Scope of the Study

The study was carried out in County public secondary schools in Roret Division of Bureti Sub-county of Kericho County. The study population comprised form two students. The form two students were considered appropriate since, unlike the form ones, they were settled and were familiar with the secondary school environment, and the secondary school English language syllabus content. On the other hand, the form three and the form four students were already getting prepared for the national examinations and the teachers might have adopted some specific teaching techniques towards that preparation. Roret Division was preferred for it had a good selection of four coeducational schools necessary for experimental purposes as dictated by the research design of the study. The four schools were also adequately spatially spread enough to limit the effect of contamination during the experiment. Further, the performance of candidates in the study area was reflective of the poor performance of the entire Bureti Sub-county. The study was confined to determining the effects of the Neurological Bimodal teaching approach on learner achievement and motivation, across gender, to learn English language in English language classes in County secondary schools in the study area.

1.8 Limitations of the Study

The following limitation was forecasted:

Since the study was carried out in schools of County secondary schools category, the findings might not be generalisable to schools of a different category, such as sub-county secondary schools. This is because learners' entry behaviour to different school categories vary based on

their performance at KCPE. However, in order to reduce the effect of this limitation, content validity was ensured through the use of the revised English language syllabus of the year 2005 which is used in all secondary schools in Kenya.

The use of self-evaluation in determining the level of motivation among the respondents would be another limitation. With self-evaluation, learners were likely to present inaccurate information in trying to present themselves in positive light. However, to mitigate this limitation, the respondents were asked not to indicate their names on the completed questionnaire. This would hide their identity making them free to respond to the items more freely and objectively. Secondly, the findings of the study may not be generalisable to categories of schools other than County schools. To reduce the effect of this, the ELWAT involved composition writing which is an aspect in the Form Two syllabus across the country.

1.9 Assumption of the Study

The assumption in this study was that the English language teachers in the experimental schools were going to implement the teaching module judiciously. The researcher trained the teachers for two days in order to sensitise them in all the areas and enable them implement the module as fully and as objectively as possible.

1.10 Definition of terms

In the study, the following terms are used as defined.

Achievement - Performance on tests based on scores (Zembar & Blume, 2001). In this study motivation refers to performance by boys and girls in ELWAT during the experiment.

Bi-modal - Refers to two modes (Danesi, 1987). In the study, it refers to the two brain hemispheres; the right and left hemispheres.

Blended language learning – Mixing language learning styles, activities, etc. during instruction (Pena-Sanchez & Hicks, 2006). In the study, the phrase refers to integrating the use of technology into classroom-based learning and teaching.

Contextualization - The creation of an environment in which an activity may be situated (Schiffer, 2000). In the study, it means the avoidance of structure-based pattern drills that focus on linguistic forms rather than the context in which conversation takes place.

Conventional teaching approaches– Teacher dominated interaction methods of teaching which are largely a functional procedure which focuses on skills and areas of knowledge in isolation (Broughton, et al, 1994). They are the teaching approaches popularly used in the teaching of school subjects. In the study, they refers to such approaches as the lecture, the demonstration, and the project methods.

Diversification - Refers to using different teaching styles and activities during instruction (Nuessel and Cicogna, 1991). In the study, it alludes to the well-established technique of providing a wide range of learning activities during a regular classroom period. These would range from L-mode structural exercises to R-mode problem solving activities.

Hawthorne effect - It is the process where human subjects of an experiment change their behavior, simply because they are being studied. In this study, it refers to a possible change of behaviour among learners during the experiment.

Hemispheric preferences – tendency to frequently use one part of the brain (Sonnier, 1991). In the study, it refers to the tendecy of learners to be good either in the use of the right or left side of the brain.

Lateralization - Specializations of one part of a system (Ehrenwald, 1984). In the study, it refers to the functional specialization of the brain, with some skills, as language, occurring primarily in the left hemisphere and others, as the perception of visual and spatial relationships, occurring primarily in the right hemisphere.

Linguistic Competence – the intuitive knowledge of rules of grammar and syntax and of how the linguistic system of a language operates (Chomsky, 1957). In the study, it refers being good in the rules of a language.

Linguistic Performance - an individual's ability to produce language. In this view, language production results from the creative application of a learned set of linguistic rules (Chomsky, 1957). In the study, it refers to being good in spoken language.

L1 - A person's mother tongue. In the study, it refers to the first or native language. This is any of the vernaculars of various ethnic groups. In Bureti, it is the Kipsigis language.

L2 – Language learnt after the first language.In the study it refers to the second language or TL being studied. It is the English language in the Kenyan situation.

Motivation – the extent to which the individual works or strives to learn the language because of a desire to learn the language and the satisfaction experienced in this activity (Dornyei, 2001). In the study, it refers to the extent to which the learners strive to learn the English language because of a desire to learn the language and the satisfaction experienced in learning it.

Neurological Bimodal teaching approach – Teaching approach which utilizes the knowledge of the nature and functions of the brain for effective language learning (Danesi, 2003). In the study, it refers to the teaching approach which involves the use and adaptation of current knowledge about the functionality of the human brain in the teaching of a second language.

Pedagogy - Teaching seen in totality, including the use of teaching and learning resources (Illinois Online Network, 2007). In the study, it refers to the art of teaching.

Personalization - Refers to adaptation for purposes of accommodating individuals (Nuessel & Cicogna, 1991). In the study, it refers to the direct inclusion of students as participants in language-acquisition activities. These might include strategic interaction, pair work or conversational activities that might occur in a "real-life" situation.

Realia - Real objects (CTCP, 2010). In the study, they refer to real objects brought into the classroom for use as teaching aids. Something real is brought from the target Language/culture to help students experience and learn the target language/culture.

Target language (TL) – A language not native to the learners studying it. In the study, it refers to the language of instruction in the classroom. It is the English language in the Kenyan situation.

Technique - a technique is any procedure that can be used to help accomplish certain objectives or tasks in class (Danesi, 2003). In the study, it refers to an explanation of grammar, a type of exercise or activity, a test, etc. that has an identifiable R-Mode, or L-Mode, or intermodal focus in its design.

Visualization - Seeing literally or through formation of mental images (Canning, 2000). In the study, it refers to the general notion that refers to the incorporation of visual materials of all sorts (pictures, slides, overhead projectors, film, interactive CALL, Video discs, and related technology) during the teaching/learning process.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature on the study. The literature is reviewed specifically on the four specific techniques instrumental in engaging both of the learners' hemispheres of the brain during English language learning. These techniques are contextualization, visualization, diversification and personalization. The chapter also explores the conventional teaching approaches, brain-based learning and hemispheric preferences, gender and language achievement, learner motivation in language teaching and learning, Neurological Bimodal Teaching Approach, theoretical and conceptual frameworks of the study.

2.2 Conventional Teaching Methodology

Conventional teaching methods are also referred to as traditional methods of teaching. Some research studies indicate that the conventional teaching methods are still rampantly used in the teaching of language despite the fact that their major disadvantage is in their being too teacher-centred.

Broughton, et al (1994) describe conventional teaching methodology as the teacher-dominated interaction where the teaching is deeply teacher-centred. In this view, teaching is based on the traditional view of education, where teachers serve as the source of knowledge while learners serve as passive receivers. Conventional teaching methodologies are described by some researchers as being largely functional procedures which focus on skills and areas of knowledge in isolation – that is, without any meaningful integration of skills and areas of knowledge. The conventional teaching methods would, therefore, mostly include lecture, demonstration, illustration and explanation. Scrivener (2005) explains that conventional teaching methodology is based on a precondition that being in a class in the presence of a teacher and listening attentively is enough to ensure that learning will take place. Richards (1990), states that in conventional teaching methodology, learning was very much seen as under the control of the teacher. In most cases, the conventional teaching methodology has continued to be exhibited in classroom processes to date.

Researching on factors affecting performance in the Kenya Certificate of Secondary Education (KCSE) English language examinations in Nyamache Division, Gucha District, Kenya Ouma (2010) found out that teachers used methods of teaching which were seemingly

of a lower level. For example, 79.4% used lecture method of teaching and 66.2% never used demonstration method of teaching, which is a higher level method. The study also found out that teachers' evaluation methods had an effect on students' performance in English language examination. For instance, 72.5% of students reported that teachers rarely gave them assignments and home work. Majority of the students (94.1 %) also reported that teachers did not correct their assignments. It was also revealed that lack of teaching and learning materials had an effect of poor performance in English language. For example 64.7% of teachers argued that they did not have teachers' reference books and guides. Additionally, a majority, (85.3%) of the teachers and 73.6% students reported that they had inadequate audio tapes while 91.2% of the teachers and 73.6% students observed that they had quite inadequate visual tapes. Basing on the findings, the study recommended that teachers should use methods of teaching that involve students more as students participation in teaching and learning is very important. In addition, the study recommended that schools should provide the required teaching and learning facilities.

Bett (2013) carried out a study on classroom interaction in English language classes in Kericho Municipality, and found that teacher-talk accounted for about 78% of classroom talk, effectively making classroom processes teacher-centred. Bett (2013) study revealed that teaching methods were mostly lecture, explanations, illustrations and other methods where learners were mostly passive during classroom processes. This implies that learners do not benefit much from conventional teaching methodology – thus, the need for change of strategy through use of other teaching methods like NBTA. However, all the elements of the conventional teaching methodology are quite useful to a great extent in the delivery of knowledge to the learners by the teacher, especially if they are blended with techniques that involve learners extensively in classroom processes. A lecture, for example, could be blended with cooperative learning in order to make the class more activity based. During the study, the conventional teaching methodology was used with the control groups (C1 & C2) of the study while NBTA was used with the experimental groups (E1 & E2) of the study. The comparison of the pretest results would, therefore, indicate which of the teaching methodologies would be more superior to the other.

2.3 Brain Based Learning (BBL)

There have been concerted efforts by researchers and linguists to design methodologies and strategies geared towards enhancement of language acquisition by learners – attempts to find

out what works best for language acquisition. Since the brain is the seat of language, focus has been directed to its study in order to determine and harness its workings for the benefit of quality language learning. Nuessel and Cicogna (1991) note that since the 1980s, researchers on second-language instruction have increasingly advocated for the employment of multi-channeled sensory stimulation to assist in its pedagogical objectives. Further, there have been sustained attempts to consider some pedagogical strategies to access the learner bi-modally. These authors further observe that these attempts have led to a shift from a simple rendition of grammar rules to a wide array of supporting auditory and visual technological components. In addition, the authors explain that this shift is in line with the realization that second-language acquisition is a complex process that requires a multi-sensory stimulation that accesses both cerebral hemispheres. Danesi (1987) observes that there are two hemispheres in a human brain: the right and the left hemispheres. The two serve differentiated functions. He describes the hemispheres as L-Mode, to refer to the left hemisphere; and R-Mode for the right hemisphere - thus, Danesi's 'Bimodal Model'. During English language teaching/learning process, the teacher should ensure that activities appeal to the two hemispheres for meaningful, wholesome learning.

Caine and Caine (1994) describe Brain Based Learning (BBL) as involving accepting the rules of how the brain processes information, and then organizing instruction bearing these rules in mind to achieve meaningful learning. They add that it is a way of thinking about the learning process. These authors additionally explain that as far as the part of the brain involved in language is concerned, the Broca and the Wernicke areas are distinct. The former is especially responsible for the recognition of vocal sounds and their formation or articulation, whereas the latter, Wernicke's area, is the special location for the logical processing of language. Because of this, Caine and Caine (1994) instruct that meaningful contexts should always be provided not only for new input, but also for focusing purposes. This allows the R-Mode to complement and strengthen the intake operations of the L-Mode, especially during more mechanically- oriented focusing tasks (Young & Danesi, 2001). On his part, Jensen (2008) explains BBL as a set of principles and a base of knowledge and skills through which we can make better decisions about the learning process. The objectives of brain research studies include teaching to cater for individual differences, diversifying teaching strategies, and maximizing the brain's natural learning processes (Tileston, 2005).

Danesi (1987) explains that the Neurological Bimodal teaching approach model employs techniques and strategies that centre on the second-language learners' second-language acquisition requirements. Specifically, Danesi advocates the following four specific tactics to engage the learners' both hemispheres of the brain: contextualization, visualization, diversification, and personalization. Caine and Caine (1994) have noted that one vital aspect of Danesi's bimodal model of second-language acquisition is the incorporation of instructional activities and strategies in the language classroom that access and stimulate both hemispheres of the brain, thereby, complementing and reinforcing the acquisition of the target language. According to Sonnier (1991), hemispheric preferences might be a major contributing factor to individual differences. That is, left-hemispheric students are strong in analytical thought processing, while right-hemispheric students are visual processors. According to Gadzella and Kneipp (1990), right-hemispheric students process information holistically, but left-hemispheric students process information logically and sequentially. In addition, according to Gadzella (1995), left-hemispheric students achieve higher grades than right-hemispheric ones, especially when the grades are primarily based on an objective test. The veracity of the statement by Gadzella (1995) that left-hemispheric students achieve higher grades than right-hemispheric ones can be a controversial one given that judgment of who is left or right-hemispheric may not be accurate. Jegede, Taylor and Okebukola (1991) explain that the perceptual functions of the right hemisphere are more specialized for the analysis of space and geometrical shapes and forms, elements that are all present at the same time (not so sequential like language).

The right hemisphere is the creative half. It can 'see' the whole out of parts, thus allowing us to connect puzzle parts together. The right hemisphere also plays an important role in the comprehension of emotion. Ehrenwald (1984) states that brain research confirms that both sides of the brain are involved in nearly every human activity; and that it is known that the left side of the brain is the seat of language and processes information in a logical and sequential order. Ehrenwald further indicates that the right side of the brain is more visual and processes information intuitively, holistically and randomly. Most people seem to have a dominant side. Researching on English Language Teaching (ELT) locally produced textbooks, Masoud (2011) found that a high percentage of the learning activities of the locally-developed ELT textbooks under investigation were designed with L-Mode focus which are mainly structural techniques including a series of practice drills such as substitutions, fill-ins, transformations, and completions, whereas only a small number of the

learning activities in those textbooks were designed with R-Mode focus. Masoud (2011) study was conducted in the Iranian context. It is therefore essential to examine the Kenyan locally produced texts to determine the extent to which they balance out the incorporation of L-Mode and R-Mode activities. There was also need to investigate the effectiveness of brain-based learning techniques in Kenya through carrying out a study in the Kenyan context as one of the attempts at improving English language learning in the country.

2.4 Neurological Bimodal Teaching Approach

The concept of bimodality in second language acquisition and learning was developed by Marcel Danesi (1987). As Danesi (2003) states, any instructional system that privileges only one of the two modes of the brain is bound to fail sooner or later because such a system has been unimodally developed. The research and advances of neurophysiology have habitually affected language pedagogy, with the last two decades cultivating bimodality to a greater degree and exhibiting its most prosperous offerings (Kim-Rivera, 1998). Kim-Rivera notes that the two hemispheres of the brain process language input as a unit and are thus complementary: the left hemisphere enables us to analyze individual concepts, while the right hemisphere allows us to synthesize information into discourse.

2.4.1 Important Features of Neurological Bimodal Teaching Approach

2.4.1.2 Contextualization of English language Learning

In every learning environment, learners have situations and realia they are familiar with. Since every teacher's desire is to enhance learner understanding, it is prudent that he/she capitalizes on the situations and realia the learners are familiar with. Contextualization is described by Danesi (1987) as the creation of an environment in which an activity may be situated – the avoidance of structure-based pattern drills that focus on linguistic forms rather than the context in which conversation takes place. In addition, Di Pietro explains that learners should learn vocabulary not in an isolated form but within a context to enable them use the vocabulary in different contexts. For example, if a teacher was teaching a topic on etiquette, he/she could help learners imagine how to address people in situations like the head teacher's office, a hospital setting or a university setting. Such a contextualization of learning would help them internalize the learned vocabulary. Shrum and Glisan (2010)) suggest that tutors should ensure that conversations and tasks are purposeful and meaningful to the learner and that parallel real-life situations in which they might expect to use their language skills should be incorporated. Kumaravadivelu (2003) observes that current pedagogy should be

responsive to and responsible for local, individual, institutional, social, and cultural contexts in which learning and teaching takes place. Realia and contextualization are other two ways to make foreign language teaching more authentic and meaningful to students. Jahelnabi (2012) notes that realia make learning more interesting and memorable for learners and teachers as well as arouse the awareness and interest in teachers and learners towards foreign language, and also develop independence in learning. He adds that using realia is an extremely effective means of communication since non- native speakers rely more heavily on visual aid. Further, Jahelnabi argues that using realia reduces anxiety among learners, are highly motivating and entertaining, and they can give shy pupils more opportunities to express their opinions and feelings. They also enable teachers to avoid long confusing explanations and save time and effort. Finally, the author explains that using realia enhances pupils' cognitive skills such as problem solving, decision making, planning and organization of critical thinking; they can help pupils remember things faster, and they are effective tools in team work. A teacher teaching English in Kenya would, subsequently, improve learner understanding of grammatical concepts if he/she took time to collect relevant objects in the environment, such as stones, leaves, soil, butterflies and household commodities to illustrate the nouns.

2.4.1.3 Diversification of English language Learning

Monotony kills enthusiasm. There is more excitement in variety; excitement that encourages an individual to keep advancing in whatever task they are engaged in. Teaching methods as well as classroom activities should be diversified during English language teaching in order to promote learner acquisition of the target language. Diversification is one of the features of NBTA that is lauded as necessary in stimulating learners during English language classes.

According to Nuessel and Cicogna (1991), the term diversification refers to the well-established technique of providing a wide range of learning activities during a regular classroom period. These activities would range from L-mode structural exercises to R-mode problem solving activities. Marsh (2012) observes that learning a foreign language presents different challenges for different people in different contexts. He further explains that the reasons for learning a foreign language are as diverse as the ways different individuals approach the task of learning new vocabulary, figuring out new grammar rules, listening, reading, and speaking in a language other than their native language. Therefore, a range of methods and approaches are often used to introduce new language, and a variety of classroom

management techniques are employed to maximize practice opportunities. Marsh summarizes that what is required is an "effective" learning environment for effective language learning.

Egbert and Hanson-Smith (1999) propose that for effective language learning, recording devices, such as video players; newspapers, and language laboratories should be utilized to provide different and varied access to content. The authors further explain that teachers can employ a variety of activity types with group work and pair work, collaborative learning and independent learning to engage learners in communicative language practice. They can also try to address the need for personalized learning through the introduction of self-study resources designed for independent study. On the other hand, the internet has served as one of the ways of diversifying learning. Network-mediated learning and computer-assisted language learning offer directions that have attracted attention and are now considered an important component or venue in any language learning curriculum. Blended language learning appears to indicate that when appropriately implemented, the internet can significantly improve the learning experience (Pena-Sanchez & Hicks, 2006).

Wright (2010) explains that teachers are required to accommodate a wide range of student abilities in their classrooms using techniques that include integrating learning into game-like tasks that allow students to win praise, points, privileges, or rewards; promote friendly competition between student teams; or use puzzles, riddles, or other novel vehicles to kindle student interest. A teacher can also present instructional material in short sessions at a brisk pace; and require that students engage in some type of active responding to teacher instruction (e.g., students respond to teacher question in unison; students write down their response and then the teacher calls randomly on one student to share his or her answer; students break into small groups and use cooperative-learning strategies to solve a problem). Akdim (2013) observes that dramatic interaction is an excellent strategy for diversification since it involves communicative interaction of a speaker and a hearer. He adds that questioning strategies, too, enhance social skills and interactions; and learning outcomes are improved. Moreover, group work offers an embracing affective climate and promotes learners responsibility and autonomy. It is a step toward individualizing instruction. With all the stated benefits of diversification, English language teachers in the Kenyan context would improve learner outcomes if they judiciously utilized group work, pair work, game-like activities, dramatization, peer teaching, the internet, among others so that their classes tend toward learner-centredness as opposed to teacher-centredness.

2.4.1.4 Personalization of English language Learning

Personalization is another important feature of NBTA which involves having learners take ownership of the learning process by getting actively involved and contributing in the classroom decision making process. Nuessel and Cicogna (1991) explain personalization as the direct inclusion of students as participants in language-acquisition activities. These might include strategic interaction or other types of exercises in which students work in pairs of small groups and engage in simulated conversational activities that might occur in a "real-life" situation. The social relations between the students can be improved through interactive group-work (Kenny, 1994). It is more preferable that the students are left to build their own groups. However, allowing students to build their own groups might lead to undesirable realizations since individuals have a tendency of picking their own friends to work with; others might also want to pick the best in class to work with, leaving those considered less bright to feel discriminated against. Franke and Kaul (1978) seemed to address this limitation when they suggested that the improvement of social interactions is ensured through partner-work, if the teacher makes sure that the partners, as agreed by the students, change over time. Franke and Kaul further explain that students need to benefit from increased community involvement in their learning. According to Nuessel and Cicogna (1991) teachers personalize learning when they use instructional strategies related to assessment for learning and differentiated instruction to individual students' learning needs, interests and learning styles. They also observe that when strategies are paced to learning needs and coupled with technology as a means of providing more flexible learning opportunities, the learning becomes even more personalized. Nuessel and Cicogna further advise that the critical element is to encourage students to find what their interests are. If they are interested in sports, they are encouraged to read and talk in English about anything to do with sports. If they are interested in arts, let them explore this topic in English. It is also suggested that the ideal situation would also be to integrate gestures, music, and strategic interaction into a meaningful linguistic Gestalt that would provide students with an opportunity to synthesize these various modalities of language. A teacher may use reader's theatre technique in the performance by students of a scene from a novel to enable the learners master a particular concept. This will provide a lot of learner excitement as it allows a great deal of personalization and student identification with the performance. Strategic interaction is another personalization strategy that teachers can utilize for effective language acquisition by learners. Pietro (1987) lauds Strategic Interaction as an approach in which students are assigned roles that oblige them to work out and implement personal game plans through

dialogues with other role players. Even a ten minutes skit in a class of forty minutes can be initiated and implemented in the classroom with shrewd teacher guidance and learner participation.

2.4.2 Visualization in English language Learning

Visualization is another central feature of NBTA that is lauded to be useful with regard to brain based learning. When learners are assisted to imagine and form mental impressions of a concept to be learned, they are more likely to understand the concept better than if they were merely bombarded with mere explanations of it. According to Canning (2000), a visual is any projected or non-projected image that can be classified into illustrations, visuals, pictures, perceptions, mental images, figures, impressions, likeness, replicas, reproductions or anything that would help a learner see an immediate meaning. The visual is considered projected when it is planned for and executed with an intended meaning. In contrast, the non-projected visual is the result of a spontaneous occurrence of an image that is usually unplanned and occurs in relationship as a result of a triggered catalyst. Nuessel and Cicogna (1991) define visualization as a general notion that refers to the incorporation of visual materials of all sorts (pictures, slides, overhead projectors, film, interactive CALL, Video discs, and related technology). They note that the use of technology in the instructional task of second-language education has grown at an awesome pace during the past decade. Smith (1984) notes that the obsolescent laboratory has evolved into a multi-media learning and resource center with interactive learning materials including Computer Assisted Language Learning software, videodiscs, cam-corders, VCRs, and other advances that have taken place in the past decade.

Schiffler (2002) undertook neurophysiological studies of the brain and their relation to foreign language learning and found that there is an inter-hemispheric interaction in the human brain, when using visual-verbal processing. Pedagogical researches on foreign language learning recommend mental visualization, learning with gestures and learning with relaxation to enhance foreign language learning. Canning (2000) argues that perception affects learning. How a learner views an object, text or symbol can affect written and oral communication. Even those blind from birth can facilitate learning and recall using imagery instructions. Thus, the mental image of what we have seen may a time make a greater impact than auditory input. Therefore, visual cues are important, since they either facilitate or distract from understanding. Borsook, Higginbotham and Wheat (1992) aver that the more

sensory modes in which mental representation is stored, the more likely they will be remembered. Teachers can easily implement the technique of visualization in several ways. Prior to exposing learners to descriptive composition writing, for example, the learners can be taken out on sight-seeing before being asked to write a descriptive composition on a specific issue. Their mental impressions during the outing would come in handy in their written descriptions.

On the strategy of visualization, Wright (2000) sums up the role of pictures as specifically contributing to, among others, interest and motivation; a sense of the context of the language (they bring the world into the classroom (a street scene or a particular object, for example train); and a specific reference point or stimulus (pictures can stimulate and provide information to be referred to in conversation, discussion and storytelling). Moreover, Wright adds that pictures motivate, demonstrate and instruct. They provide cultural information which is impossible to give in any other way, and stimulate language learning across the range of sub-skills in listening, reading and writing as well as speaking. The role of visual materials in present-day language learning is critical, and pictures come in handy. With the advent of Smartphone technology, teachers have an opportunity to take instant pictures and avail them to the learners even in the course of teaching.

Canning (2001) observes that learners prefer visuals that are coloured, contain a story, relate to previous experiences and that can be associated with places, objects, persons, events or animals which they are familiar of. It is highly recommended that the visuals used should be interpretive and to the point. Di Virgilio (1999) presented results of an investigation which showed the inter-hemispheric connection between the language areas of the left hemisphere and right hemispheres of the brain which lie in the inferior temporal cortex. This region is responsible for visual recognition. Such a connection is interesting for foreign-language learning. Based on this research, Virgilio (2003) proposes that it would therefore be sensible to look for ways in foreign-language training which integrate texts being learned not only in a verbal-contextual manner but also in a visual one. For the last several years it has been recommended that students learn vocabulary with the help of mind maps or clusters. Buzan (1986) sees in this the integration of results from neurophysiological studies of the brain which confirm that the brain does not process information in a linear but in a clustered manner - just as human thoughts are not ordered in a linear fashion but are first organized in a sequential manner during the process of articulation. Visualization may be explored in the

following forms: Visualization by using brainstorming mind mapping, advantages of visuals on learning, gestures as visuals in foreign-language teaching, and music as visuals. The teaching module utilized during treatment in the present study contained visuals to enhance learner understanding of concepts.

2.4.2.1 Visualization by Using Brainstorming Mind mapping

During the present study, the teachers engaged the learners in brainstorming of visuals concerning the topics of the lessons. To demonstrate how to help learners visualize for uninhibited thinking, Schiffler (2002) claims that if one first writes down the central theme about which one wants to write on a big white sheet and then jots down everything that comes to mind which is somehow related, then this mirrors our apparently disorganized thought process. These notes written down during a phrase of free association not only prevent thinking blocks, they also encourage visual thinking; thereby leading to more associations than when the urge to write everything down, as one would organize it in a text, is followed. Only after the brainstorming session, where all of the ideas have been written down, in the form of a mind map, can the ideas which belong together contextually be summarized and the logical connections between the groups be shown with lines.

2.4.2.2 Advantages of Visuals in English language Learning

Visuals have been found to be advantageous in language learning. Canning (1998) illustrates that pictures help individual learners predict, infer and deduce information; and analyze today's world so that it can be brought into today's classroom and offer social settings which can immerse or expose the learner to new ideas or further promote an already created setting. Canning further states that if a visual is used in a testing or teaching situation, it can enhance clarity and give meaning to the text or to the message being communicated. Moreover, visuals can serve to create a solid link between the material learned and the practical application of it on a test. The nature of a graphic image serves as a catalyst and stimulus. Moreover, the visual can offer input, output and/or feedback on materials learned. Canning (2000) further explains that visuals are a good and useful tool for examination purposes because they lead the learner into drawing out language from their own knowledge and personal experiences through exposure to, immersion to the stimuli presented before them. Visuals permit strategies to organize knowledge into semantic or associative clusters. In testing and teaching situations, picture items can be developed to test whether the students understand the syntax or structure of the target language. Visuals allow for options,

responses, alternatives, patterns and ranges. Students can see immediate meaning in terms of vocabulary recognition provided the item exists in the first language. Pictures can be developed into a test to see whether the learner understands the structure and the syntax. Curtis and Bailey (2001) posit that pictures provide something to talk about. They take the focus off the language learner during oral practice and turn it to the picture. A picture can evoke mental images to help second language learners recall a term or concept. Pictures can be procured from several sources and can be of any phenomenon: objects, people, places, landmarks and impressions. They can be still pictures or can be video clips to engage the language learner mentally.

2.4.2.3 Gestures as Visuals in English language Teaching

Every community has gestures whose interpretations are culturally determined. Every member of a community has the capacity to make meaning of its gestures. Roth (2001) explains that gestures are a part of the visual domain of language since these meaningful nonverbal bodily movements may stand for a verbal element. Roth defines gestures as a type of visible, non-vocal behaviour in which articulation of the body, or movements result from muscular or skeletal shift. This includes all actions, physical or physiological, automatic reflexes, posture, facial expressions, gestures, and other body movements. Knapp and Hall (2006) explain that gestures are an excellent medium for bimodal stimulation because these significant bodily movements access both cerebral hemispheres. This form of non-verbal communication can be taught systematically by the instructor without any technological ancillaries. Technology, however, can serve an important role in this form of visual communication, e.g., a teacher can utilize a video cassette recorder to provide a slow motion rendition of a particular gesture. Hardy's (2013) study supports the theory that hand gestures are important in teaching. They help students learn more because they reinforce what they hear. To ensure effective use of gestures in English language classes, the teacher should ensure there is a joint cultural understanding between him/her and the students on the gestures used. Otherwise, misunderstandings might arise over interpretations of meanings.

2.4.2.4 Music as Visuals in English language learning

Music can serve a purpose other than entertainment only. Music appeals to virtually every human being with the capacity to perceive it through hearing. Being a popular pastime for many, music can be mined for some educational value. Background music playing during a drama session can help create a somber mood presaging a tragedy. The incorporation of

songs and music into the second-language classroom provides an excellent bimodal stimulative activity (Fenton, 2004). Because of their very nature, music and songs are ideally suited to bimodal stimulation. Jennifer (2007) argues that the best advantages of learning language through visual and performing arts is their ability to extend the learners understanding of themselves and their world while guiding them in creating meaning and developing their range of self-expression. Choi, et al (2005) posit that music operates in a broad spectrum, including visual (seeing visual aids with the music), auditory (singing and listening), kinaesthetic (moving to music) elements, and also multimode presentations. Jensen (2000) notes music has a direct physical, emotional, and psychological effect on both the students and the teacher; adding that if properly employed, it can create a heightened social learning context, motivate students to engage themselves more rapidly, and provide a sense of safety that might not otherwise be possible. Whenever movement is introduced into the learning setting, music can be used to help motivate the students to accomplish the task more rapidly, and with a sense of animation and enjoyment (Jensen, 1996). According to Yoon (2000), music enhances the brain development of children such that they can perform better in certain academic tasks and life skills. Listening to music is also believed to affect learning and recall in academic areas. Spychiger (2001) has found that children who take a curriculum that was designed to increase music instruction at the expense of language and mathematics became better at language and reading but no worse at mathematics than students who had spent more time on these subjects without the additional music instruction. Specifically, Douglas and Willatts (1994) studied the association between music and language learning. They showed that students who had received more musical training were capable of remembering significantly more words than those who did not. The findings are consistent with the idea that musical training is associated with cognitive abilities.

Although the techniques of contextualization, diversification, personalization and visualization are incorporated during the preparation of teaching aids, and also on the teaching/learning activities in Kenya, there is no structured way in which teachers ensure they have fully implemented these teaching strategies during the teaching/learning processes. With NBTA, the direction that a lesson takes from the beginning to the end is determined, leaving no room for whether or not the teacher applies NBTA techniques.

2.5 Modal Principles of Bimodality Theory

Kim-Reviera (1998) claims that few studies have approached second language teaching from a neurolinguistic perspective. However, he notes that an exceptional study is Marcel Danesi's educational construct of neurological bimodality, an attempt to find a neurological foundation for classroom language instruction. Kim-Reviera explains that the underlying hypothesis in neurological bimodality is that there is a natural flow of information processing from the right to the left hemispheres of the brain during language learning. Therefore, language instruction should reflect that flow direction by providing concrete forms of instruction at early language learning stages and more formal and abstract instruction at later stages.

In the teaching of language, Danesi (2003) advocates the following four pedagogical principles of bimodality theory: the modal flow principle, the modal focusing principle, the contextualization principle and the conceptualization principle. Danesi explains that the consolidation of these principles would effectively enhance the learning of the language, as they integrate both structure and communication, and thus educate both hemispheres at the same time. Danesi and Mollica (1988) conducted a study which attempted to substantiate the claims of bimodality theory. It was a comparative study of the measurable learning outcomes of teaching in a bimodal fashion, employing techniques suggested by the principles, and in an L-mode dominant manner and an R-mode dominant manner. The 'very rapid assessment' sought the viability of pursuing bimodality, and revealed that with the three groups of the study, the bimodal group equaled both the L-mode and R-mode groups in their respective strengths and was the far superior group in regard to general proficiency and creativity. A study based on the Kenyan context needed to be conducted to verify the findings of Danesi and Mollica (1988). In the current study, learners exposed to NBTA outperformed those taught using the Conventional Teaching Methodology.

2.5.1 Application of the Bimodality Theory in English language Classroom

2.5.1.1 The Modal Flow Principle

The modal flow principle is one that can be applicable in the teaching of any subject. However, its discussion here is geared towards English language teaching and learning. The modal flow principle (modal directionality principle) signifies that at first the learner's experiential plane is activated (the R-mode), then new input flows to the analytical (the L-mode), as was generally the case with the inductive principle (Danesi and Mollica, 1994). However, the principle of modal directionality should be utilized only with new input, so that

foreign language learners may experience a new structure or concept before shifting to the formal explanation. Young and Danesi (2001) explain that during the initial learning stages students need to assimilate new input through observation, induction, role-playing, simulation, oral tasks, and various kinds of interactive activities. Formal explanations, drills, and other L-Mode procedures must follow these stages, since it has been found that control of structure does not emerge spontaneously.

The modal directionality principle implies that the teacher should leave ample room for student improvisation during the early learning stages. Instructional techniques which focus on explanations will be of little value, since the students generally have no preexisting L-Mode schemata for accommodating the new input directly. In order to make the new material accessible to the L-Mode (intake), therefore, the early stages should involve teacher and learner alike in activities enlisting exploration, imagination, spontaneity, and induction. Once the initial learning stages have been completed, the teacher can 'shift modes' and begin to focus more on formal, mechanical, rule-based instruction (Young & Danesi, 2001). If a learning task contains knowledge or input that the learner can already accommodate cognitively, directionality can be efficiently avoided. Jeffries (1985) has shown that the use of grammatical rules to start a new unit of learning (an R-Mode practice) poses a serious obstacle to class room acquisition. The modal directionality principle thus claims that experiential forms of tutoring belong to the initial learning stages, that teaching should move progressively towards a more formal, analytical style in the later stages, and that the creative utilization of the new input belongs to the final stages. And, these stages can be called simply an R-Mode stage, an L-Mode stage, and an intermodal stage respectively (Danesi, 2003).

Danesi (2001) identifies the general procedures being utilized in any teaching context based on the modal flow principle as follows: During an R-Mode Stage, classroom activities should be student-centered and involve students and teacher in a complementary fashion. The problem encountered in most classes utilizing conventional teaching methodology is that teachers take over the classes from the beginning by starting off with lecture and delving straight into the new concepts (L-Mode) without according the learners an opportunity to first build schemata of the new input (R-Mode). This generally does not promote understanding positively, leading to inadequate learner outcomes in language learning. Danesi explains that novel input should be structured in ways that activate sensory, experiential, inductive forms of learning (dialogues, questioning strategies, simulations, etc.). He advises that students'

inductive and exploratory tendencies should be encouraged to operate freely when introducing new information. During an L-Mode Stage, the focus now shifts to the teacher. The teacher should explain the structural and conceptual features of the new materials clearly using deductive and inductive techniques as warranted by the situation. Explanations, drills, etc. should follow the experiential learning phases. Focusing on some problematic aspect of the subject being taught is to be encouraged if a student appears to have difficulty grasping it or using it with appropriate comparison to the NL and with suitable exercise materials. During an Intermodal Stage, the learner should be allowed to employ the new materials to carry out real- life verbal tasks, but only after he/she shows the ability or willingness to do so. Teaching new things or discussing matters of form and structure during this stage should be avoided. Students should be allowed to find solutions to problems of communication on their own. Role-playing and work in pairs or groups is advisable for most students, although some may not wish to participate. The latter can be assigned other kinds of creative tasks (e.g. writing). In actual classrooms, intermodal stage is seen when teachers trigger off the 'supervised practice' in order to try and allow the learner to practice the learned skills. Interestingly, most classes utilizing the conventional teaching methodology begin with the L-Mode stage, and the R-Mode stage is largely ignored.

2.5.1.2 The Modal Focusing Principle

Modal focusing principle is required at points in the learning process when, for instance, a learner appears to need help in overcoming an error pattern that has become an obstacle to learning. To this end, L-Mode focusing allows the students an opportunity to focus on formal matters for accuracy and control while R-mode focusing attempts to focus on matters of understanding and conceptualization (Young & Danesi, 2001). According to Young and Danesi (2001), meaningful contexts should always be provided not only for new input, but also for focusing routines. This allows the R-Mode to complement and strengthen the intake operations of the L-Mode, especially during more mechanically- oriented focusing tasks. They elaborate that contextualized instruction enables the learners to relate L-Mode form to R-Mode content. Also, the modal focusing principle stresses the fact that at some time during the learning process, the student may need to concentrate on one mode or the other to digest new data, reinforce acquired structures or vocabulary, or simply think of what to say. In actual classrooms, the teacher can implement the modal focusing principle by zeroing in on problematic areas he/she could have identified during the intermodal stage. During the

intermodal stage, the teacher could provide further explanations and emphasis as well as utilize visuals to enhance learner comprehension of concepts.

2.5.1.3 The Contextualization Principle

The teaching moduleused during the current study incorporated contextualization as an aspect of NBTA. Learners were engaged in open dialogues, were exposed to authentic texts, and realia familiar to them were used during the teaching/learning process. Further, learners were asked to imagine relevant contexts in which activities might be situated.

Danesi (2003) argues that memorizing or pronouncing words in isolation, rehearsing speech formulas, or even practicing grammar without reference to some situation that typically entails them, rarely leads to learning. There must be a context relevant to the learning of concepts. Danesi explains that language derives its meaning (usage) primarily from the context in which it is involved (i.e. its use). Therefore, the brain requires sufficient context for it assimilate new input in any mnemonically functional way. Danesi (2003) also maintains that during an R-Mode stage, the new material must contain references to cultural concepts in order for the brain to detect the appropriate meaning potential of the new structures whereas, during an L-Mode stage, the practice and rehearsal of the new structures is greatly enhanced if practical or conceptual information is provided. Danesi further argues that there are two types of cultural techniques: cultural contextualization techniques; which are designed to provide culturally appropriate information that allows students to relate the novel linguistic input to cultural concepts, symbolism, rituals during an R-Mode stage, and Practical contextualization techniques; which refer to the use of meaningful information or reference to realistic situations in the design of exercises and activities used during an L-Mode stage. In essence, by contextualization, Danesi means the creation of an environment in which an activity may be situated. This means the avoidance of structure-based pattern drills that focus on linguistic forms rather than the context in which conversation takes place (Cicogna & Nuessel, 1993). Among contextualization techniques are the use of open dialogues, authentic texts, and realia. Through these techniques grammar can be taught in context (Kim-Rivera, 1998).

2.5.1.4 The Conceptualization Principle

Language transfer in L2 classes is inevitable since learners find that they sometimes have to lean on L1 to make sense of L2 structures. The language teacher should always focus more on the intermodal stage to enhance learner conceptualization in learning. During the present study, the teaching modulehad provisions for activities on R-Mode, L-Mode and intermodal

stages during every lesson. Danesi (2003) states that students often produce L2 messages in their speech and writings which are 'semantically anomalous' because they have a tendency to put together L2 messages on the basis of L1 concepts. Thus, the language teacher must ensure that the two systems- the linguistic and the conceptual- are interrelated during all aspects and stages of instruction and practice. Moreover, Danesi (2003) maintains that in terms of dealing with incoming conceptual structures, the language teacher should attempt to apply the first two pedagogical principles (modal flow & modal focusing principles).

2.5.1.5 The Modal Techniques

Danesi (2003) explains that a technique is any procedure that can be used to help accomplish certain objectives or tasks in class. It can be an explanation of grammar, a type of exercise or activity, a test, etc. that has an identifiable R-Mode, or L-Mode, or intermodal focus in its design. Danesi categorizes these techniques generally as: Structural Techniques, Visual Techniques, Ludric Techniques, Humor Techniques, and Role-Playing Techniques.

According to Danesi (2003), the aim of structural techniques is the development of some aspect of linguistic, communicative, or conceptual competence. These techniques include teacher explanations of grammar and vocabulary, classroom exercises and activities. Most of these techniques have either an R-Mode or an L-Mode focus while some are also intermodal, such as translation exercises or cloze test techniques. On their part, Visual techniques provide visual contexts to accompany the verbal input, and also provide illustrative support for some explanation, exercise, activity, etc. Thus, they can provide crucial R-Mode contextualization for learning. In addition, in terms of conceptualization principle, they can facilitate the development of the conceptual competence in learners if the provided visual imagery is illustrative of the conceptual domain being learned.

Thirdly, Ludric techniques refer to any game- playing or problem-solving techniques including crosswords, word searches, scrambled words, interactive games, board games, etc (Danesi, 2003). These techniques fall into two categories: Language Teaching Games (LTGs) which are useful during intermodal stages; and Language Teaching Puzzles (LTPs). The LTP techniques are also of two types: form-based LTPs which promote L-Mode form-based language learning; and concept-based LTPs which promote both R-Mode communication-based learning and conceptual fluency. Riddles, logical deductions, and simple mathematical puzzles fall into this category. Humor techniques are designed to evoke humor with a crucial

R-Mode focus and are useful to develop conceptual fluency in learners. And they are also in line with the conceptualization and contextualization principles. And finally, role-playing techniques are designed to involve learners to communicate together in a creative fashion during intermodal stages; and they include pair work or group work tasks which are particularly useful for bimodal learning. Danesi and Mollica (1988) note, however, that bimodality does not dictate any specific instructional routine or style, but that it can be adapted into any textbook, regardless of emphasis. Thus, this theory is compatible with the notion of proficiency in that it is a multifaceted concept that adapts to all methodologies, approaches, and techniques. During the present study, game-like activities, such as individuals earning points in some class competition, were reflective of ludric techniques. Role-playing, pair work and group work were also extensively utilized during classes.

2.6 Gender and English Language Achievement

The comparative performance of boys and girls in English language learning is of great interest to linguists across the globe. And so are their performances in other school subjects as well. Emphasis is made by examination bodies on the performance of boys in relation to that of girls. A growing body of research has reported that females are better in academic achievement than boys (Camarata & Woodcock, 2006; Gibb, Fergusson & Horwood, 2008; Marks, 2008; Pajares & Valiante, 2001). In her study on fourth and eighth-grade teachers' and students' perspectives on boys' and girls' relative writing competence, Peterson (2000) reported a superiority of girls' writing over boys' writing and girls' writing was considered as more detailed, descriptive, and having greater conformity to writing conventions. These findings, however, may not be accurately generalizable to students in secondary school classes who are normally older and more mature. Some studies indicate that girls are more confident in writing than boys (Pajares & Valiante, 2001; Peterson, 2000).

According to Soori and Zamani (2012), students (males and females) use language features (e.g. style of writing) differently. Due to the fact that men and women speak differently in using different language features, they can write differently as well. However, Soori and Zamani (2012) revealed that most language features were used equally by male and female writers. Furthermore, Jones (2007) reported that with regard to composition process and strategies, there is scant evidence to support the notion of boys as weak writers. In addition, Peterson (2000) found that girls tend to see themselves as being successful both in their use of writing conventions and writing description. Boys, in contrast, tend to identify appeal and creativity as their writing strengths.

In foreign-language teaching at schools, the perception that women generally have better verbal skills than men - at least after puberty - has been repeatedly pointed out during the last 50 years (Carrol, 1999). An international aptitude test administered to fourth graders in 35 countries, for example, showed that females outscored males on reading literacy in every country. There was need to verify if the same situation would prevail in the study area of the present study. Carrol further notes that girls continue to exhibit higher verbal ability throughout high school, but they begin to lose ground to boys after fourth grade on tests of both mathematical and science ability. These gender differences in math and science achievement have implications for girls' future careers and have been a source of concern for educators everywhere. Females outperform males on several verbal skills tasks: verbal reasoning, verbal fluency, comprehension, and understanding logical relations (Hedges & Nowell, 1995). Males, on the other hand, outperform females on spatial skills tasks such as mental rotation, spatial perception, and spatial visualization (Voyer, Voyer, & Bryden, 1995).

In Africa, SACMEQ (Southern and Eastern Africa Consortium for Monitoring Educational Quality) tested the ability of students to read in English in the 6th grade. The SACMEQ test produced achievement data with a mean of 500 points and a standard deviation of 100 points. SACMEQ has conducted two cycles of student assessments (SACMEQ I and II). Regional (and international) student assessments often use different scales of measurement (e.g., a mean of 250 points and a standard deviation of 50 points in LAB and a mean of 500 points and a standard deviation of 100 points in SACMEQ). The results of SACMEQ study are as presented in Table 3. The SACMEQ results in Table 3 were based on the 6^{th} grade and might not be replicated if a higher class were used for the study. In fact, when NBTA was used in the teaching of composition writing in the present study, achievement among the boys matched that of the girls. Moreover, SACMEQ II was conducted in the year 2002 while SACMEQ I was in 1997. Since then, technological advances, such as the internet may have changed how all learners engage with knowledge.

Table 3**:**

Gender Differences in English Language Achievement: Results from SACMEQ II and I

Difference in Average Achievement (SACMEQ II)				Percent Reaching Mastery Level			
SACMEQII (2002)		SACMEQ1 (1997)		Minimum Mastery Level		Desirable Mastery Level	
Boys Better	Girls Better	Boys Better	Girls Better	Boys	Girls	Boys	Girls
Botswana	**27**			48	63	13	18
Kenya 0		3		67	69	25	22
Lesotho	8			14	18	2	2
Malawi 6		9		10	7	1	0
Mauritius	**26**		**12**	50	63	27	33
Mozambique	5			63	61	9	6
Namibia	5	4		17	19	7	7
Seychelles	**65**			60	82	32	53
South Africa	**27**			31	42	15	23
Swaziland	9			61	67	10	13
Tanzania **16**				70	66	31	24
Uganda	6			34	37	9	11
Zambia	0	5		21	21	5	5
Zanzibar	2	2		38	36	4	3

Source: Ross, Saito, Dolata, & Ikeda (2004)

Table 3 indicates that gender differences in English were not evident in SACMEQ II with 9 out of 14 participating countries showing no gender differences. While gender differences in favor of girls in Botswana, Mauritius, and South Africa were small (27, 26, and 27 points, respectively), the female advantage in Seychelles was large (65 points). On the other hand, although there was a case of gender differences in favor of boys as occurred in Tanzania, the male advantage (16 points) was much weaker than the female advantage.

Linguists have always tried to unravel the factors related to the perceived difference in performance between boys and girls. Research evidence has identified a range of factors behind the boys' underperformance (Daly, 2003; Estyn, 2008; DfES, 2007). These include, firstly, factors related to the quality of teaching, such as teaching grammar separately from contextualised writing; inappropriate use of interventions, misuse of writing frames, and a lack of connection between oral and writing work. The second set of factors include school-level factors, such as not offering children an active and free-play environment which has been associated with more progress in reading and writing. Thirdly, there are classroom-level factors, such as ineffective use of ICT, setting and streaming. Other factors are behavioural and social-level factors as well as factors related to the way lessons are conducted such as, too much emphasis on story writing, not giving boys ownership of their writing, a discrepancy between boys' reading preferences and writing topics, using 'counting down' time strategies and a dislike by boys of drafting and figurative language. Daly (2003) and Ofsted (2005) have suggested the following strategies for raising boys' performance: school and classroom level approaches, such as using active learning tasks; appropriate approaches to discipline, target setting, monitoring and evaluation.

Some linguists, on their part, have demonstrated a contrary opinion on language achievement and motivation between the genders. Muhammad & Mamuna (2013) carried out a study involving 240 twelfth-grade Pakistani students, 150 (63 male and 87 female) students belonged to the urban areas and 90 students (57 male and 33 female) belonged to the rural area, who had studied English for 11 years. The results of MANOVA analysis showed that there was no overall statistically significant difference between male and female participants in their motivation to learn English. Moreover, the univariate analysis of variance shows no significant differences between males and females in their parental encouragement, degree of instrumentality, English class anxiety, ethnocentrism, cultural identity, need for achievement, interest in foreign languages and motivational intensity. The study contradicts the research studies conducted by MacIntyre & Baker (2003) which reported the importance of gender as a variable in second language motivation. The study also contradicts Sung & Padilla (1998) who found significantly higher motivation for females than their male counterparts. The present study reports that a teaching approach, such as the NBTA has the potential to level out any differences in achievement and motivation to learn English by the boys and girls.

Overall, the evidence indicates that although there has been an improvement in pupils' achievement in writing, it is the subject where pupils perform less well compared to reading, mathematics and science. In addition, there is a gender gap with girls outperforming boys in all Key Stages (DFE, 2012). At Key Stage 4, the latest data shows that in 2012 (DfE, 2012) 568,600 pupils attempted a GCSE in English, and 69 per cent of those achieved a grade A-C. The gender gap is still evident with 76 per cent of girls getting a grade A-C compared to 62 per cent of boys. Sixty eight per cent of pupils made the expected level of progress in English in 2012 compared to 72 per cent in 2011.

2.7 Learner Motivation in English Language Teaching

Motivation is a driving force in undertaking any task. Some tasks are tedious and would discourage individuals from proceeding with them if they could avoid them. In the learning of language, motivation too is a requirement necessary for learner persistence and advancement. Since motivation has an indirect bearing on learner achievement, teachers must get a way to promote learner motivation for quality learning.

Motivation is defined as the extent to which the individual works or strives to learn the language because of a desire to learn the language and the satisfaction experienced in this activity (Dornyei (2001). Dornyei adds that a "motivated learner" is, therefore, defined as one who is: (a) eager to learn the language, (b) willing to expend effort on the learning activity, and (c) willing to sustain the learning activity (Gardner, 2000). Motivation plays a significant role in three ways. First, it mediates any relation between language attitudes and language achievement. Second, it has a causal relationship with language anxiety. Third, it has a direct role in the informal learning context, showing the voluntary nature of the motivated learners' participation in informal L2 learning contexts. Learners' motivation is a key variable that frequently concerns and challenges practitioners in language classrooms (Cheng & Dornyei, 2007). Dornyei and Ottó (1998) define motivation in second language (L2) learning as the dynamically changing cumulative arousal in a person that initiates, directs, coordinates, amplifies, terminates, and evaluates the cognitive and motor processes whereby initial wishes and desires are selected, prioritized, operationalized and (successfully or unsuccessfully) acted out.

The Self-determination theory by Deci & Ryan (1985) postulate that people can be motivated because they value an activity or because there is strong external coercion; that they can be urged into action by an abiding interest or a bribe; and that they can behave from a sense of

personal commitment to excel or from fear of being surveilled. Moreover, Deci and Ryan explain that men have an inherent tendency to seek out novelty and challenges, to extend and exercise one's capabilities, to explore and to learn. From the time of birth, children, in their healthiest states, are active, inquisitive, curious, and playful, even in the absence of specific rewards. However, the maintenance and enhancement of this inherent propensity requires supportive conditions as it can be fairly readily disrupted by various non-supportive conditions. Intrinsic motivation, being inherent, will be catalyzed when individuals are in conditions that conduce towards its expression – it will flourish if circumstances permit. Deci and Ryan identify the following factors as capable of diminishing intrinsic motivation: threats, deadlines, directives, pressured evaluations, imposed goals diminish intrinsic motivation. It would appear that the maintenance and enhancement of this inherent propensity for intrinsic motivation varies across gender since a large body of research report that boys are less motivated than girls in the learning of language. Perhaps boys are more averse to threats, deadlines, directives, pressured evaluations, or imposed goals than are girls. This theory, however, states that intrinsic motivation will flourish if circumstances permit. When boys and girls were taught using NBTA, their performance in the posttest was similar – implying that NBTA enabled the boys' performance to flourish.

Dornyei (2001) observes that language teachers frequently use the term 'motivation' when they describe successful or unsuccessful learners. This reflects the intuitive belief that during the lengthy and often tedious process of mastering a foreign/second language (L2), the learner's enthusiasm, commitment and persistence are key determinants of success or failure. Indeed, Dornyei further argues, in the vast majority of cases that learners with sufficient motivation can achieve a working knowledge of an L2, regardless of their language aptitude, whereas without sufficient motivation even the brightest learners are unlikely to persist long enough to attain any really useful language. A student's attitude and motivation has frequently been reported to be the most critical factor for success (Desmarais, 2002; Doherty, 2002; Gilbert, 2001; Murday & Ushida, 2002; Warschauer, 1996). Motivation, according to Winne and Marx (1989), is both a condition for, and a result of, effective instruction. Based on these claims, it is plausible to speculate that students' motivation plays an important role in learning a second language.

The relationship between gender and second or foreign language learning has been examined in many studies. Attitudes, motivation and learning strategies are the factors in which the

effects of gender appear most. Behçetogullari (1993) reported high motivation of females in their studies. Third factor is learning strategies which reflect a significant difference between males and females. According to Nyikos (1990), females are superior in using language strategies. A study by Csizer and Dornyei (2005) involving over 8000 13- and 14-year old Hungarian students provided more recent evidence that male students are less motivated L2 learners. The goal of the study was to describe motivational profiles of L2 learners through cluster analysis. By means of a questionnaire, student attitudes were assessed with regard to five different languages, including French. Four broad motivational profiles were uncovered. The first group consisted of the least motivated learners. Students in clusters two and three were progressively more motivated, and the fourth cluster consisted of the most motivated students. The results further indicated that males dominated the least motivated clusters. The more motivated clusters, on the other hand, were largely populated by females. There was no evidence that the Hungarian study could be replicated in the Kenyan context since the characteristics of the study locations were totally different. It was therefore necessary to carry out an investigative study in the local context to determine the veracity of the Hungarian study results in the Kenyan context.

Factors that bring about variations in learners' motivation have been identified as including endogenous (internal or inner inspiration) and exogenous (external to human personality) factors. Exogenous factors include factors, such as socio-cultural circumstances, professional needs, and language requirements for international education. Endogenous factors bring pleasure and satisfaction to a student, and exogenous factors relate to the tangible benefits attached to an activity (Noels, Clement, & Pelletier, 1999). A number of studies over the past couple of decades have analyzed patterns of motivation in language classrooms in a variety of situations (Cheng & Dornyei, 2007; Gliksman, Gardner, & Smythe, 1982). These studies have established a consistently strong relationship between motivation and L2 success.

To motivate them, learners should be involved in some decisions about the language program. For instance, setting assignment and project deadlines is one of the important decisions that interests learners. This collaborative decision making allows learners to feel that they set their targets themselves rather than someone else ordering them to do so. Furthermore, learners are given clear understanding of the teacher’s expectations, leaving no room for ambiguity or missing information. This objective can be achieved by providing a detailed course outline, using a clear assessment rubric, and, most important, making

adjustments to teaching plans according to learners' reflective feedback (e.g., use of a self-assessment narrative with prompts such as "I learned from this project . . . " and "The major problem areas in this course were . . . "). These strategies are a couple that is likely to help learners realize that their opinion matters in various course decisions and that the teacher cares about the learners. It is an attempt to make language teaching a bidirectional process through teacher–learner involvement.

All efforts should be made to provide learners with a low-anxiety, if not anxiety-free, classroom atmosphere (Brown, 2001; Cheng & Dornyei, 2007). This motivational strategy also ties into learner-centered approach in language teaching. A safe as well as supportive environment should be created in which learners can learn and practice the language comfortably. This positive environment through good teacher–student working relationships should be maintained. For example, the teacher can make regular contributions to a bulletin board in the classroom with welcome, happy birthday, and congratulations messages and encourage students to use the board to exhibit their projects. Additionally, he/she can make use of Web-based chat rooms for virtual interaction and mutual support. Other similar strategies can also strengthen good working relationships. Teachers can take simple yet highly effective steps, such as joining learners on field trips, hikes, and lunches. These confidence-building efforts over time help to develop a classroom community. Learners experience and appreciate the supportive teaching environment in which they are encouraged to take risks in using language structures creatively and accept that the mistakes made in this effort probably will not impede their initiatives (Cheng & Dornyei, 2007; Reid, 1999).

Kumaravadivelu (2003) instructs that making learning an enjoyable experience is crucial to maintaining learners' motivation. This involves the application of various principles related to motivation when preparing a teaching plan for a school term. First, texts, audiovisual materials, tasks, and class activities should be related to students' interests. Kumaravadivelu advises that the teacher should always give learners choices in assigning a task, and learners' preferences should get priority. Third, an extracurricular component in the course is a very desirable feature so that elements such as music and humor can be incorporated in teaching, thus increasing learning opportunities beyond regular lessons. These extracurricular activities can be simple speaking and writing acts such as sharing a cultural object from one's country/region, giving a musical or dramatic performance, and having poster competitions. Kumaravadivelu notes that these activities have been tried and found to be quite successful in

enhancing and maintaining learners' motivation (Kumaravadivelu, 2003). Furthermore, it is important to appreciate learners' efforts and progress. To promote learner autonomy, activities that involve peer support and feedback are incorporate in addition to teacher commentary. The use of interesting icebreakers can help in overcoming classroom drudgery. For this purpose, cartoons and brief video clips related to the lesson are used. Moreover, sometimes changing the class venue to an open space or a corner in the school cafe can help break monotony, especially when a lesson does not require use of classroom equipment. Learners' motivation may be manifested in their interest, commitment to tasks and enthusiasm during classroom processes.

Eccles et al. (1983) model relates that both parents and teachers contribute to gender differences in motivation by- (a) modelling sex-typed behaviour, (b) communicating different expectations and goals for boys and girls, and (c) encouraging different activities and skills. Abu-Rabia (1997) conducted a research study in the Canadian context to identify the gender differences of Arab students in the motivational constructs and attitudes towards ESL learning. The results of the study revealed that both male and female participants showed stronger extrinsic motivation to learn English as a second language in the Canadian context. In the study no gender differences were found. In this case, what could have motivated the Arab students in the learning of the language was the need to acquire English for their survival in the Canadian context. Such a motivation would not be so forceful in an environment where learners would have the service of other language to enable them interact with others.

There is a possibility that the perpetual poor performance in the English language is contributed to by teachers' inadequate appeal to the two cerebral hemispheres of their learners. Researches across Kenya confirm unsatisfactory performance in the English language. Investigating the influence of teaching methods on students' achievement in KCSE English in public secondary schools in Kasipul Division, Rachuonyo South District, Kenya, Ogweno (2010) found that text book reading, demonstration and homework assignments were the most used methods. An investigation into the methods most liked by the students revealed that some of the mostly used methods by the teachers were not the most liked by the learners. The study also found out that teachers who were highly experienced were identified by the methods which had more activities and that allowed teacher -learner interaction. The

study noted that teachers who utilized methods with hands-on activities had their students score highly. The study recommended that any instruction in English should contain activities and should be student centered.

The literature reviewed in this study is mostly from the global stage since studies on Neurological Bimodal teaching approach are currently scanty in Africa in general and Kenya in particular. The literature may, therefore, not be entirely reflective of the Kenyan situation considering that the classroom environment and processes where studies on Neurological Bimodal teaching approach have been done are unique to those environments. Carrying out a study on Neurological Bimodal teaching approach in Kenya would deliver results consistent with the Kenyan context.

2.8 Theoretical Framework

This study was guided by the neurological bimodality theory to language acquisition. Comparatively, it is a new teaching approach in relation to the conventional teaching approaches. Neurological Bimodality theory is defined as the notion that both hemispheres of the brain are involved in a complementary fashion in global language processing (Danesi, 1987). Danesi's Neurological Bimodal Teaching Approach is an adaptation from the neurological bimodality theory. This teaching approach was appropriate for this study since it integrates the activities that appeal to the L-Mode and the R-Mode sides of the brain for a more positive outcome in language learning. The approach has been successfully implemented in such countries as Iran, Canada and Italy; and so it was worth trying it in the Kenyan context too.

2.9 Conceptual Framework

The conceptual framework (Figure 1) illustrates the interaction among the variables of the study. It was developed by the researcher. The framework presents independent, intervening and dependent variables of the study. The independent variables interact with the intervening variables to impact on the dependent variables. The framework is displayed in Figure 1.

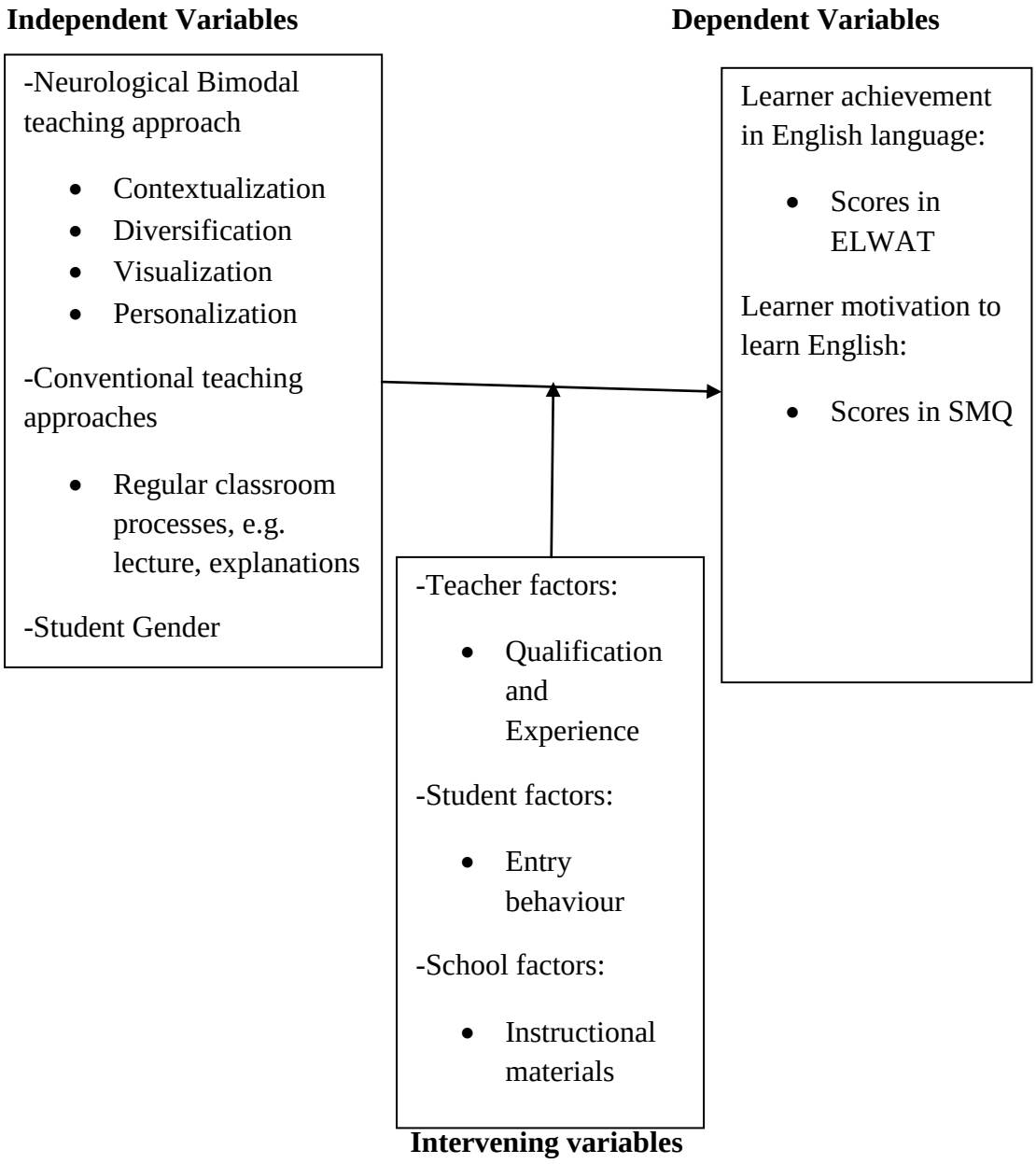

Figure 1: Conceptual Framework showing interaction of the variables of the study

In Figure 1, the independent variables are Neurological Bimodal teaching approach and the conventional teaching methods. In an ideal situation, these independent variables would directly affect the dependent variable as indicated by the arrow directly pointing to the dependent variables from the independent variables. However, other factors interact with the independent variables to impact on the dependent variables. These factors were teacher factors, student factors and school factors. The dependent variables, such as learner achievement were determined by learner scores in the ELWAT. The dependent variable of learner motivation was determined by learner scores in the SMQ. The effect of teacher factors was controlled by selecting teachers with a minimum qualification of diploma in education or above, and a teaching experience of three years or more. To control for student factors, the four schools of the study were all of the category of County secondary schools – therefore, the entry behaviour for all the learners was similar. To control for school factors, the researcher provided the teaching module and learning resources, such as teaching notes and teaching aids to the schools that did not have.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter summarizes the methodology that was used to guide the research process. It covers research design, target population and accessible population, sampling procedures and sample size, instrumentation, validity and reliability of research instruments; together with development and use of instructional materials. The chapter also covers data collection procedures and statistical methods that were used for data analysis.

3.2 Research Design

The study adopted the quasi-experimental research design. In this design, there is non-random assignment of subjects to the groups; which addresses the challenge of the school authorities not allowing the classes (which exist as intact groups) to be dismantled so that they can be re-constituted for the purpose of research (Gall, Borg and Gall, 1996). This study, therefore, adopted the non-randomized Solomon 4-group, non-equivalent control group design. The design is rigorous enough for experimental and quasi-experimental studies (Gall, Borg and Gall, 1996). The research design is also considered appropriate in achieving, among others, the following purposes: assessing the effect of the experimental treatment relative to the control treatment, assessing the effect of a pretest relative to no pretest, assessing interaction between pretest and treatment conditions, and determining the extent to which the groups are uniform before giving the treatment (Gall, Borg and Gall, 1996). Cook and Campbell (1979) observe that the quasi-experimental procedure controls for all major threats to internal validity except those associated with interactions of selection and history, selection and maturation and selection and instrumentation. To control for interaction between selection and maturation, the schools were assigned randomly to the control and treatment groups. Maturation effects were controlled in this design by having two groups taking a pretest and a posttest (Ary, Jacobs & Razavich, 1972; Cook & Campbell, 1979; Fraenkel & Wallen, 2000). Pretest helped the researcher to have the knowledge of the entry level of the respondents before the experiment started. In order to avoid experimental contamination, the same English language subject teachers were used. In more than one streamed schools, the treatment was administered to all form two classes in order to avoid the Hawthorne effect. However, only results from one stream in each school were randomly selected and used for data analysis. To avoid the effects of contamination, the treatment and control groups were

from different schools. The conditions under which the instruments were administered were kept as similar as possible in all the sample schools to control for interaction between selection and instrumentation (Gall, Borg and Gall, 1996). The Solomon 4-group, non-equivalent control group design is annotated as follows:

Group	**Notation**
E_1	O_1 X O_2 (Experimental group)
C_1	O_3 O_4 (Control group)
E_2	- X O_5 (Experimental group)
C_2	- - O_6 (Control group)

Figure 2*: The non-randomized Solomon 4-group, non-equivalent control group design*

Key:

X = Experimental treatments using Neurological Bimodal Teaching approach

O = Observations

O_1 and O_3 = Pretest observations

O_2, O_4, O_5 and O_6 = Posttest observations.

Experimental group E_1 received a pretest, X and post –test; control group C_1 received a pretest and posttest; experimental group E_2 was not given a pretest but received X and posttest, and control group C_2 received a posttest only. Control groups C_1 and C_2 were taught without using the module. Experimental group E_2 and control group C_2 having not received pretests in this design constituted a distinct advantage in that it enabled the researcher be in a position to generalize to groups that had not have received the pretests since the pretests

would not have advance effects on the experimental treatment. The experiment period lasted five weeks. This was a relatively short period thereby controlling the effects of history and maturation. Creative composition writing was taught for five weeks in E1 and E2 before the posttest was administered to the four groups. The researcher ensured objectivity in scoring both the pretest and posttest by use of a systematic scoring key. In order to achieve the objective of teaching and learning of the topic 'writing' as contained in the syllabus (KIE, 2005), teachers in the experimental schools followed a teaching module provided by the researcher. This was aimed at ensuring uniformity of treatments.

3.3 Location of the Study

The study was carried out in Roret Division of Bureti Sub-county of Kericho County of Kenya. Roret Division is categorized as one of the educational divisions in Bureti sub-county. The Division had 12 public secondary schools, seven of which were County secondary schools while five were Sub-county secondary schools. Two of the County secondary schools were three-streamed while the rest were two-streamed. The schools enrollment rate in the division was 75% for boys and 60% for girls; and the drop- out rate for boys was 12% and 16% for girls (Bureti Subcounty Education Office, 2012). The secondary school teacher - pupil ratio was 1:50 (Bureti sub-county Education Office, 2012). Roret division had a low secondary school density with a secondary school for every 3.5 km. The mean grade for Roret Division in the 2015 KCSE was 3.92 with boys' mean being 3.72 against that of girls at 4.12.Table 4 shows the distribution of secondary schools in Roret Division.

Table 4**:**

School type/status and Form Two Enrollment in Roret Division

School Type	**Status**	**Form Two Streams**	**No. of Form Two Students**
Girls	County	10	520
Boys	County	8	335
Mixed	County	5	360
TOTAL			**1215**

3.4 Target and Accessible Population

12 The target population was 11,085 students in Roret Division of Bureti sub-county. Mugenda and Mugenda (1999) define target population as that population to which a researcher wants to generalize the results of the study. The accessible population was 1215 Form Two students from the Division. Hulley and Cummings (1988) explain that the accessible population is a subset of the target population that reflects specific characteristics with respect to age, gender, diagnosis, etc., and who are accessible for study. The study sample was 184 Form two students from the four experimental schools of the study which were selected from the 12 schools in the Division. The ideal setting for research study is one that directly satisfies the researcher's interest and should be accessible to the researcher (Singleton, 1993).

3.5 Sampling Procedures and Sample Size

A sampling procedure is a definite plan determined before data is actually collected for obtaining a sample from a given population (Orodho, 2005). The total number of public secondary schools in Roret Division was 12 with a total student population of 11085. The accessible population of the study was 1215 form two students. Because the form ones were still getting introduced to the secondary school syllabus and the form threes and fours were beginning to get exposed to methods of teaching preparing them for KCSE national examinations, the form two students were seen as more suitable for the study. To select the sample size for the study, purposive sampling technique was used. Purposive sampling was used in order to minimize experimental contamination by ensuring that selected schools were far apart; as well as to ensure that all the four schools selected were coeducational County secondary schools. This produced 184 students in four schools that actually participated in the study. Two of the schools were three-streamed while two were two-streamed. All County public secondary schools admit learners with similar characteristics. Coeducational schools were selected for purposes of comparison of achievement and motivation in written English language by gender when learners are taught using NBTA approach and conventional methods of teaching. The assignment of groups to either experimental or control groups was done by simple random sampling technique. Two schools were randomly selected as experimental groups (E_1 and E_2) and the other two were used as control groups (C_1 and C_2).

The classes used for the study had a population ranging from 42 to 51 learners. The study adopted the quasi-experimental research design because there is non-random assignment of

subjects to the groups since the school authorities do not allow the classes (which exist as intact groups) to be dismantled so that they can be re-constituted for the purpose of research (Gall, Borg and Gall, 1996). The Ministry of Education Science and Technology recommends 45 students per class in secondary schools. Subsequently, the actual sample size for this study was 184 students drawn from two experimental group schools, and two control group schools. Gall, Borg and Gall (1996); Kathuri and Pals (1993) argue that for experimental studies, at least 30 cases are required per group. The teachers who participated in the study had a minimum qualification of a diploma in education with a teaching experience of three years or more. With such experience, they were expected to have understood the dynamics of language teaching and were more likely to be excited by new methods of teaching for better results. Table 5 is the sample frame for the study. The school names are coded for purposes of confidentiality.

Table 5**:**

Sample Frame

School Code	**School enrollment**	**No. of Form Two students**	**No. selected**
AC	548	135	42
BG	536	90	49
CK	347	135	51
DT	372	90	42
TOTAL	**1803**	**450**	**184**

3.6 Instrumentation

The study utilized two data collection instruments: the English Language Writing Achievement Test (ELWAT), and the Students' Motivation Questionnaire (SMQ). The two instruments bore the following characteristics:

3.6.1 English Language Writing Achievement Test (ELWAT)

The ELWAT for Pretest and Posttest were guided compositions on topics familiar to the learners. The familiarity of the composition topics was intended to put them in context to

accord the learners enough materials to express themselves in. The ELWAT for pretest and that of posttest were similar. The ELWAT for pretest was on an incident where a man was mistakenly killed by a rowdy mob while that of the posttest was on the doctors and nurses' strike and its consequences. The ELWAT contained clear instructions to the learner, including the limit on the number of words to write the composition in. They were limited to about 350 words written in 50 minutes; KNEC normally requires candidates to complete their compositions in about 40 minutes. Two experienced language teachers selected from those already trained by KNEC on the marking of composition for KCSE candidates were trained on the objectives of the study, sensitised on the teaching module, and trained on the Composition Scoring Guide. The two examiners were preferred because of their experience and familiarity with scoring compositions. They participated in the scoring of the pretest and the posttest.

3.6.2 Students Motivation Questionnaire (SMQ)

This instrument was used to measure the students' level of motivation in writing composition in English language. Nitcher (1984) states that students' motivation is a good indicator of effort and devotion in studying a subject. The study adapted the SMQ developed and used by Wachanga (2002). The SMQ was modified to investigate students' opinions and perceptions on learning creative writing using Neurological Bimodal Teaching approach. The instrument contained 28 Likert – scale items. The items positively framed Strongly Agree (SA) carried five marks while Strongly Disagree (SD) carried one mark. The items negatively framed Strongly Disagree (SD) carried five marks while Strongly Agree (SA) carried one mark. There was one mark difference between the choices.

3.6.3 Validation of Research Instruments

Validity is defined as a measure of how an instrument measures what it is supposed to measure (Kombo & Tromp, 2006). To ensure both content and external validity of the instruments, the items in the ELWAT were derived from the Kenya Institute of Curriculum Development (KICD, 2005) English language syllabus. ELWAT involved composition writing which is an aspect in the Form Two English language syllabus in Kenya. Mugenda and Mugenda (1999) define content validity as a measure of the degree to which data collected using a particular instrument represents a specific domain or indicators or content of a particular concept. Wiersma and Jurs (2009) define external validity as the extent to which results can be generalized to populations, situations and conditions. Since composition writing is an aspect of the Kenyan English language syllabus, findings of the study would be

generalizable to Kenyan secondary school students. Five experts in research and language teaching from Egerton University validated the research instruments. The expert reviews of the instruments ensured both face and content validity of the instruments. To ensure internal validity, data analysis was done by use of a recognized data analysis software, SPSS version 22.0.

The SMQ developed and used by Wachanga (2002) was adapted and modified for use in the collection of data for effects of Neurological Bimodal teaching approach on learner motivation, and was reviewed by the supervisors. The validity of SMQ was established by five experts of educational technology and linguistics, all drawn from Egerton University. The Five-week teaching module was reviewed by the supervisors and was further tested through piloting in two County secondary schools in Bureti Sub-county which did not take part in the study.

3.6.4 Reliability of the Instruments

The ELWAT reliability was tested using inter-rater reliability method. The reliability of the written tests was measured by calculating the reliability of the marking. This was done by inter-rater reliability and intra-rater reliability. Inter-rater reliability refers to the degree of similarity between different examiners: can two or more examiners, without influencing one another, give the same marks to the same set of scripts (Wang, 2009). The raters were two experienced examiners marking KCSE English Paper One for the KNEC. The reliability of ELWAT was found to be 0.77, which was considered adequate since it was higher than the recommended threshold of 0.70 acceptable in social science research.

Piloting of the instruments was carried out in two schools that did not participate in the study. The reliability of SMQ was estimated using Cronbach's alpha coefficient. Cronbach's alpha coefficient is useful when measuring internal consistency of multi-item measures used to measure psychological attributes; that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability (Nunnally and Bernstein (1994). Since the SMQ used carried 28 Likert-scale items, Cronbach alpha was deemed appropriate for calculating the reliability of SMQ. Its reliability was found to be 0.83, which was also higher than the recommended threshold of 0.70. For research purposes, reliability should be at least 0.70 or higher ((Fraenkel and Wallen, 2000; Coolican, 1999; and Gall, Borg and Gall, 1996). The results of the piloting were used to improve the content and face validity of the instruments.

3.7 The Development of the Instructional Manual

The researcher developed a teaching module for teachers' use during the treatment period (See Appendix D). The module was based on the revised English language syllabus (KIE, 2005). The training module was prepared by the researcher and contained the following content outline:

Teaching and scoring areas

This section will carry the following aspects:

- Relevance and Adequacy of content
- Compositional Organization
- Cohesion
- Adequacy of Vocabulary for Purpose
- Grammar
- Mechanical Accuracy I (Punctuation)
- Mechanical Accuracy II (Spelling)

The researcher trained the teachers of the experimental groups for two days on using the teaching module in teaching the topic of the experiment. They were also sensitised on the objectives of the study.

3.8 Data Collection Procedures

Before collecting data, the researcher obtained a research introductory letter from the Board of Postgraduate Studies of Egerton University and subsequently obtained permission to conduct research from the National Commission for Science Technology and Innovation (NACOSTI). The County Director of Education (CDE), Kericho County, together with the District Education Officer (DEO), Bureti sub-county, were notified in advance of the study in order to get their consent. The researcher trained the English language teachers in the experimental group schools for two days on using the teaching module during the treatment. Before the treatment, a pretest was undertaken for E1 and C1 groups. The pretest was to establish if the entry behaviour of the learners was similar; and subsequently also determine whether they were suitable for the study.

The pretest was followed by a five-week treatment. In schools with more than one stream of Form Two classes, all the streams were treated but data from only one class was used for the study. After the treatment, a posttest was administered to all the four groups in order to

determine the effect of the treatment. The ELWAT used for the posttest had a slight variation from the one used for the pretest. This was intended to control for the effect of participants' maturation and sensitization. The last step in data collection was the administration and collection of the SMQ for analysis. Respondents to the SMQ were assured of confidentiality of the information they had provided.

3.9 Data Analysis

Collected data was organized, coded, entered into the SPSS computer programme, and cleaned before analysis. During data analysis, the researcher used paired samples t-test, ANOVA and ANCOVA to test the research hypotheses utilizing Statistical Package for Social Sciences (SPSS). ANOVA was used to analyse for statistical significance in the four means of the posttest. ANOVA is appropriate when comparing variables that are at interval or ratio scales and are continuous (Field, 2013). The mean and standard deviation was used to describe and compare students' motivation and achievement in English language composition writing from the experimental and control groups. The hypotheses were tested for significance using t-test, ANOVA, and ANCOVA. ANOVA and t-test were used to determine if there were any statistically significant differences on the students' achievement and motivation in English language composition writing between experimental and control groups, and by gender. ANCOVA was also used for statistical adjustment to enhance control if variation was evident in the experimental and control groups at the time of pretesting. The posttest results were correlated with the covariate using KCPE results. The level of significance was set at $\alpha = 0.05$ to guide in the rejection or acceptance of the null hypotheses.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the study titled 'Effects of Neurological Bimodal Teaching Approach on Achievement and Motivation in the Learning of the English Language composition writing in County secondary schools in Roret Division of Bureti Sub-county of Kericho County, Kenya'. The study utilized a quasi-experimental research design, the Solomon-Four-Non Equivalent-Group design. The hypotheses of the study investigated whether there were statistically significant differences in learner motivation and achievement between experimental and control groups and by gender when learners were taught English language composition writing using Neurological Bimodal Teaching approach and the conventional teaching approaches. This was especially because the conventional teaching methods which are commonly used in the teaching of language have not resulted in satisfactory achievement among learners. The results of each of the hypothesis tested are presented, discussed and related to the findings of previous similar studies. The chapter presents the results in the following sequence:

(i) Pretest analysis.
(ii) Effects of NBTA on learner achievement, by learning approach, in English language composition writing.
(iii) Effects of NBTA on learner motivation, by learning approach, to learn English language composition writing.
(iv) Effects of NBTA on learner achievement, by gender, in English language composition writing.
(v) Effects of NBTA on learner motivation, by gender, to learn English language composition writing.

The findings are presented in form of Tables and their interpretations given. The hypotheses of the study were tested using t-test, ANOVA and ANCOVA, the results of which guided in the acceptance or rejection of the null hypotheses at 0.05 significance level.

4.2 Pretest Analysis

Two groups E1 and C1 were pretested before the commencement of the study to determine if they had similar characteristics and same entry level before the administration of the

treatment. Gerard (2012) explains that one way to analyze data is by comparing the subjects with respect to their posttest measurements. Gerard further adds that even though subjects are assigned to treatment at random, there may be some concern that any difference in the posttest measurements might be due to a failure in the randomization and that perhaps the groups differed in their pretest measurements. The knowledge gathered during the pretest helps the researcher to come up with valid and objective conclusions about the population after the treatment (Gerard, 2012). The pretest results on SMQ indicated that groups E1 and C1 were similar on motivation at the start of the experiment (Table 7). The pretest results on ELWAT also indicated that at the start of the experiment, groupsE1 and C1 were similar on achievement at the beginning of the experiment (Table 7).

Data on achievement were generated using the ELWAT instrument while data on motivation were generated using the SMQ instrument. The English Language Composition Scoring Criteria (ELCSC) derived from the Kenya Institute of Education (KIE, 2005) syllabus was used in the scoring of the achievement pretest, which was marked out of 20 marks. The groups' mean scores were calculated from this total mark.

The t-test results of the comparison of the pretest mean scores in achievement and motivation by learning approach were as shown on Table 6.

Table 6**:**

Pretest Mean Scores on Achievement and Motivation

Scale	**Groups**	**N**	**Mean**	**SD**	**df**	**t-value**	**p-value**
Achievement	E1	42	6.33	1.46	91	1.015	0.313
	C1	51	6.02	1.50	88.526	1.018	0.312
Motivation	E1	42	2.88	0.20	87	0.550	0.584
	C1	47	2.90	0.25	86.269	0.556	0.580

The results in Table 6 show that at the beginning of the study, E1 had an achievement mean score of 6.33 (SD = 1.46) while C1 had a mean score of 6.02 (SD=1.50). The t-test results reveal that the difference between the two means was not statistically significant at the 0.05 level, $t(91) = 1.015$, $p= 0.313$, $\rho > 0.05$. The results in Table 7 further show that the

difference between the mean score (M = 2.90, SD = 0.25) of C1 on motivation was higher than that of E1 (M = 2.88, SD = 0.20). The difference between the motivation scores were however not statistically significant at the 0.05 level, t(87) = 0.550, p= 0.584, ρ > 0.05. The results were an indication that the two groups, C1 and E1, were similar in achievement and motivation to learn English before commencement of the study. Therefore, it was appropriate to use them to examine the effectiveness of NBTA and the conventional teaching methodologies in the teaching and learning of English language composition writing.

In order to determine the entry behaviour on motivation and achievement among the boys and girls in groups E1 and C1, a pretest on mean scores on ELWAT and SMQ was analysed and the results are shown on Table 7.

Table 7**:**

Pretest Mean Scores on Achievement and Motivation by Gender

Scale	**Groups**	**N**	**Mean**	**SD**	**df**	**t-value**	**p-value**
Achievement	Male	47	5.89	1.52	91	-1.779	0.079
	Female	46	6.43	1.40	90.725	-1.780	0.078
Motivation	Male	45	2.88	0.25	87	-0.508	0.613
	Female	44	2.90	0.21	84.890	-0.509	0.612

The results in Table 7 reveal that the male students' achievement mean score (M = 5.89, SD = 1.52) was not statistically significantly different from that of their female counterparts (M = 6.43, SD = 1.40) at the 0.05 significance level, t(91) = 1.779, p= 0.079, ρ > 0.05. The results further showed that the difference between the male students mean score (M = 2.88, SD = 0.25) on motivation and that of the females (M = 2.90, SD = 0.21) was also not statistically significant at the 0.05 significance level, t(87) = 0.508, p= 0.613, ρ > 0.05. This meant that the male and female students were similar on achievement and motivation to learn English language composition writing at the point of entry into the study. Consequently, it was appropriate to use them to determine if gender differences in achievement and motivation existed when NBTA and conventional methodology were used in the teaching and learning of English language composition writing. The results of the pretest analysis showed that the groups were homogeneous in the two constructs at the point of entry. Thus, they were

considered suitable for the study. According to Cohen, Manion & Keith (2011), groups that are homogeneous are most appropriate for experimental studies since any post-treatment changes could be attributed to treatment.

4.3 Effects of Neurological Bimodal Teaching Approach on Learner Achievement in English language composition writing by Learning Approach

The first hypothesis of the study sought to determine if there was any statistically significant difference in achievement between learners taught English language composition writing using the Neurological Bimodal Teaching approach and those taught using the conventional approaches. The effect of NBTA approach was determined in two ways: one, a posttest analysis which compared the means of groups E1, E2, C1 and C2. Second was the determination of the gain difference between the pretest and the posttest means of groups E1, E2, C1 and C2.

Table 8 presents the posttest achievement mean scores of the experimental and control groups.

Table 8:

ELWAT posttest means and SD of the four groups

Group	N	Mean	SD
E1	42	12.67	1.36
E2	49	12.14	1.44
C1	51	7.12	1.66
C2	42	7.48	1.35

Based on the mean scores, it can be observed in Table 8 that the groups that received the treatment (E1 and E2) outperformed the control groups C1 and C2 by a great margin with E1, E2, C1 and C2 mean scores being 12.67, 12.14, 7.12 and 7.48 respectively. This implied that learners in the treatment groups, E1 and E2 learned more and achieved more in English composition writing than their counterparts taught using the conventional teaching approaches. This good performance by the experimental groups was attributable to their exposure to the Neurological Bimodal Teaching approach, which produced the large mean gain differences. From the results, it can be deduced that NBTA was a better teaching

approach than the conventional teaching methodology. To find out if there was any statistically significant difference in the mean scores among the groups, one way ANOVA test was carried out and the results are as presented in Table 9.

Table 9**:**

ANOVA Posttest Achievement Scores by Learning Approach

Scale	Sum of Squares	df	Mean Square	F-ratio	p-value
Between Groups	1207.853	3	402.618	187.214	.000*
Within Groups	387.104	180	2.151		
Total	1594.957	183			

* Statistically significant at α=0.05 significance level ($\rho < 0.05$)

Table 9 shows that the results of the posttest ELWAT mean scores among the four groups was found to be statistically significantly different F (3, 180) = 187.214, p-value=000. The ANOVA test results, therefore, indicated that there was a statistically significant difference in achievement between learners who were taught English language composition writing using Neurological Bimodal Teaching approach and those taught using the conventional approaches. This implied that the NBTA approach improved learning, leading to a higher achievement among the learners in the experimental groups. This shows that NBTA produced better achievement results than the conventional teaching approaches in the teaching of composition writing.

Because the results in Table 9 did not show where the difference lay, the Scheffe post-hoc multiple comparisons test on ELWAT mean scores was run to determine where the differences occurred among the four groups. Scheffe procedure was preferred since it has some advantages over other post hoc procedures. Stevens (1999) explains that Scheffe'sprocedure is perhaps the most popular of the post hoc procedures, the most flexible, and the most conservative. Scheffe'sprocedure not only corrects alpha for all pair-wise or simple comparisons means, but also for all complex comparisons of means as well. Complex comparisons involve contrasts of more than two means at a time.

The results of the Scheffe post hoc multiple comparisons are as presented in Table 10.

Table 10:

Multiple Comparisons of ELWAT Posttest Means by Learning Approach

Groups	Mean Difference	p-value
E1 vs E2	0.5 2	0.091
E1 vs C1	5.55	0.000*
E1 vs C2	5.19	0.000*
E2 vs C1	5.03	0.000
E2 vs C2	4.67	0.000*
C1 vs C2	-0.36	0.242

* Statistically significant at α=0.05 significance level ($\rho < 0.05$)

From Table 10, it can be observed that Experimental Group 1 had a statistically significant difference with Control Groups 1 and 2; and Experimental Group 2 also showed statistically significant difference with Control Groups 1 and 2. These results revealed that the posttest achievement difference for the experimental and control groups were indeed statistically significantly different. This further confirmed the superiority of NBTA over the conventional teaching methodology.

Between the Control Groups 1 and 2, it can be observed in Table 10 that the mean score difference was not statistically different; and Experimental Groups 1 and 2 were also not statistically significantly different. To determine if the significant difference of the posttest mean scores of the groups did not only result from the differences of the groups other than the treatment, an analysis of covariance test was undertaken to adjust the posttest mean scores. The learners' Kenya Certificate of Primary Education (KCPE) results were used as covariates. Coolican (1999) argues that this test is aimed at reducing the effects of the initial group differences. ANCOVA adjusts the means before conducting the comparison. The ANCOVA results are as shown in Table 11.

Table 11:

ANCOVA Test of difference of ELWAT Posttest

	Sum of Squares	df	Mean Square	F	p-value
Contrast	1001.576	3	333.859	154.972	.000*
Total	385.623	179	2.154		

* The difference is significant at $\alpha = 0.05$ significance level ($p<0.05$)

Table 11 indicates that there was a statistically significant difference in the ELWAT posttest mean scores of the four groups F (3, 179) = 154.972, p = 0.000; thus confirming that the differences between the posttest means were statistically different at 0.05 α- level in favour of the experimental groups. This could be attributed to treatment. Consequently, it could be concluded from the results in Table 11 that NBTA enhanced learner achievement in English composition writing than did the conventional teaching approaches. Since Table 11 did not show where the differences lay, multiple comparison test was carried out using the Scheffe post hoc procedure. The results of the Scheffe post hoc test are as presented in Table 12.

Table 12:

ELWAT posttest multiple comparisons

Group	Mean Difference	p-value
E1 vs E2	.487	.120
E1 vs C1	5.627	.000*
E1 vs C2	5.257	.000*
E2 vs C2	4.770	.000*
C1 vs E2	-5.140	.000*
C1 vs C2	-.369	.678

* The difference is significant at $\alpha = 0.05$ significance level ($p<0.05$)

From Table 12, the Scheffe post hoc test results confirmed that indeed the results of the posttest were due to the treatment and not the differences that existed because of the variations in KCPE results. Again, these results confirmed the superiority of NBTA over the conventional teaching approaches.

To further confirm the achievement difference between the experimental and the control groups by learning approach, it was necessary to determine the posttest achievement mean gain score. The ELWAT mean scores were statistically computed for E1 and C1. This was meant to determine the effect of NBTA on students' achievement in language learning. The pretest and posttest mean scores on ELWAT for E1 and C1 were compared to establish the mean gain score between the two groups. The results are as displayed in Table 13.

Table 13:

ELWAT Pretest, Posttest Mean Scores and Mean Gain of E1 and C1

Scale		**E1**	**C1**
Pretest	N	42	51
	Mean	6.33	6.02
	SD	1.46	1.50
Posttest	N	42	51
	Mean	12.67	7.12
	SD	1.36	1.66
Mean gain		**6.34**	**1.10**

Table 13 indicates that there was a posttest achievement mean gain score of 6.34 by the experimental group E1 taught using Neurological Bimodal Teaching approach; and an achievement mean gain score of 1.10 by the control group C1 taught using conventional teaching approaches. The difference in achievement gain can be attributed to the NBTA teaching approach. These findings suggested that NBTA was a more superior teaching approach than the conventional teaching approaches, and should therefore be used more often in English language instruction. The results in Table 13 did not show if the mean gain score of E1 and C1 were statistically significantly different. Therefore, it was necessary to perform a t-test to determine this. The results of the t-test are as shown in Table 14.

Table 14:

Comparison of ELWAT means gain between E1 and C1

Group	N	Mean gain	df	t-value	p-value
E1	42	6.34	73	15.14	0.000*
C1	51	1.10			

* The mean difference is significant at $\alpha = 0.05$ significance level ($p<0.05$)

Table 14 reveals that the mean gain score of E1 (6.34) was statistically significantly different from that of C1 (1.10) since t (73) = 15.14, p-value 0.000 ($p<0.05$). Therefore, it was concluded that the treatment of E1 and E2 groups using NBTA increased learner achievement in English language composition writing than did the conventional teaching approaches on the control groups C1 and C2.

The first null hypothesis stated that there was no statistically significant difference in achievement in English language composition writing between learners who were taught using Neurological Bimodal Teaching Approach and those taught using the conventional approaches. However, the findings presented and discussed revealed that the learners taught using NBTA had statistically significant higher achievement mean scores on the ELWAT than those taught using conventional teaching approaches. Therefore, the first null hypothesis was rejected.

The ANOVA and ANCOVA posttest results presented implied that Neurological Bimodal Teaching approach (NBTA) promoted better achievement in language learning than the conventional teaching approaches. There was no statistically significant difference between the posttest means of the Control Groups 1 and 2 on one hand and between the Experimental Groups 1 and 2 on the other hand. That there was no statistically significant difference between Control Groups 1 and 2 and that their mean scores, compared to those of Experimental Groups 1 and 2, were low was an indication that the conventional teaching approaches were less superior to the Neurological Bimodal Teaching approach, which enabled Experimental Groups 1 and 2 to post higher means of 12.67 and 12.14 respectively against those of Control Groups 1 and 2 at 7.12 and 7.48 respectively. There was no

statistically significant difference between Experimental Groups 1 and 2 since Neurological Bimodal Teaching approach seemed to have leveled out differences in achievement between the two groups.

In this study, improved achievement among learners taught using NBTA was attributed to the application of Danesi's (1987) bimodality theory. Specifically, Danesi (1987) advocates the following four specific tactics to engage the learners' both hemispheres of the brain: contextualization, visualization, diversification, and personalization. Caine and Caine (1994) have noted that one vital aspect of Danesi's bimodal model of second-language acquisition is the incorporation of instructional activities and strategies in the language classroom that access and stimulate both hemispheres of the brain, thereby, complementing and reinforcing the acquisition of the target language by all learners. This ultimately leads to improved language achievement among learners. Nuessel and Cicogna (1991) note that since the 1980s, researchers on second-language instruction have increasingly advocated for the employment of multi-channeled sensory stimulation to assist in achievement of pedagogical objectives. Further, there have been sustained attempts to consider some pedagogical strategies to access the learner bi-modally. These authors further observe that these attempts have led to a shift from a simple rendition of grammar rules to a wide array of supporting auditory and visual technological components through the use of newer methods of teaching, such as NBTA.

Caine and Caine (1994) describe Brain Based Learning (BBL) as involving accepting the rules of how the brain processes information, and then organizing instruction bearing these rules in mind to achieve meaningful learning. On his part, Jensen (2008) explains BBL as a set of principles and a base of knowledge and skills through which we can make better decisions about the learning process. The objectives of brain research studies include teaching to cater for individual differences, diversifying teaching strategies, and maximizing the brain's natural learning processes (Tileston, 2005). Caine and Caine (1994) further argue that meaningful contexts should always be provided not only for new input, but also for focusing purposes. This allows the R-Mode to complement and strengthen the intake operations of the L-Mode, especially during more mechanically- oriented focusing tasks (Young & Danesi, 2001). When these principles of NBTA are applied, the objectives will be to utilize brain research studies to teach catering for individual differences, diversifying teaching strategies, and maximizing the brain's natural learning processes (Tileston, 2005).

The teaching module used during the treatment was designed around the principles of the bimodality theory to cater for individual differences. The teaching learning activities were diversified, meaningful contexts were provided, visualization and personalization were ensured. When these strategies were applied during treatment, individual differences that resulted from hemispheric preference (Sonnier, 1991), were leveled out among the learners in the treatment groups, leading to an overall good performance among them. Since the control groups were not exposed to the NBTA principles, they were not accessed bimodally, leading to their comparatively low achievement in English language composition writing.

Similarly, Myhill et al (2011) carried out a study which confirmed that contextualization (which is an element of Neurological Bimodal Teaching approach) in the teaching of grammar has a significantly positive effect on pupils' writing development. They added that the approach was more effective for the most able writers. They also undertook a randomised controlled study in UK aimed at exploring the effect of contextualised teaching on pupils' writing development. Findings from the study were promising, showing a significant positive effect for pupils in the intervention group, taught lessons using the contextualization principles. The pupils taught this way scored higher in the writing tests compared with pupils in the comparison group. The test results of the first hypothesis were also similar to a study by Myhill (2001) which showed that contextualization had a statistically significant positive effect on pupils' writing development.

On their part, Zwicker and Hadwin (2009) explained that multisensory approaches to teaching writing may be more effective for pupils than cognitive approaches. According to them, there is some evidence that the use of ICT (which is also one way of diversification of learning in the use of NBTA; and which also promotes visualization during learning) to teach writing can be more effective than the conventional methods. Other aspects of diversifying language teaching according to Neurological Bimodal Teaching approach include cooperative learning, face to face interaction, pair-work, and group work, all of which were utilized during the treatment in this study. Similarly, Kagan (1994) conducted a study on the effects of cooperative learning on the achievement of ninth-grade students in a culturally diverse Biology class. The experimental group with the combination of both black and white students had a significant increase on the academic achievement scores. Face to face interaction (an important aspect of cooperative learning as well as of NBTA) in the classroom

has an intense effect on societal, cognitive and scholarly development of students. Another study by Khan and Inamullah (2011) on the effects of Students' Team Achievement Division (STAD) on academic achievement for students studying chemistry at higher secondary level in Khyber Pukhtunkhwa, Pakistan showed that the experimental group taught using the STAD method performed better in the test than the control group taught through traditional lecture method. STAD is a version of cooperative learning.

In this study, visualization of learning was another element of NBTA that was utilized during the treatment. Visualization has been found to produce a significantly positive effect on learner achievement in composition writing. For example, Fidan and Erden (1996) undertook a study which reported the importance of using various visual materials used in teaching-learning process. The results of the study revealed that visualization helped learners acquire knowledge and skills quite easily. As in many areas of education, visual materials may also be used effectively in language teaching, especially to concretise abstract concepts, increase retention of what is learned and attract children's attention.

4.4 Effects of Neurological Bimodal Teaching Approach on Learner Motivation to Learn English Language Composition writing by Learning Approach

Hypothesis two of the study sought to determine if there was any statistically significant difference in student motivation in learning English language composition writing between learners who are taught using Neurological Bimodal Teaching approach and those taught using the conventional approaches. In order to determine the effect of NBTA approach on students' motivation to learn English language composition writing, T-test, ANOVA test, Scheffe Post hoc analysis, ANCOVA test and gain determination test were utilized in the examination of this hypothesis. The following are the results of the above tests. In order to compare the motivation on SMQ for E1 and C1 by learning approach, their post motivation mean scores were computed. The results are shown in Table 15.

Table 15:

Posttest motivation mean scores and SD of E1 and C1 groups

Group	N	Mean	SD
E1	42	4.24	.47
C1	47	3.25	.25

In Table 15, the results show that there was a marked difference in post motivation mean scores between the experimental group E1 (M = 4.24, SD = 0.47) and the control group C1 (M = 3.25, SD = 0.25). These findings suggested that Neurological Bimodal Teaching approach motivated learners much more significantly than the conventional teaching approaches since the mean score for E1 (4.24) was higher than that of C1 (3.25).

To find out if there were any statistically significant differences in posttest motivation mean scores between E1 and C1, one way ANOVA test was carried out and the results are as presented in Table 16.

Table 16:

ANOVA Posttest Motivation Scores by Learning Approach

Scale	Sum of Squares	df	Mean Square	F	p-value
Between Groups	41.169	3	13.723	115.000	.000*
Within Groups	20.644	173	.119		
Total	61.813	176			

*Significant at α=0.05 significance level ($\rho < 0.05$)

Table 16 shows that the results of posttest SMQ mean scores for E1 and C1 were found to be statistically significantly different since $F(3, 173) = 115.000$, $p<0.05$. The ANOVA results on Table 16 show that there was a statistically significant difference in motivation between learners taught English language using Neurological Bimodal Teaching approach and those taught using the conventional approaches. This implied that NBTA promoted motivation among learners more than did the conventional teaching approaches.

The ANOVA results in Table 16 did not show where the difference lay. Therefore, the Scheffe post-hoc multiple comparisons test on SMQ mean scores was run to determine where the differences occurred between groups E1 and C1. The results of the Scheffe post hoc multiple comparisons were as presented in Table 17.

Table 17:

Multiple Comparisons of SMQ Posttest Means by Learning Approach

Groups	Mean Difference	p-value
E1 vs E2	0.088	0.643
E1 vs C1	0.993	0.000*
E1 vs C2	1.110	0.000*
E2 vs C1	0.904	0.000*
E2 vs C2	1.022	0.000*
C1 vs C2	1.118	0.427

*Significant at α=0.05 significance level ($\rho < 0.05$)

Table 17 shows the Post hoc Comparisons of the Posttest Motivation Mean Scores of the SMQ for the Four Groups. From Table 17, it can be observed that the difference in posttest motivation means between the experimental groups E1 and E2 was not significant (MD=0.088, $p>0.05$) but the posttest motivation mean difference between E1 and C1 (MD=0.0993, $p<0.05$); E1 and C2 (MD=1.110, $p<0.05$) as well as the post motivation mean difference between E2 and C1 (MD=0.904, $p<0.05$), and E2 and C2 (MD=1.022, $p<0.05$) showed statistically significant difference. On the other hand, the post motivation mean difference between control groups C1 and C2 (MD=1.118, $p>0.05$) showed no statistically significant difference. Therefore, the findings indicated that the experimental groups E1 and E2 benefited from NBTA while the control groups C1 and C2 did not benefit as much from the conventional teaching approaches. This proved the superiority of NBTA approach over the conventional teaching approaches.

In order to further determine the effect of NBTA on students' motivation by learning approach, the pretest and posttest mean scores on SMQ for E1 and C1 were compared to establish if the mean gain difference between the two groups was statistically different. The results are as presented in Table 18.

Table 18**:**

Results of Posttest Motivation Mean Gain by Learning Approach

Scale	**Groups**	**N**	**Mean**	**SD**	**df**	**t-value**	**p-value**
Motivation Gain	E1	42	1.34	0.608	87	9.706	0.000*
	C1	47	0.34	0.34			

*Significant at α=0.05 significance level (ρ < 0.05)

Table 18 shows the motivation mean score gain of the experimental groups E1 and control group C1. From the Table, the results showed that the difference between the experimental group E1 (M = 34, SD = 0.608) on posttest motivation mean score gain and that of the control group C1 (M =0.34, SD = 0.34) was statistically significant at the 0.05 level, t(87) =9.706, ρ < 0.05. The findings suggested that Neurological Bimodal teaching approach was a better teaching approach than the conventional teaching approaches since increased motivation among learners may lead to improved achievement in English language composition writing.

Hypothesis two of the study sought to determine if there was any statistically significant difference in student motivation in English between learners taught using Neurological Bimodal Teaching approach and those taught using the conventional approaches. The findings indicated that there was a statistically significant difference in post motivation mean scores gain between learners taught using NBTA and those taught using conventional teaching approaches, leading to the rejection of hypothesis three of the study.

This study implemented Danesi's (1987) language teaching model lauded for increasing learner motivation through appealing to both hemispheres of the brain. Danesi advocates the following four specific tactics to engage both of the learners' hemispheres of the brain: contextualization, visualization, diversification, and personalization; all of which are meant to enhance learner motivation. Caine and Caine (1994) have noted one vital aspect of Danesi's bimodal model of second-language acquisition is the incorporation of instructional activities and strategies in the language classroom that access and stimulate both hemispheres of the brain, thereby, complementing and reinforcing the acquisition of the target language.

Lo and Hyland (2007) undertook a study in Hong Kong which involved an action research project aimed at implementing a new ESL writing programme designed to enhance students'

motivation and engagement by taking more account of the young learners' own socio-cultural context (which Neurological Bimodal Teaching approach refers to as contextualization). It was found that the new writing programme enhanced students' writing engagement and motivation. The researchers noted that the enthusiastic way that the participants responded to the new programme suggested that encouraging young writers to write about topics of interest and of relevance to them and providing them with genuine audiences, can have a liberating and confidence-building effect. The underachieving students benefited most in this respect. Williams (2003) suggested that each individual L2 learner's motivation is influenced by both external factors related to their socio- cultural and contextual background, and internal factors related to themselves. During this study, sentences were contextualized with adequate considerations for meaningfulness, and learners were also given a lee-way to determine the topics they would have liked to write their compositions on. This allowed them to choose and write on topics they could easily relate with. Consequently, they were able to write more easily, more creatively and more effectively. This may explain the good performance they attained at the posttest stage.

Other researchers advocate that teachers should ensure a pleasant and supportive atmosphere in the classroom where the students can feel safe and trusting (Dornyei, 2001). In the present study, teachers were prepared to be friendly and interactive with the learners during the implementation of the new teaching approach. Being friendly and interactive with the learners is one of the elements of the NBTA. Ferris and Hedgcock (1998) have also argued that teachers should take the different backgrounds, experiences, and expectations that students bring into the writing classroom into account when selecting teaching materials and approaches, developing reading and writing assignments, constructing assessment instruments, and providing feedback. The reading and writing tasks and activities used should be meaningful, relevant, and varied in terms of content and genre. Finally, teachers should be explicit about the goals of the learning and assessment tasks they use, provide learners with clear goals and strategies to make writing tasks manageable, and allow students choice (Cumming, 2002; Dornyei, 2001; Ferris & Hedgcock, 1998; Hyland, 2002; Raimes, 1998; Williams, 2003). All these studies that have reported positive motivation among language learners have utilized one or other of the NBTA features which this study adopted during the treatment.

Other researchers that have conducted research on learner motivation include Serra (2014) who found out that young learners write better about their own lives and experiences -

whether it is a holiday, or their experience with their grandparents, or any other experience outside the classroom; that young writers write best when they write about something they know well. Ellis (2003) puts it that real-world processes of language use, including modern text types such as (instructional) chatting10, and a real communicative situation are aspects that enhance learner motivation in language teaching.

Storch (2001) carried out a study involving 30 students on collaborative learning, which NBTA refers to as diversification of learning. After the study, 24% of the participants found the collaborative stage 'instructive' and 38% 'very instructive'. When beginning the tasks, students were invited to pair up with another student and prepare an individual draft of the same writing task, including a preliminary brainstorming and schematization of the basic ideas (pre task 1). The topic had to be chosen in such a way that a collective stage was possible, for example, by giving a list of concrete elements that should enter the text. As Jacobs (1998) and Storch (2001) point out, there are several potential advantages of collaborative learning: students become more confident and motivated, they learn from each other, among others. They add that cooperative peer response to writing is seen to be important for exposing students to real readers, for building their confidence as writers and for encouraging them to make active writing decisions rather than slipping into a passive reliance on teacher feedback. Computers are also lauded as tools blending learning. Hyland (2002) adds that computers decentralise teacher role and redistribute authority, thus facilitating more student talk. Storch (2001) and Jacobs (1998) studies advocate for diversification and personalization of learning, which are inherent in Neurological Bimodal teaching approach.

Visualization, which is another element of Neurological Bimodal Teaching approach, has been researched on to determine its motivating power. Studies have revealed that in the language learning process, visualization can help develop long-term memory and stimulate mental rehearsal leading to better language achievement among learners. We can also use mind-mapping to help organize ideas in speaking and writing. Visualization also helps learners to focus on the meaning and how to express it by translating the mental picture into words. According to Helgesen (2004), visualization encourages learners to process the story through multiple sensory modalities: they think about what they see, hear and feel. In short, as Arnold (1999) points out, visualization can prepare the existing schema to facilitate comprehension or enrich production in the language learning process.

Case (2008) found that personalization (making sure students can use the language to talk about themselves) is commonly accepted as a vital part of language learning. Students most need the motivation of realising that they can use English to talk about themselves. They are also most impressed by the teacher taking a personal interest in them. In the study, students were involved in using language games, talking about student likes and wants, story books with personal connections, letting them undertake projects, photos and drawings or even jotting down what they say on the board or on a notebook. Their achievement scores increased significantly. The teaching module used during the present study included language games meant to motivate learners. The findings were, therefore, in line with Case (2008) study on personalization of language learning to enhance motivation.

4.5 Effects of Neurological Bimodal Teaching Approach on Learner Achievement English Language composition writing by Gender

Hypothesis three of the study sought to determine if there was any significant difference in achievement in English language composition writing between boys and girls taught using Neurological Bimodal Teaching approach. In order to find out the effect of NBTA approach on students' achievement in English language composition writing by gender, posttest scores for boys and girls in groups E1 and E2 were analysed. A t-test was used to test this hypothesis and the results are as shown in Table 19.

Table 19:

T-test Results of Posttest Mean Scores on Achievement by Gender

Gender	N	Mean	SD	df	t-value	p-value
Male	42	12.67	1.36	89	1.775	.918
Female	49	12.14	1.44			

Not significant at α=0.05 significance level, (p>0.05)

Table 19 shows the t-test results of the ELWAT scores for boys and girls taught using NBTA approach. The results reveal that the difference between the male students' mean score (M = 1267, SD = 1.36) on posttest achievement and that of the females (M = 12.14, SD = 1.44) was not statistically significant at the 0.05 level, t(89) = 1.775, $\rho > 0.05$. The findings suggested that Neurological Bimodal Teaching Approach was able to level out any achievement differences between gender and therefore, that the teaching approach was better than the conventional teaching approaches. The effect of treatment on achievement on both

boys and girls was similar in this case. This implied that NBTA was effective in reducing the gender differences commonly observed when conventional teaching approaches are utilized in the teaching and learning of English language.

To find out if the boys and girls were similar in performance at the point of entry, it was necessary to use ANCOVA to deal with any entry behaviour differences. ANCOVA uses a covariate to take care of initial differences by adjusting means before conducting comparisons. ANCOVA reduces the effects of initial group difference statistically by making compensating adjustments to the posttest means of the groups involved (Gall, Borg & Gall, 1996). ANCOVA was therefore performed using the students' KCPE scores as the covariate. The results are as shown in Table 20.

Table 20:

ANCOVA Test of Difference of ELWAT Posttest by Student Gender

Scale	Sum of Squares	df	Mean Square	F	Sig.
Contrast	15.035	1	15.035	7.980	.019
Error	165.806	88	1.884		

Not significant at α=0.05 significance level ($\rho > 0.05$)

Table 20 shows that the results of posttest ELWAT mean scores for the boys and girls were found not to be statistically different since $F(1, 88) = 7.980$, $p>0.05$. The findings indicated that there was no statistically significant difference in achievement between male and female learners at the point of entry into the study. This suggested that they were appropriate for the study; and that any posttest behaviour difference or similarity would be valid.

In order to further determine the effect of NBTA on students' achievement by gender, the pretest and posttest mean scores on ELWAT for both genders were compared to establish the mean gain score by gender. Therefore, the ELWAT mean scores were statistically computed by gender. The results are as presented in Table 21.

Table 21:

Results of Achievement Mean Gain Scores by Student Gender

Scale	Groups	N	Mean	SD	df	t-value	p-value
	Male	47	3.64	2.87	91	.422	.674
Gain	Female	46	3.28	3.31	89.087	.421	.675

Not significant at α=0.05 significance level ($\rho > 0.05$)

The results in Table 21 show that the difference between the male students' mean score (M = 3.64, SD = 2.87) on ELWAT posttest achievement mean gain and that of the females (M = 3.28, SD = 3.31) was not statistically significant at the 0.05 level, $t(91) = 0.422$, $\rho > 0.05$. The boys' mean of 3.64 was slightly higher than that of girls which was at 3.28. The findings suggested that Neurological Bimodal Teaching approach slightly favoured the boys, implying that NBTA approach was more preferable in the learning of English to the conventional teaching methodology. But the t-test results in Table 21 showed that the difference in achievement gain score between boys and girls taught using Neurological Bimodal Teaching Approach was not statistically significant. Therefore, hypothesis three of the study which sought to determine if there was any statistically significant difference in achievement in English language composition writing between boys and girls taught using Neurological Bimodal Teaching approach was upheld on the strength of the test analyses results.

The findings of this study suggested that girls and boys taught using Neurological Bimodal Teaching Approach achieved better scores in English language composition writing; and further that boys' achievement mean scores were slightly better than the girls' though the difference was not statistically significant. The findings, therefore, implied that Neurological Bimodal Teaching Approach levels out any differences in achievement between boys and girls in English language composition writing. Consequently, the findings of this study on English language composition writing achievement between boys and girls were at variance with findings from a large body of research across the world on English language composition writing. But the findings of this study seemed to resonate with a study by Myhill, et al (2010) that was aimed at suggesting ways to address the discrepancies by gender in language achievement.

Reacting to several language studies reporting under-performance by boys, Myhill et al (2011) undertook a study and recommended specific strategies that could help the boys catch

up with the girls. The teaching and learning features that Myhill et al (2011) recommended were very closely related to the features of NBTA, which was a teaching methodology utilized in this study. It means that the features suggested by Myhill, et al (2011) were able to appeal to both brain hemispheres of the learners and would promote better language learning. They presented a range of specific strategies for writing, which included explicit teaching about language, for example subordination and co-ordination. The study also reported that boys can benefit more from a range of diverse interventions such as stepped instructions using mini plenaries and task cards; using visual organisers and frames to scaffold text structure; the use of drama conventions to explore aspects of character, setting or plot; incorporation of 'talk for writing' time into literacy lessons so that pupils can talk about their texts before they start writing it.

Other strategies recommended to improve boys' performance included topic selection in narrative writing (which should be left to the learner to decide), medium term planning using frameworks which are adapted to meet pupils' diverse needs, planning writing using mnemonics as boys often have difficulties with timed writing and the process of 'beginning, middle and end'; effective drafting should be an integral part of pair, group and whole-class teaching. Explicit teaching of drafting skills should also include the use of photocopied contextualised material. From the list of the suggested strategies to help the boys, it can be observed that many are activity-based, visual, contextualized, diversified, concretised, and personalized. All these are the aspects inherent in Neurological Bimodal Teaching Approach. All these elements were contained in the teaching module used during the treatment (Appendix D).

Among the features utilized in this study, in line with the elements of NBTA, were: topic selection, dramatization, use of mnemonics, personalization of writing tasks, use of animated illustrations, encouraging active responding in discovering the main ideas, modeling writing, working in pairs, groups, and discussion of ideas in class, rewarding or praising of student responses no matter the nature of the response, diversification and visualization of learning. It may appear that these elements of NBTA seemed to have leveled out writing achievement differences in favour of the boys in this study, with boys posting a better posttest mean gain of 3.64 against the girls' 3.28 (Table 19). Most of the classroom activities suggested were practical in nature, and they seemed to appeal to the boys, enabling them to enjoy learning; ultimately achieving better.

Other research evidence has identified a range of factors behind the boys' underperformance (Daly, 2003; Estyn, 2008; DfES, 2007). These include, firstly, factors related to the quality of teaching, such as teaching grammar separately from contextualised writing; inappropriate use of interventions, misuse of writing frames, and a lack of connection between oral and writing work. The second set of factors include school-level factors, such as not offering children an active and free-play environment which has been associated with more progress in reading and writing. Thirdly, there are classroom-level factors, such as ineffective use of ICT, setting and streaming. Other factors are behavioural and social-level factors as well as factors related to the way lessons are conducted such as, too much emphasis on story writing, not giving boys ownership of their writing, a discrepancy between boys' reading preferences and writing topics, using 'counting down' time strategies and a dislike by boys of drafting and figurative language. Daly (2003) and Ofsted (2005) have suggested the following strategies for raising boys' performance: school and classroom level approaches, such as using active learning tasks; appropriate approaches to discipline, target setting, monitoring and evaluation. These suggestions are inherent in the NBTA approach, and actually formed the major components of the teaching module used during this study.

Overall, though, literature on language achievement (and writing achievement in particular) by gender reveal a trend which largely does not favour the boys. Test reports on the writing elements of the English curriculum have consistently shown that boys have not matched girls' achievement (Department for Education and Skills (DfES), 2006; OfSTED, 1996, 1998;, 2002; Qualifications and Curriculum Authority (QCA), 1998) in England. Reasons offered for this differential attainment have been various. A concern that boys are less successful than girls in reading and writing is shared across the English-speaking Western world (Collins, Kenway & Mcleod, 2000; Evans 1999). The differences in achievement between the boys and girls seems to begin much early in life too. Analysing the writings of 8 to 10 year olds in Melbourne, Australia, Kanaris (1999) found that girls wrote longer, more complex texts that contained more subordinate clauses and a wider range of adjectives than did the boys.

Numerous research studies on language achievement by gender have reported that females are better in academic achievement than boys (Camarata & Woodcock, 2006; Gibb, Fergusson, & Horwood, 2008; Marks, 2008; Pajares & Valiante, 2001). In her study on fourth and eighth-grade teachers' and students' perspectives on boys' and girls' relative writing

competence, Peterson (2000) reported a superiority of girls' writing over boys' writing when they found that girls' writing was more detailed, descriptive, and having greater conformity to writing conventions. Other studies indicate that girls are more confident in writing than boys (Pajares & Valiante, 2001; Peterson, 2000). Pajares et al. (1999) and Pajares and Valiante (1999) argue that based on some evidence, students' confidence in writing is a predictive factor of their writing competence.

Aside from confidence giving girls an upper hand in language achievement, some other language studies have reported other factors that help the girls. Carrol (1999) reported that women generally have better verbal skills than men, a factor that has been accepted globally for a long time. The researcher explains that in foreign-language teaching at schools, this parallel - at least after puberty - has been repeatedly pointed out during the last 50 years. On their part, Hedges and Nowell (1995) emphasize that females outperform males on several verbal skills tasks: verbal reasoning, verbal fluency, comprehension, and understanding logical relations. Demir (2005) also notes that in most of the studies about attitudes towards language learning with regard to gender, it is clear that due to various beliefs, social expectancies, conditions and cultural orientations, females are more positive than males and this creates higher motivation with a better acquisition. Another factor that gives the girls an edge over the girls is on learning strategies which reflect a significant difference between males and females. According to Nyikos (1990), females are superior in using language strategies.

Research studies in Iran by Kamari et al. (2012) which involved 150 BA students of Islamic Azad University of Ahvaz majoring in Teaching English as a foreign Language (TEFL) compared both genders in terms of proficiency in writing descriptive paragraph and their opinion on paragraph essay. The results showed the superiority of writing skill of male students on opinion paragraph essay and superiority of female students on the descriptive one. According to the findings of Kamari et al. (2012), males are good writers on opinion related- subjects because of their ability in expressing their opinions and ideas. The data analysis in the study conducted by Jafari and Ansari (2012) on the effect of collaboration and gender on Iranian EFL learners' writing accuracy indicated that the students in the collaborative writing group outperformed the students in the control group. Moreover, based on data, the females in the collaborative group outperformed males in the same group indicating that gender has a pivotal role in Iranian EFL collaborative writing.

Even with other aspects of language, such as reading, Mullis, et al (2006) has indicated that all recent international studies agree that girls have a higher reading achievement than their male counterparts. This gender gap appears when students are in their fourth year of school and it is important up to when they are fifteen. Research data showed that at their fourth year of schooling, girls had significantly higher reading achievement than boys in all countries except in Spain and Luxembourg.

Contributions by Klein (2004) explain that differences in scholastic achievements of male and female are generally attributed to biological causes and cultural stereotypes. When students have opportunities to interact among themselves, a teacher and the materials, knowledge and skills are acquired and learning is real for both sexes. This is probably because when students explain and receive explanations from one another in their group, the new concepts are retained in memory and related to concepts already in memory. This ends up improving their academic performance and their motivation to learn (Slavin, 1992).

Some research findings advise that caution should be exercised on gender differences in achievement. OfSTED (1993) observes that some of the evidence suggests the achievement discrepancies may be attributable, not to gender difference per se, but to teaching contexts such as limited opportunities for boys to discuss the more affective aspects of experience and little scope for writing with conviction about personal feelings. William (2000) affirms that sex differences in cognition are small and traditional differences in some subjects have narrowed. Very few of the tests show a standard mean difference in favour of either males or females of more than 0.4 which means that less than 4% of the variation in individuals' test scores is related to gender differences. On the same argument, Weiner (2010) summarizes the different theories on gender differences by affirming that gender differences need to be treated with caution since the studies may themselves be stereotyped or biased towards one gender or the other. As a matter of fact, some of them may not test the most relevant skills and knowledge, and even some may not be predictive of future academic performance.

In conclusion, many studies on language achievement by gender report results contrary to the findings of this study. It can be posited that when the elements of NBTA are utilized as a package during language teaching, more contextualized, personalized, visualized, diversified, and activity based learning seem to enhance students learning; and more particularly the boys', enabling them to achieve better performance and close up the gap difference that is

commonly claimed to exist between them and the girls with regard to language achievement by gender.

4.6 Effects of Neurological Bimodal Teaching Approach on motivation to learn English language Composition writing by Gender

The fourth hypothesis of the study was meant to determine if there was any statistically significant difference in motivation to learn English language composition writing between boys and girls taught using Neurological Bimodal Teaching Approach. In order to find out the effect of NBTA on students' motivation in English language composition writing by gender, the SMQ posttest mean scores for boys and girls were analysed and then compared to determine if there were any statistically significant differences between them. T-test analysis, ANOVA test and gain determination were carried out to establish the difference in motivation to learn English language composition writing by gender. The results of the t-test are as shown in Table 22.

Table 22:

T-test Results of Posttest Motivation Mean Scores on SMQ by Student Gender

Scale	Group	N	Mean	SD	df	t-value	p-value
Posttest Motivation	Male	91	3.64	.59	175	-1.467	.144
	Female	86	3.78	.60	174.238	-1.466	.144

Not significant at α=0.05 significance level ($\rho > 0.05$)

Table 22 shows the t-test results of the SMQ of boys and girls who were exposed to NBTA approach. From Table 23, the results show that the difference between males (M = 3.64, SD = 0.59) on posttest motivation mean scores and that of the females (M =3.78, SD = 0.60) was not statistically significantly different at the 0.05 level, $t(175) = 1.467$, $\rho > 0.05$. This implied that the treatment affected motivation of both boys and girls in a similar manner. The findings suggested that Neurological Bimodal teaching approach was effective in motivating students to learn English language composition writing and that when treated equally, gender was not a factor in student motivation.

To find out if there were any statistically significant differences in posttest motivation mean scores within and between groups, one-way ANOVA test was carried out and the results can be observed in Table 23.

Table 23:

ANOVA Posttest Motivation Mean Scores by Gender

Scale	Sum of Squares	df	Mean Square	F-value	p-value
Between Groups	.763	1	.763	2.152	.144
Within Groups	62.056	175	.355		
Total	62.818	176			

Not significant at α=0.05 significance level (ρ > 0.05)

Table 23 shows that the results of posttest SMQ mean scores for boys and girls taught using Neurological Bimodal Teaching approach and those taught using the conventional approaches were found not to be statistically significantly different since F (1, 175) = 2.152, p>.0.05. This was a further confirmation that learners taught using NBTA approach attained higher motivation to learn English language composition writing than those taught using conventional methodology, implying that NBTA approach promoted better achievement through increased motivation among learners.

Another ANOVA test was carried out to compare posttest motivation mean gain scores by gender, and the results are as shown in Table 24.

Table 24: ANOVA Posttest Motivation Mean Gain Scores by Gender

Scale	Sum of Squares	df	Mean Square	F	p-value
Between Groups	.250	1	.250	.523	.471
Within Groups	41.624	87	.478		
Total	41.875	88			

Not significant at α=0.05 significance level (ρ > 0.05)

In Table 24, it can be seen that the results of posttest SMQ mean gain scores for boys and girls did not reveal any statistically significant difference since F (1, 87) = 0.523, p>.0.05. The results of this test corroborate the ANOVA results in Table 23 that indeed the gain in student motivation to learn English language composition writing was statistically significant when NBTA was utilized in the learning process. This implied that NBTA would be a more facilitative method in the teaching and learning of English relative to conventional teaching methodology.

The t-test results for both the posttest motivation mean scores (Table 22); the ANOVA test for post motivation mean scores (Table 23) and for post motivation mean gain scores by student gender (Table 24) all indicated that there was no statistically significant difference in motivation by gender. Subsequently, it was concluded from these findings that the null hypothesis that stated that there was no statistically significant difference in motivation in English language learning between boys and girls taught using Neurological Bimodal Teaching approach was approved, which led to the retention of hypothesis four of the study.

Several studies on motivation report that in both achievement and motivation, girls outperform the boys. A study by Csizér and Dörnyei (2005) involving over 8000 13 and 14-year old Hungarian students provided more recent evidence that male students are less motivated L2 learners. The goal of the study was to describe motivational profiles of L2 learners through cluster analysis. By means of a questionnaire, student attitudes were assessed with regard to five different languages, including French. Four broad motivational profiles were uncovered. The first group consisted of the least motivated learners. Students in clusters two and three were progressively more motivated, and the fourth cluster consisted the most motivated students. The results further indicated that males dominated the least motivated clusters. The more motivated clusters, on the other hand, were largely populated by females. Motivation studies on gender differences in language learning carried out by Dornyei, Csizer, and Nemeth (2006); Mori and Gobel (2006) have also reported that females are more motivated in learning foreign languages than males.

On the contrary, results from this study indicated that there was no statistically significant difference in motivation by gender. The motivation gap difference in language learning by gender reported by numerous studies does not hold in this study. As was seen with language achievement by gender, the boys' performance was boosted by the NBTA teaching approach. Boys' motivation was enhanced by diversification, personalization, visualization and contextualization as well as the activity oriented teaching and learning resulting from these strategies. The application of these strategies seemed to appeal more to the boys' both brain hemispheres, making them enthusiastic about language learning.

Some studies indicate that girls are more confident in writing than boys (Pajares & Valiante, 2001; Peterson, 2000). Ehrenwald (1984) indicates that the right side of the brain is more visual and processes information intuitively, holistically, and randomly. Most people seem to have a dominant side; the girls' dominant side mostly being the left hemisphere (L-mode).

Considering that a high percentage of the learning activities of the textbooks are designed with L-Mode focus which are mainly structural techniques including a series of practice drills such as substitutions, fill-ins, transformations, and completions, whereas only a small number of the learning activities in those textbooks are designed with R-Mode focus, girls seem to have been favoured (Masoud, 2011). And yet Ehrenwald (1984) states that brain research confirms that both sides of the brain are involved in nearly every human activity, and that it is known that the left side of the brain is the seat of language and processes information in a logical and sequential order. According to Sonnier (1991), hemispheric preferences might be a major contributing factor to individual differences. That is, left-hemispheric students are strong in analytical thought processing, while right-hemispheric students are visual processors. In addition, according to Gadzella (1995), left-hemispheric students achieve higher grades than right-hemispheric ones, especially when the grades are primarily based on an objective test. Because of this, researches on language achievement and motivation have consistently reported performance in favour of the girls.

When NBTA was used all learners regardless of gender were availed opportunities to have both sides of their brains accessed. In that case, the issue of hemispheric preference was diminished. This seemed to allow the boys to level out the motivation gender difference commonly reported by many studies on language achievement by gender.

Suleiman (1993) conducted a research on the students of Arabic ethnicities studying EFL at Arizona State University. The study showed motivational differences related to gender in favour of the females. Sung and Padilla (1998) examined 144 elementary and 451 secondary school students' motivation towards learning Chinese, or Korean as L2. Findings of the study confirmed significantly higher motivation for females than their male counterparts.

Canadian studies, such those of Massey (1994), Netten, Riggs and Hewlett (1999), Pagliaroli (1999) have also found evidence to suggest that males are less motivated to learn French than females. The study by Netten, Riggs and Hewlett (1999) indicated that boys were less likely to study French after Grade 9. While 59% of the 380 participants who participated in the study indicated a desire to continue studying French in Grade 10, the majority of these participants were female by almost a 3 to 1 ratio. Of the 155 students dropping French (the study reported), approximately two-thirds were male. Furthermore, a British study conducted by Williams, Burden and Lanvers (2002) supports the notion that males are less motivated to learn French than females. In this study involving 228 students in Grades 7 to 9, motivational

differences were investigated between adolescent males and females toward the study of French and German. The results of this study indicated that girls expressed a significantly higher degree of desire to learn French than did the boys, and they also put forth more effort to learn the language.

Xin Ma (2007) reporting for 'Education for All Global Monitoring Report 2008 Education for All by 2015: will we make it?' notes that in language achievement and motivation, the gender differences in favour of girls in Botswana, Mauritius, and South Africa were small (27, 26, and 27 points, respectively). But the female advantage in Seychelles was large (65 points). On the other hand, although there was a case of gender differences in favour of boys as occurred in Tanzania, the male advantage (16 points) was much weaker than the female advantage as reported in earlier studies.

Researchers, such as Barrs and Pidgeon (2002) have tried to explain the language motivation difference between boys and girls. They argue that under-achieving boys remain unmotivated and demonstrate a particular resistance to revisiting and revising their own written work. Others, including Browne (1994) suggest that boys become less committed to writing as they get older and perceive writing as a passive, quiet, reflective activity and therefore a female activity. One outcome of this focusing of attention on the under-performance of boys has been the strongly held belief within the teaching profession (Myhill & Jones, 2005) not only that boys are naturally weaker at language than girls but also that boys do not like English, and especially that boys do not like writing.

Some linguists, on their part, have demonstrated a contrary opinion on language achievement and motivation between the genders. Muhammad and Mamuna (2013) carried out a study involving 240 twelfth-grade Pakistani students, 150 (63 male and 87 female) students belonged to the urban areas and 90 students (57 male and 33 female) belonged to the rural area, who had studied English for 11 years. The results of MANOVA analysis showed that there was no overall statistically significant difference between male and female participants in their motivation to learn English. Moreover, the univariate analysis of variance showed no significant differences between males and females in their parental encouragement, degree of instrumentality, English class anxiety, ethnocentrism, cultural identity, need for achievement, interest in foreign languages and motivational intensity. The study contradicts a large body of research but supports the present study which shows that there is no statistically significant

difference between boys and girls taught English language composition writing using the NBTA approach.

It is the activity-based learning tasks; contextualization, diversification, personalization, and visualization features of NBTA that seem to bring the boys' level of motivation up close to that of the girls, leveling out any major differences that may have existed.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the main findings of the study, its conclusions and the recommendations as well as suggestions on possible areas for further research. The purpose of the study was to establish the effect of Neurological Bimodal Teaching Approach on learner achievement and motivation in the learning of the English language composition writing in comparison to the conventional teaching approaches in the learning of the same.

5.2 Summary of the major findings of the study

From the pretest results, it was found that learners taught using NBTA and those taught using conventional teaching approaches were homogenous on achievement and motivation at the onset of the study since their mean scores showed no statistically significant difference. After the treatment, the mean scores of the experimental groups E1 and E2 were found to be statistically significantly different from those of the control groups C1 and C2. This implied that only the treatment influenced the difference in achievement between the experimental and the control groups, proving the superiority of NBTA over the conventional methods of teaching.

Upon testing each of the four hypotheses of the study, the following findings were realized.

(i) On the first hypothesis, it was found that there was a statistically significant difference in achievement in English language composition writing between learners who were taught using Neurological Bimodal Teaching approach and those taught using the conventional teaching approaches. This statistically significant difference in achievement proved that NBTA was more superior than the conventional teaching methods in the learning of English language composition writing. This finding, therefore, led to the rejection of the first hypothesis of the study.

(ii) The tests on the second hypothesis established that there was a statistically significant difference in motivation to learn English language between learners taught English language composition writing using Neurological Bimodal Teaching approach and those taught using conventional teaching approaches. This finding also proved that NBTA boosted learner motivation to learn English language composition writing more than did conventional teaching methods. Based on this finding, the second

hypothesis of the study was, therefore, rejected.

(iii) On hypothesis three of the study, it was found that there was no statistically significant difference in achievement in English language composition writing between boys and girls taught using Neurological Bimodal Teaching approach. This was a unique finding since the commonly held belief is that boys underperform in language achievement relative to girls. This finding led to the acceptance of hypothesis three of the study.

(iv) Tests on hypothesis four of the study indicated that there was no statistically significant difference in motivation to learn English language composition writing between boys and girls taught using Neurological Bimodal Teaching approach**.** This finding was contrary to findings of most research studies that report better motivation among girls than boys in language learning. Based on this finding, hypothesis four of the study was accepted.

5.3 Conclusions

From the findings of this study, the following conclusions were drawn:

(i) Teaching English language composition writing using Neurological Bimodal Teaching Approach improved learner achievement in language classrooms. This was based on the statistically significant difference on the posttest mean scores of the experimental and control groups, which favoured the experimental groups. This implied that the employment of NBTA in the teaching of English language composition in secondary schools improved learner achievement in the English language composition writing than did the conventional teaching methods. NBTA advocates contextualization, visualization, diversification, and personalization of learning. These four specific tactics engage the learners' both hemispheres of the brain leading to wholesome learning. This could have resulted in improved achievement among learners who had been exposed to NBTA. NBTA also incorporates instructional activities and strategies in the language classroom that access and stimulate both hemispheres of the brain, thereby complementing and reinforcing the acquisition of the target language by all learners, ultimately leading to improved language achievement among learners.

(ii) NBTA increased learner motivation in the learning of the English language composition writing. After the treatment, the posttest mean scores on SMQ showed

that the experimental groups outperformed the control groups. This implied that NBTA enhanced learner motivation than did the conventional teaching approaches. During the treatment using NBTA, students were involved in using language games, talking about students likes and wants, story books with personal connections, letting them undertake projects, photos and drawings or even jotting down what they said on the board or on a notebook. All this, among other features, are characteristics of the NBTA which may have been responsible for increased motivation scores among learners after the treatment.

(iii) NBTA leveled out any differences in achievement in English language composition writing between boys and girls taught using Neurological Bimodal Teaching approach. This was because from the posttest results of ELWAT, it was found that there was no statistically significant difference in achievement by gender. This finding demystified the long held belief that boys underperform in comparison with girls in the language classrooms. This finding also implied that motivation of students to learn English language composition writing can be realised if NBTA, instead of the conventional teaching methods, is preferred in the teaching English language. NBTA instructs that in language teaching, meaningful contexts should always be provided, especially for new input, and also if a teacher wanted to focus on a particular concept. When meaningful context is provided, the right side of the brain (R-Mode) complements and strengthens the intake operations of the right side of the brain (L-Mode), especially during more mechanically- oriented tasks. This leads to wholesome learning, boosting achievement among learners, especially the boys who seem to thrive more in mechanically oriented tasks advocated for by NBTA. Conventional teaching methods, such as lecture and question-answer seem to make concepts appear abstract to the boys. Therefore, their improved performance could have resulted from NBTA's features that entail more student engagement and more practically oriented tasks that concretized concepts for them. Thus, the gender gap difference in achievement was diminished by the utilization of NBTA.

(iv) NBTA increases boys' motivation in English language composition writing but does not make them surpass the girls' motivation. The boys' level of motivation is brought up to par with that of the girls, leading to similar motivation and achievement between them. This is because the posttest results on SMQ did not show any significant

difference by gender. This implied that NBTA was better than the conventional teaching methods in increasing the boys' motivation, which led to better achievement amongst them. Overall, students' achievement through increased motivation in the learning of English language composition writing favours both the boys and the girls. NBTA entails activity-based learning, contextualization (which grounds learning and appeals to learner interests and background), diversification of learning tasks, personalization of learning (which promotes a feeling of ownership in learners), and visualization which reduces abstractness of concepts. These features of NBTA seemed to bring the boys' level of motivation up close to that of the girls, leveling out any major differences that may have existed by gender.

5.4 Recommendations

The findings and conclusions of this study established that NBTA was a more superior approach than the conventional teaching methods with regard to achievement and motivation in the learning of English language composition writing among secondary school learners. Therefore, the researcher made the following recommendations:

(i) It is essential for educators to focus more keenly on English language composition writing through personalizing, contextualizing, visualizing, and diversifying classroom processes in order to capture the imagination and motivation of all learners and especially the boys.

(ii) Teachers should be made much more aware that varied teaching and learning strategies in composition writing are pivotal for students, especially male students who are relatively less good in writing. In order to sensitize the teachers on the strategies, universities and teacher training colleges should incorporate NBTA in their teacher training designs.

(iii) Educators should concentrate on students' motivation as a more indirect influence on student outcomes. This can be achieved by implementing NBTA in the teaching of English language instead of utilizing the conventional teaching approaches which have always returned unsatisfactory results. NBTA enhances learner engagement since its features are more activity-oriented and it also employs multi-channeled sensory stimulation to assist in its pedagogical objectives.

(iv) Curriculum developers, such as KICD should address gender inequities between boys and girls in academic settings by promoting equitable learning environment through designing of activities and provision of teaching and learning resources that cater for and appeal to both gender in the English language classrooms. NBTA is a safe teaching and learning strategy in the realization of this recommendation.

5.5 Suggestions for Further Research

Since the findings of this study established that NBTA boosted learners' motivation and achievement, the following suggestions for further research were made:

(i) Research could be carried out to determine the adequacy of the recommended English language teaching and learning resources to motivate learners during the English language teaching/learning processes.

(ii) Research could be undertaken to assess teacher training curricular to determine if teacher trainees graduate with comprehensive skills to enable them teach utilizing teaching and learning processes similar to those of NBTA.

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APPENDICES

APPENDIX A

ENGLISH LANGUAGE WRITING ACHIEVEMENT TEST (ELWAT): PRETEST

School……

Class:……ADM NO:……Gender:……

INSTRUCTIONS

- Read the following composition question carefully before doing anything else.
- On the spaces provided, write your composition in not more than 350 words using a pencil.
- Do not write your name anywhere on the question paper.
- You are free to make corrections on your work. Only ensure that your final work is legible.

QUESTION:

Write a composition beginning with the following sentence:

I cautiously approached the rowdy mob that appeared to be surrounding either somebody or something. Lo! A man had been killed
unfairly……...
……
……
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……

APPENDIX B

ENGLISH LANGUAGE WRITING ACHIEVEMENT TEST (ELWAT): POSTTEST

School……

Class:……ADM NO.:……Gender:…….

INSTRUCTIONS

- Read the following composition question carefully before doing anything else.
- On the spaces provided, write your composition in not more than 350 words using a pencil.
- Do not write your name anywhere on the question paper.
- You are free to make corrections on your work. Only ensure that your final work is legible.
- You are required to write the composition in 50 minutes.

QUESTION:

Write a composition ending with the following sentence:

That night, I sat and thought hard and long; and concluded that even if the doctors and nurses had to go on strike, they had no right to make that man undergo all that pain before finally dying……

……..……..……

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APPENDIX C

STUDENTS MOTIVATION QUESTIONNAIRE (SMQ)

The purpose of this questionnaire is to find out what you think about learning the English language in the last five weeks. Please indicate what your view is about each of the stated items.

INSTRUCTIONS

1. Read each item carefully and ensure that you have understood it before choosing what truly agrees with what you think.
2. Enclose in a square box the letter that corresponds with how you really feel about your experience during the learning of English using the new teaching method. Enclose only one of the choices.
3. The choices are: SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree, U = Undecided.
4. If you change your mind about an answer, you may cross it out neatly and circle another one.

Example: A student who agrees with the following statement would answer as follows:

Undertaking tasks in groups or in pairs was:

Stimulating SD D U A [SA]

ITEMS

Learning English composition writing was:

1. Fun SD D U A SA
2. Satisfying SD D U A SA
3. Informative SD D U A SA
4. Useful SD D U A SA

5. Boring SD D U A SA
6. Frustrating SD D U A SA
7. Hard SD D U A SA
8. Challenging SD D U A SA

Learning English composition writing was:

9. A pleasure SD D U A SA
10. A source of anxiety SD D U A SA
11. Fearful SD D U A SA
12. Too stressful SD D U A SA
13. Too demanding SD D U A SA
14. Exciting SD D U A SA

Learning English composition writing made me:

15. Appreciate written English SD D U A SA
16. Dislike written English SD D U A SA
17. Interested in written English SD D U A SA
18. Scared of written English SD D U A SA
19. Like written English SD D U A SA

Undertaking assignments after attending the English lessons made me:

20. Feel confident about written English SD D U A SA

21. Feel eager to learn written English SD D U A SA

22. Doubt my ability to learn written English SD D U A SA

23. Want to apply my knowledge to solve practical problems in written English:

SD D U A SA

24. Happy SD D U A SA

25. Excited SD D U A SA

26. Feel as if I was wasting my time SD D U A SA

27. Frustrated SD D U A SA

28. Unhappy SD D U A SA

APPENDIX D

FIVE-WEEK TEACHING MODULE

This module is intended to teach Form Two students on how to write a composition meant for a research study titled 'Effects of Neurological Bimodal Teaching Approach on Achievement And Motivation in Written English Across Gender in County Secondary Schools in Roret Division, Bureti Sub-County'.

By the end of the treatment the learner should be able to write a good composition observing the following:

(i) Relevance and Adequacy of content
(ii) Compositional Organization
(iii) Cohesion
(iv) Adequacy of Vocabulary for Purpose
(v) Grammar
(vi) Mechanical Accuracy I (Punctuation)
(vii) Mechanical Accuracy II (Spelling)

How to Write a Narrative Composition

Example: Narrative composition on **'Fire Incident'**

WEEK ONE, LESSON ONE:

Formulation of Central idea/Relevance and adequacy of content

Revisit with the learners the correct format and tone of a narrative composition. Use simple, clear language when communicating with the learners.

Stage 1

- During the lesson, bring into the class a video clip of a burning house (if possible), pictures, e.g. of a fire engine, fire engine siren, firefighters, charts, etc. related to the topic of composition.
- Learners discuss in pairs what each picture illustrates- the volunteers to tell class.
- Few learners to illustrate fire fighting (frantic dialogue, and movements among themselves; bystanders to converse (Dramatization)

- Teacher uses questioning strategies, e.g. is Rono right to say……..? Have you ever witnessed this? Have you watched a fire accident on Tv?
- What is happening on the video? What do you think is going on in the minds of the firefighters? What would you have done yourself?

Stage 2

Definition of 'Central idea'

Help learners understand the concept 'central idea' by providing a definition, examples and illustrations.

What is 'central idea'? (L-Mode)

A central idea is a running theme/what a text is generally talking about, e.g. an accident; an incident, such as a robbery; corruption, love, etc. The writer of the text extensively discusses the central idea as vividly as possible using descriptions, images, proverbs, idioms, etc. in order to capture the reader's full attention.

A central idea is the backbone of any composition.

Illustration:

For effective illustration, read out a short article and help them discover the 'central idea'.

Using one paragraph of a newspaper extract or extract from a text book circulated to every learner, read it out, let learners hazard guesses on the central idea. Provide the correct central idea.

Provide another extract illustrating a different idea and repeat the procedure above.

Stage 3

Formulation of a central idea

(i) Put learners into five groups. Let each group suggest at least 3 possible topics for a narrative composition, using the 'think-aloud' approach as they work through the strategy as you observe them. Ask questions like: what are some of the issues we write about? Hints learners can be given include: fighting fire, saving accident victims, terrorist victims, growing crops, keeping pets, shopping, etc. This activity could last for about five minutes.

(ii) When each group is through, write all their suggestions on the board as presented by the groups' representatives. Let learners Share with others. The critical element is to encourage students to find what their interests are and to make learning related to the student's life. Determine the best and agreeable topic by the majority.

(iii) Provide the students with a copy of reading material (e.g., expository article or model composition) with main ideas already highlighted. Guide them in the identification of the main idea(s).

(iv) Require that students engage in some type of active responding in discovering the main idea/ideas in (iv) above. Before you intervene to point out the main idea(s), let them have a discussion among themselves, listing down the main idea(s). This activity makes them active during learning.

(v) Explicitly recognize, praise, and reward the effort that a student puts into an assignment-no matter how imperfect the outcome. This will motivate them.

(vi) Agree with the learners on a topic from which you all will formulate the main idea(s). Help learners visualize the main idea(s) for the agreed topic by using brainstorming. Draw up the visual on the board based mostly on their suggestions which you cleverly guide. E,g. If the guided composition was: Write a composition of not more than three hundred words beginning: 'Everyone was running from different directions carrying a container of sorts…'. In this case, a possible central idea would be a burning house/building. Therefore, a brainstorming session would yield the following visual:

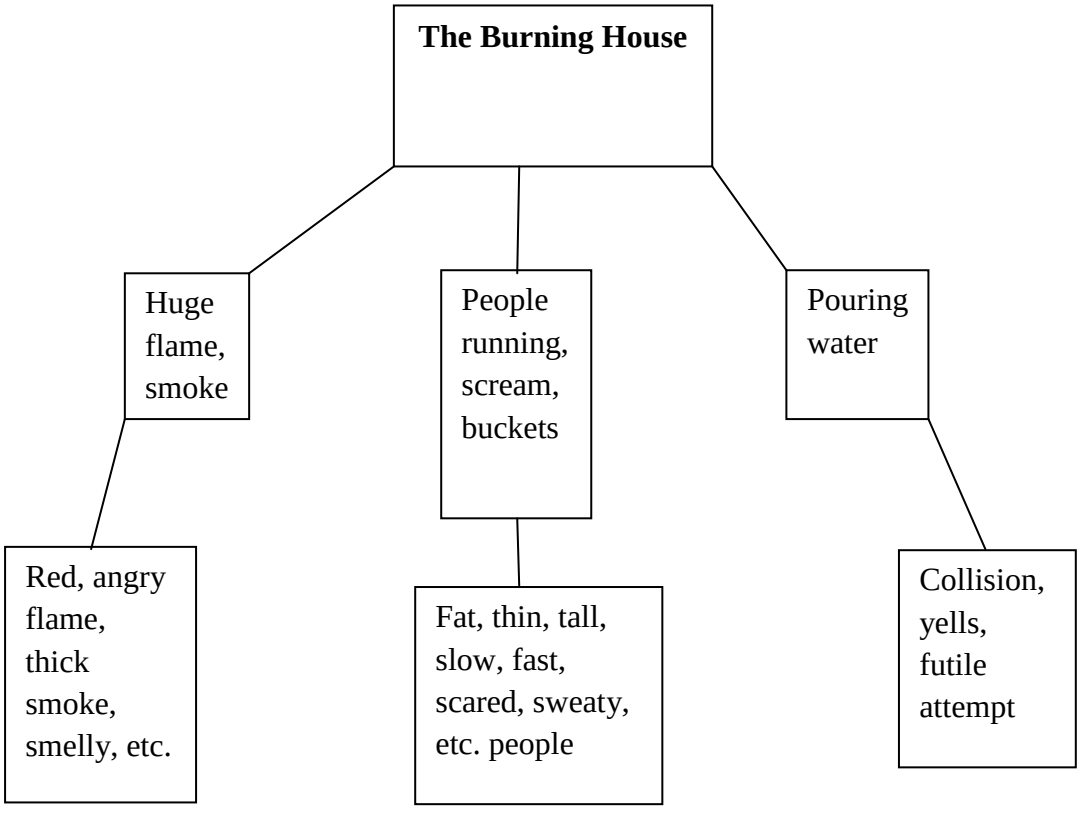

Figure 3: Brainstorming visual

Ask questions such as the following:

- Why have you proposed this topic?
- What experiences do you have of this topic?

    (i) How successful do you think the people's attempt to put out the fire will be?
    (ii) Do you think any official security, e.g. chief, police, will arrive?
    (iii) Do you think anybody will be injured during the melee?
    (iv) How much do you think will be saved from the fire?
    (v) Whose house is it?
    (vi) What do you think will happen to the affected family?
    (vii) What do you think are the causes of the blaze/fire? Let individual learners present their suggestions on this.

- In asking them these questions, you will be provoking them to think up more ideas for the topic.
- Ask the students to close their eyes and to imagine the action as vividly as possible; seeing the action in their mind's eye.
- Organize a fire fighting drama based on the visual above. Select volunteering learners to act out this scenario.

Provide explanations, examples, illustrations, etc. of the composition topic which the learners are familiar with. E.g. explain that fire accidents can happen in their homes, and their school.

- At the end of the class period, encourage the students to compare and add onto the notes provided in class as well as get academic assistance from peers and you.

Homework

Provide a short article and ask learners to read through it, determine the main idea and brainstorm on a plot visual of the same before the next lesson.

- Allow learners role in deciding when completed assignment will be handed in but they should not have so much leeway as to affect your teaching program.

WEEK ONE, LESSON TWO:

(a) Composition Organization

This involves:

(i) Clear organization of ideas

(ii) Economy and objectivity of language – not highly descriptive

(iii)Clear and sensible paragraphing

Step 1

Review the previous lesson on central idea(s). Spend about 5 minutes checking on last lesson's assignment and commenting on the learners responses before beginning on the day's lesson. This will ground them for the day's lesson.

Provide animated or clearly highlighted illustrations of sentences, paragraphs, whole texts, articles, etc (if use of projector is possible). (It is prudent to pick these from current literature set books, newspaper articles, etc. in order to contextualize learning).

Link them to the current lesson. E.g. explain that 'that is how ideas are organized and presented for the reader to follow the text easily.

Ask learners recall questions. E.g. 'Do you remember the burning house? What were some of the possible causes of the fire? Do you think it was wise of those people to try to put out the fire using buckets, cans, etc?

Step 2

Teacher Activities

Sketch a visual of a paragraph on the board, labeling the topic sentences, TS; and the supporting sentences from SS1, SS2, etc.

Explain the reason for paragraphing: helps a writer present and adequately develop one concept/idea after another.

Paragraph: Definition:

Activity

Teacher plays the F1 KIE video demonstrating the structure of a paragraph; and its definition.

After the video presentation, teacher asks the learners to repeat the definition of a paragraph in unison.

A **paragraph** can be defined as a group of closely related sentences that develop a **central idea**; it is a series of sentences related to a single topic.

A paragraph conventionally begins on a new line, which is sometimes **indented**.

PARAGRAPH DEVELOPMENT: Writing topic, supporting and concluding sentences

Activity:

Teacher runs the Teaching slides for the learners to observe the structure of a paragraph.

Define:

Topic sentence

Supporting sentence(s)

Concluding sentence(s) **(Ref. Notes p. 1)**

Step 3

Together with the learners, list the main theme/ideas of the 'Burning house' which the learners already know.

Let learners consider each of the various ideas under the 'burning house' and rank them in order of likely occurrence, i.e. which one is likely to happen first. Carefully consider the various view points before agreeing on some ranking.

Provide the brainstormed visual again.

From the 'Burning house' help identify topic, supporting sentences, and concluding sentences.

Teacher Activities

Teacher reads out to the class MORE EXAMPLES of topic, supporting and concluding sentences. (**Ref. Notes P.2**)

Step 4

Class activity:

In each of the examples below there is a topic sentence. Write THREE SUPPORTING SENTENCES in the blank spaces under each one and ONE CONCLUDING SENTENCE.

The first one has been done for you: **(Ref. Notes P.2-3)**

Model a paragraph from 'The Burning house' as the learners copy it onto their exercise books.

Activities:

For **group work**, provide some central ideas, e.g. an arrested gangster, a school visit by the Governor, market day in my village, a road accident, a new teacher in our school, etc. Let students **discuss** amongst themselves the most appropriate supporting sentences and

concluding sentences for the above central ideas, which can help them develop good paragraphs. Let group representatives present completed sentences.

For **individual** assignments, provide more central, personalised ideas, such as my Christmas present, my grandmother's homestead, my first punishment in school, a school fight, etc.

Specify the number of supporting sentences for a paragraph by the individual learners.

Supervise learners as they write out own paragraphs; pick the best and have them read out by the owners to the rest of the class.

Explicitly recognize, praise, and reward the effort that a student puts into the assignment-no matter how imperfect the outcome. This will motivate them.

Homework

Allow learners role in deciding topic of paragraph to write as long as they are going to observe good paragraph structure. This will ensure that paragraphs address issues familiar to learners.

Ask questions such as the following to guide them in constructing their assignment paragraphs:

- Which is the topic sentence in your paragraph?
- Why do you think that is the topic sentence?
- Which is the first supporting sentence? Which are the others?
- What has the class learnt from how a paragraph is organized?

The best presented paragraph will be used in the next lesson.

WEEK TWO, LESSON ONE

Objective And Descriptive Writing

Activity:

Provide a **video or a large size picture** of a traffic jam in a big town which the learners themselves drew. Let learners watch it.

Alternatively, provide an oral imaginary description of a traffic jam in a city lasting several hours.

Write an example of the description of the jam on the board for the learners to see.

Example: "There was a long line of traffic on Uhuru Highway today, probably four kilometers long, and it took me 45 minutes to get to the Bus Stage."

Ask the following question:

Do you get any indication of how this driver feels about the subject (the traffic)? If you can't, then what kind of description is it?

Let us now get down to what descriptive writing is, as well as its types.

Description Writing:

Definition:

Description is the style of writing whereby the author relates to the audience a visual picture of the subject he/she is describing. The author attempts to convey as many of the senses related to the subject as possible for a clearer understanding of what is being described.

There are two types of description: *subjective* and *objective*.

(i) **Subjective** description conveys the writer's personal view or impression of the subject being described. An example of subjective description is a restaurant or film review. Subjective description is to be *avoided* when trying to convey to the reader only what is being described--without opinion. *Objective* description does this by subordinating the writer's personal responses while emphasizing the actual qualities of what is being described. E.g. the descriptions of the traffic jam above. This involves choosing our words very deliberately.

(ii) **Objective Description:**

In Objective description, words are "neutral" or "denotative" because they aren't likely to carry any emotional charge. They convey information but not much feeling about that information. They are neutral because they don't make you feel positive or negative about the subject they describe.

Activity:

Have students repeat the definitions of objective and descriptive language in **unison**, repeating them after you.

Clues for description

The following clues will help us evaluate our descriptive writing.

- In describing, am I accurately describing the subject/object objectively rather than subjectively?
- Have I looked at each word and thought about if it expresses what I want it to?
- Have I organized my details in an orderly, clear fashion?

Purpose of descriptive writing:

The purpose of descriptive writing is to make our readers see, feel, and hear what we have seen, felt, and heard. Whether we are describing a person, a place, or a thing, our aim is to reveal a subject through vivid and carefully selected details.

Activity:

Reading

In the following paragraph, observe how the writer moves clearly from a description of the head of the clown (in sentences two, three, and four), to the body (sentences five, six, seven, and eight), to the unicycle underneath (sentence nine). Notice also how the concluding sentence helps to tie the paragraph together by emphasizing the personal value of this gift.

Paragraph 1) A Friendly Clown (Ref. Notes p.4)

Paragraph 2)

Here is another descriptive paragraph involving Supporting a Topic Sentence with Specific Details. See how it has been reworded and rearranged.

The Blond Guitar (Ref. Notes p.4)

In the next descriptive paragraph, the student writer focuses less on the physical appearance of her pet than on the cat's habits and actions.

Paragraph 3)

Gregory (Ref. Notes p.5)

In the following paragraph Joyce Carol Oates affectionately describes the "single-room schoolhouse" she attended from first through fifth grades. Notice how she appeals to our sense of smell before moving on to describe the layout and contents of the room.

Paragraph 4)

Inside School (Ref. Notes p.5)

Activity:

Using the rows in the class, assign sentence one of any of the descriptive paragraphs above to Row1, sentence two to R2, etc. Organize for choral reading where Row2 reads after Row1, etc. till the end of the description. This can be repeated as many times as the teacher likes.

Actvity2:

Get learners to sketch on the board the smiling toy, the blond guitar, and the Persian cat based on the descriptions on the paragraphs.

Let the rest of the class comment on the board drawings. Ask questions of the drawings – questions touching on descriptions.

Homework

Ask learners to write objective descriptions of own choice topics of not more than seven lines. You can help brainstorm on some of the possible topics.

WEEK TWO, LESSON TWO

Cohesion

(i) Use of appropriate connectors

(ii) Variety of sentence structure (reasonable mix of simple, compound, complex, compound-complex sentences

(iii)Imagination, originality and maturity of ideas

Step 1

Teacher uses questioning strategies, e.g. When we say there is cohesion among tribes in Kenya, what do we mean? What makes people of a country cohesive? Answers include: national symbols like the flag; the presidency, parliament, National days, e.g. Mashujaa Day; national institutions – schools, universities, etc. Or What do you think? What else unites a country?

So what do you do to make the sentences in your paragraphs united and related? Do you use their parliament? (Humour)

Activity:

Provide own appropriate example of a cohesive paragraph.

Provide model extracts from newspapers, set books, etc. of coherent paragraphs.

Review the previous lessons on main idea and organization of ideas in a paragraph.

Step 2

Define:

- Connector, and examples

Activity:

Pick a well written learner's paragraph from last lesson's assignment and help rewrite it with connectors, such as although, however, moreover, etc.

- Guide the learners through identification of connectors from the model paragraphs.
- Provide more examples of paragraphs with connectors.
- In groups, let learners convert their previous paragraphs into ones with connectors.
- Towards the end of each class period, the group reps present their groups paragraph. Pick the best for further illustration and commendation. In this case let individual learners present paragraphs with connectors while the rest of the class score them for proper use of connectors and originality. Decide on a reward to give to the best presenter…e.g. half a loaf for each member of the winning group.

The Invisible Book activity- a volunteer pretends to read a paragraph from an invisible book. They must use style and language to mimic the written word. This helps them experience the writer's voice.

Before end of lesson, require that students engage in some type of active responding to teacher instruction (e.g., students read the best cohesive paragraph in unison after the teacher).

WEEK THREE, LESSON ONE

Variety of sentence structure (reasonable mix of simple, compound, complex, compound-complex sentences

Step 1

Let two volunteer students participate in two sets of dialogues – one only in simple sentences; and the same dialogue but in various types of sentences. Students may just act out by orally dramatically reading the following dialogues: (**Ref. notes p.6**).

Let students decide which the better dialogue is.

Explain that it is natural for people to speak in a variety of sentences.

Present two **paragraphs**, one plain with no connectors and in one sentence type, e.g. all simple sentences; and another with connectors and varieties of sentences. Ask the learners to compare and contrast them, and explain which of the two is more sensible. (**Ref notes for examples, P. 6-7**).

Step 2

Explain reason for employment of sentence varieties – e,g. to reflect a realistic conversational situation; in normal life men tend to use a variety of sentences in conversations.

Define:

Various sentence types, providing good examples familiar to the learners. (**Ref Notes p.7-9**)

Step 3

- In groups, have learners construct objective paragraphs with diverse sentence types and connectors.
- Pick the best and have them read out to the class. Explicitly recognize, praise, and reward the effort that a student puts into an assignment-no matter how imperfect the outcome. This will motivate them.
- For class assignment, specify length of composition to be written. Supervise the task, mark as you provide comments. Determine the best and have it read out to the class. Explicitly reward for good work done.
- Provide the students with more copies of reading material with connectors; diverse sentences.
- Encourage students to read as many of the others' paragraphs suggesting corrections, if any.

Ask questions such as the following about the current lesson:

- How did you like the topic?
- What would you prefer – a paragraph with connectors and varied sentences or one without?

Ask the learners to close their eyes, think of a main idea and supporting ideas; and imagine writing a paragraph with connectors and varied sentences. Ask them to imagine the action in the paragraph as vividly as possible, repeating the sequence of the verbs and seeing the action in their mind's eye.

Homework

Provide some connectors and ask learners to construct a paragraph utilizing them. Learners are asked to seek assistance from their peers if they wish.

WEEK THREE, LESSON TWO

Teaching Grammar And Mechanics

Expressing the past time in English using the simple Past tense, Past Continuous, Past perfect, Past Perfect Continuous

Step 1

Activity 1:

Provide various sentences, all expressing the past and let learners read them out in unison after you.

(i) The Class Secretary collected our books for marking yesterday.
(ii) My mother liked oranges when she was young.
(iii) I used to speak in broken English when I was in primary school.
(iv) The leader quickly rushed and called in more people to help.
(v) *Where did you go on holiday last December?*
(vi) *What was your mother doing when I rang you?*
(vii) *We weren't doing anything special when the teacher came in.*
(viii) *Mr. Cheruiyot had already begun the exam when I arrived.*
(ix) *The gardener had been weeding the school potatoes when he heard the cry of the infant in the bush.*

Activity 2:

Let learners be in pairs to dramatize questions (v) and (vi) above. One asks the other the question and expects a response framed in good sentence. After a moment, the teacher selects a few pairs to dramatize to the whole class.

Step 2

Teacher now explains the various tenses used for expressing the past time; providing definitions, illustrations, and seeking learners' own examples. Examples should be from everyday situations.

The Simple Past tense

Definition:

The simple past tense is used to express a finished past action which occurs at a specific moment in the past.

Examples:

Teacher examples:

She sold her house last month.
They didn't want to visit Malindi when they were in Mombasa.
Where did you go on holiday last December?

Learners' examples:

Exercise:

Test your knowledge on the simple past

Q: Where _____ on vacation last summer?

- went you
- did you went
- did you go

Q: They _____ until 5 o'clock in the afternoon.

- not arrived
- didn't arrive
- doesn't arrive

Q: We _____ a bus to Chicago last week.

- taked
- did took
- too

Q: _____ to the party last weekend?

- Did you go
- Went you
- Where went

Q: They _____ a swimming pool into their backyard last summer.

- did put
- put
- putted

Q: Where _____ this afternoon?

- did go
- did he go
- did he went

They _____ the play very much.

- didn't enjoys
- didn't enjoyed
- didn't enjoy

Past Continuous

The past continuous is used to express something that is happening at a precise moment in the past. The past continuous is often used to express an interrupted action.

Examples:

I was cooking dinner when you telephoned.
What was he doing when you arrived?
They weren't doing anything special when you interrupted them.

Past Perfect

The past perfect is used to talk about an action that was finished before another action in the past. This form is especially useful for giving reasons for a decision that was made in the past.

Examples:

They had researched the market carefully before they decided to open a new branch.
Mrs Rono had already begun the meeting when I arrived.

Past Perfect Continuous

The past perfect continuous is used to express the duration of an activity up to another point in time in the past. It is also used to stress that a certain activity had been going on before something important happened. **Examples:**

We had been waiting for two hours when they finally arrived.
They had been working on the report when he telephoned.

Chebet had been studying for four hours when he came home.
Korir had been driving four over six hours when he finally pulled over to have lunch.

WEEK FOUR, LESSON ONE

Mechanical Accuracy I (Punctuation)

Provide a paragraph without punctuation marks. Let a learner read out the paragraph.

Provide another paragraph with punctuation marks. Let a learner read out the paragraph.
Let learners comment on the two paragraphs.

Ask learners if they know of capitalization and let them name the various punctuation marks.

Capitalization

Learning proper capitalization is critical in writing. For example, every new sentence begins with a capital letter, and all proper nouns (names of people and places) are begun with capital letters regardless of their positions in the sentence.

Punctuation

Definition:

Punctuation marks are *signposts* used by writers to give directions to their readers about which way a sentence is going. Using punctuation properly is one of the most crucial elements in making the meaning of the sentence absolutely clear. Take a favorite example: "Let's eat Grandma!" becomes considerably less worrisome when a single comma is added … "Let's eat, Grandma!"

Do you now realize how important a punctuation mark is?

Uses of the Punctuation Marks

(i) The Full Stop (.)

- Marks the end of a sentence.

I will go to the zoo**.**

- Follows most initials.

John F**.** Kennedy

- Follows most abbreviations. E.g. Jan**.,** Rev**.**

(ii) The Apostrphe (')

- Used to show ownership of an object.

Tim**'**s hat.

- Used to show that letters have been missed out (Contraction).

I don**'**t know what happened.

(iii) The Question Mark (?)

- Marks the end of a direct question.

Why are you late**? Or** How do you know**?**

(iv) The Comma (,)

- Used to separate three or more single items on a list.

They ate pears**,** apples**,** plums**,** grapes and damsons.

- Used to indicate a slight pause in a sentence.

I wore my favourite dress**,** the blue one.

- Used to separate off parts of a sentence.

The teacher**,**Mr Lang'at**,** looked up.

(v) The Speech Marks (" ")

- Placed around what is said.

Melissa said, **"**You sit there**"**.

- Used round a quotation within another quotation.

Melissa said, **"**I told him to sit there, but he said **'**No**'** to me**"**.

(vi) The Exclamation Mark (!)

- Used after something is shouted.

"Help**!**"

- Used after an order is given.

"Come here**!**"

- Used after a strong feeling is expressed.

"I am so unhappy**!**"

(vii) The Semi-colon (;)

- Used to indicate a pause longer than a comma but shorter than a full stop.

I only ate one cake for tea**;** I wish I had eaten two.

- Used to separate groups of more than one word in a list.

"I took two books**;** four or five pencils**;** three pens**;** and a ruler.

(viii) The Colon (:)

- Used to introduce a quotation.

The farmer said**:** "Don't put all your eggs in one basket."

- Used before dialogue in a script.

Cat**:** Lunch!

Mouse**:** You'll be lucky.

- Used to introduce a list.

We will need**:** Paper, pens, pencils.

- Used to join two separate words together to form a new expression. E.g.

Box-office, Fairy-tale

(Can you think of any other words which can be joined together using a hyphen to make a new expression?)

(ix) The Brackets ( )

- Used to separate a word or phrase from the rest of the sentence, while providing extra information.

The dermatologist **(**skin specialist**)** looked at the back of my knee and gave me some cream for the sore patch of skin.

(x) The Dash (-)

- Used as a sign of interruption.

The police-officer began, "The reason why I am here-"

"I don't care why you are here," interrupted the man.

Activity

FILL IN THE PUNCTUATION

A young boy has written this story, but he does not know about punctuation. Can you put in the capital letters, full-stops, commas, question marks, exclamation marks and speech marks for him?

morris the martian was flying around the solar system one day when he saw a strange light in front of him what is that he thought to himself morris was scared but he flew a little bit closer so that he could see it better hello he called out there was no reply hello is anyone there he called but again there was no reply suddenly a creature appeared in front of the light boo it shouted poor morris was really scared and he flew off home and hid under his bed.

Source: Mark Warner

This is the correct version of the text:

Morris the Martian was flying around the Solar System one day, when he saw a strange light in front of him.

What is that? he thought to himself. Morris was scared, but he flew a little bit closer so that he could see it better. "Hello," he called out. There was no reply.

"Hello. Is anyone there?" he called, but again there was no reply. Suddenly a creature appeared in front of the light.

"BOO!" it shouted. Poor Morris was really scared and he flew off home and hid under his bed.

Activity:

Capital Letters:

Can You Re-Write This Passage And Correct Any Missing Capital Letters?

it was a freezing cold day. It had been snowing all night in london. tom and i went outside to play in the fresh snow. we hadn't seen this much snow since we went skiing in france last year! Uncle toby was right when he said that we would wake up this morning and see white. Tom and I decided to make a snowman in the garden. he started to roll a huge ball for the body whilst i worked on the head. Then we ran inside and asked mum for a carrot for the nose. we then found pebbles for the eyes and mouth. we called our snowman jack.

Fill in the question mark:

What Who Where When Why Which

Fill in the Question Mark:

WHAT time is it

WHO are you

WHERE is the bus

WHEN will it be Eid

WHY is it not ready yet

WHICH one is for me

Fill in the commas:

Commas

Commas are used in lists of nouns (names of people, places and objects) to separate them, except for the last one which is usually separated with ‘and’.

Example: On our holiday we visited Belgium, France, Luxembourg, Germany, Switzerland, Italy, Monaco and France.

Task:

Write these sentences in your exercise book, inserting commas in the correct places.

1. Humans have incisor canine and molar teeth.
2. Parts of the digestive system include the stomach large intestine, small intestine and gullet.
3. Major organs of the body include the brain liver heart lungs and kidneys.
4. Parts of a flower include the leaves stamen stigma petals and sepal.
5. Common birds include the sparrow blackbird blue-tit chaffinch and magpie.
6. Some types of metals are iron steel copper silver brass and aluminium.
7. Materials can be light heavy waterproof rough smooth flexible opaque or transparent.
8. Limestone granite slate and sandstone are some of the rocks found in Britain.

9. Water can evaporate boil freeze melt and condense.

10. Push pull magnetism gravity and friction are types of force.

Task:

Speech marks

Rewrite the speech into sentences using speech marks

You will be feeling better very soon little dog.

Do you like my super hero costume?

I'm going to score the next goal so that we can win the match!

Hello George. How are you feeling today?

I'm the captain of the Black Pearl.

Help! I 've lost my kitten. Have you seen her?

My leg is feeling much better now. Thank you.

I'm feeling so angry... I could scream!

Task:

Put the speech marks in the correct places in the sentences below:

1) What time is it? asked Kevin.

2) I want chicken for dinner, said Martin.

3) Can I play on the computer Mum? asked Simon.

4) I would like an ice cream please, said Sarah.

5) That costs ksh 12.99 said the shop-keeper.

6) Would you like to read a book? asked the teacher.

7) John hit me, said Henry.

8) Where is the cheese? asked Max.

9) It is time to go to assembly, said the teacher.

10) What is 7 x 2? asked Mrs Terer.

11) Hooray shouted the children.

WEEK FOUR, LESSON TWO

Mechanical Accuracy Ii (Spelling)

Many people, including students in any institution of learning, such as post graduate students in the university have problems spelling English words correctly. Surprisingly, such persons have never nurtured the habit of using the dictionary to improve their performance in this

troublesome area of the language. It is vital that we all spend time with the dictionary ascertaining correct spellings of English words.

Activity: Rapid fire spelling drill

Provide at least 10 common words but which are commonly misspelled. **(Ref. Notes)**

Let us now consider some of the areas that are important in the generation of spelling errors among the English language learners.

Misspelling as a result of MTI (Ref. Notes)

Insertion of extra letters (Ref. Notes)

(i) Use simple, clear language when communicating with the learners.

Helping learners with spellings:

Activities

1) Make a class **dictionary**, which learners can refer to when they are writing.

2) Ask the learners to create some **mnemonics** to help remember the spellings of the above words.

For example:

Boys
Eating
Custard
Are
Usually
Sloppy
Eaters

Big
Elephants
Are
Ugly

T
I
F
U
L

There is always a **LIE** in BE**LIE**VE

Task:

Think up mnemonics to help remember the following words:

Deadline, accommodation,

When they have made mnemonics, let them decorate the classroom with them, so that they can easily refer to them if they forget them.

Spelling game:

Randomly pick out any three learners to spell one word, one letter each. In this spelling game, allow students to win praise, points, privileges, or rewards to help promote friendly competition between student teams; or use puzzles, riddles, or other novel vehicles to kindle student interest.

Spelling race:

Provide a word or phrase that is normally misspelled, e.g. *seating arrangement*. Pick out one volunteer student to spell the word on the board. If he/she misspells the word, anyone who rushes and reaches the board first gets an opportunity to spell the word. This goes on till the correct answer is provided. Even if the answer has been provided, the teacher can pretend nobody has got it right.

Design a class competition where learners test you too.

Let learners Share with others

Let learners provide list of words they find problematic to spell.

Ask lots of questions, such as:

- Which other words do you find problematic to spell? Why?
- How often do you use the dictionary to check proper spellings of words?

How to help learners Visualize

Instruct learners to close their eyes and visualize the spellings of the following words:

Receive, pronunciation, seating arrangement, occurred, deadline, Surprise, caught, heard, know, didn't, alright, beautiful, it's, mother, there, their, new, knew.

Without opening their eyes, let them spell the words out.
Let them write spellings of words in the air with their fingers, their eyes closed.

Bring into the class, models, pictures, charts, real objects, etc. related to the topic of composition.

Provide explanations of spelling rules, examples, illustrations, etc. which the learners are familiar with.

WEEK FIVE, LESSON ONE

Introduction of composition topic

The teacher introduces a predetermined topic that is common to both experimental groups.

Help learners in planning the plot of the composition so that they will be well guided during the actual writing. During this stage, most of the ideas to be adopted should come from the learners themselves, with the teacher steering the learners' suggestions to a desired direction. (**A topic will be provided for this exercise**)

WEEK FIVE, LESSON TWO

Timed composition writing

Using the plot developed in the previous lesson, the teacher instructs learners to write a narrative composition in about 350 words in 40 minutes, observing as much as possible the major areas explored during the treatment.

The compositions are collected after 40 minutes.

THANK YOU

APPENDIX E

COMPOSITION SCORING CRITERIA

Introduction

Writing is a very demanding task, requiring the orchestration of a variety of cognitive resources. It is important to master important writing processes, skills, and knowledge involved in planning, drafting, and revising text. Learners should be directly taught strategies that facilitate the execution of each of these processes; as well as the knowledge and skills needed to carry out these strategies. Subsequently, during assessment, attention should be paid to these writing processes, skills and knowledge.

The following are possible scoring areas for composition assessment:

Central Idea and Analysis
Supporting Material
Organization
Expression (diction and sentence style)
Literacy (grammar and mechanics)

Composition writing: Preparation

(i) Planning stage
(ii) Drafting stage
(iii)Revising text stage

Scoring areas explained

(b) Central idea and analysis (12mks)

(i) Learner is clear on topic of composition. (2mks)
(ii) Relevance to topic – sticking to topic, writing on given subject, proper interpretation of topic/subject/given question. (2mks)
(iii)Clear coherence (2mks)
(iv)Rubric/instructions followed – start or end with statement (if asked) (2mks)
(v) Brevity – how effectively it communicates. As per given number of words. Let them simplify the plot at the planning stage to avoid unnecessary length. Penalize for exceeding given limit. (2mks)

(vi) Correct format and tone – penalize if wrong. (2mks)

(c) Supporting Material (10mks)

(i) Good and proper use of stylistic devices, e.g. similes, metaphors, personification, symbolism, etc. (at least 3@1mk = 3mks)

(ii) Use, proper use, and wording of idioms and proverbs. (at least 3@1mk = 3mks)

(iii) Proper use of commonly used expressions, such as whereby, we went hunting, no sooner…..than, etc. (2mks)

(iv) Proper vocabulary (at least 4 not commonly familiar vocabularies @1/2mk = 2mks)

(d) Organization (5mks)

(iv) Clear organization of ideas (2mks)

(v) Economy and objectivity of language – not highly descriptive (1mk)

(vi) Clear and sensible paragraphing (2mks)

(e) Expression (diction and sentence style) (10mks)

(iv) Use of appropriate connectors (4 and more used@1/2mk = 2mk)

(v) Variety of sentence structure (reasonable mix of simple, compound, complex, compound-complex sentences (3mks)

(vi) Frequent use of the passive (1mk)

(vii) Avoidance of the use of the first person – i.e. I, we (1mk)

(viii) Imagination, originality and maturity of ideas (3mks)

(f) Literacy (grammar and mechanics) (3mks)

Accuracy of language:

(i) Correct spelling, punctuations, tenses (penalize up to 4 misspellings@1/4mk, penalize up to 4 tense mistakes@1/4mk, award 1/2mk for correct punctuation)

(ii) Misnomer, letter placement in words (1/2mk)

Identification of errors

Types of errors

(a) Minor errors (Ignore these errors**)**

Include the following:

Wrong spelling of a difficult word

Possible tense error

Omission of a letter that does not cause serious change in meaning

Missing punctuation, such as comma, which does not distort the meaning

(b) Gross errors (Penalize these errors by quarter mark once in a sentence as explained in f (i and ii**)** above.

Gross errors include the following:

- Any error of agreement
- Serious tense error
- Spelling and misuse of elementary vocabulary
- Punctuation errors which cause serious lack of communication
- Elementary errors of sentence construction
- Ridiculous use of idiom that affects communication
- Misuse of common prepositions

Give credit for:

- Frequent use of the passive
- Clear organization of ideas – sequencing
- Economy and objectivity of language – i.e. not highly descriptive
- Avoidance of the use of the first person – i.e. I, we
- Use of appropriate connectors
- Clear and sensible paragraphing
- Accuracy of language
- Variety of sentence structure
- Correct spelling, punctuation, tenses
- Good and proper use of stylistic devices
- Imagination, originality and maturity of ideas

APPENDIX F:

RESEARCH AUTHORIZATION LETTER

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/15/63334/8147**

Date: **13th November, 2015**

John Kipkorir Bett
Egerton University
P.O. Box 536-20115
EGERTON.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Effects of neurological bimodal teaching approach on learner achievement and motivation to learn english language in county public secondary schools in Kericho County, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Kericho County** for a period ending **4th November, 2016.**

You are advised to report to **the County Commissioner and the County Director of Education, Kericho County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. S. K. LANGAT, OGW
FOR: DIRECTOR GENERAL/CEO

Copy to:

The County Commissioner
Kericho County.

The County Director of Education
Kericho County.

National Commission for Science, Technology and Innovation is ISO 9001: 2008 Certified

APPENDIX G

RESEARCH PERMIT

THIS IS TO CERTIFY THAT:
MR. JOHN KIPKORIR BETT
of EGERTON UNIVERSITY, 0-20115
Egerton,has been permitted to conduct
research in *Kericho County*

on the topic: *EFFECTS OF NEUROLOGICAL BIMODAL TEACHING APPROACH ON LEARNER ACHIEVEMENT AND MOTIVATION TO LEARN ENGLISH LANGUAGE IN COUNTY PUBLIC SECONDARY SCHOOLS IN KERICHO COUNTY, KENYA*

for the period ending:
4th November,2016

.....
Applicant's Signature

Permit No : NACOSTI/P/15/63334/8147
Date Of Issue : 16th November,2015
Fee Recieved :Ksh 2,000

.....
Director General
National Commission for Science, Technology & Innovation