

**SMASSE IN – SERVICE TRAINING AND K .C. S. E EXAMINATIONS
PERFORMANCE IN BIOLOGY AT TABAGON GIRLS SECONDARY
SCHOOL BARINGO DISTRICT- KENYA.**

**A RESEARCH PROJECT REPORT PRESENTED TO THE
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KAMPALA INTERNATIONAL UNIVERSITY**

**IN PARTIAL FULFILLMENT OF REQUIREMENTS FOR THE
DEGREE OF BACHELOR OF EDUCATION SCIENCE**

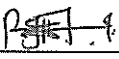
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AUGUST 2007

DECLARATION

This is to ascertain that this research report is my work and it has not been presented for an award of a degree or diploma in any other university.

Signature 

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Student's name

APPROVAL

This is to certify that this research has been submitted for examination with my approval as university supervisor.

Signature:



Supervisor's Name:

Kiweewa Emmanuel

Date

DEDICATION

This research will remain dedicated to my dad, mum, brother and sisters for their moral support through my study period

ACKNOWLEDGEMENT

I recognize the effort of my research supervisor. Mr. Emmanuel Kiweewa for his suggestion, guidance and moral support towards this research project. Many thanks goes to the teachers and administrator of Tabagon secondary school for their assistance in data collection. I cannot forget my beloved dad for the financial assistance in writing this research project.

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ABSTRACT

Persistent miserable performance in mathematics and science in Kenya National examination has raised a lot of concern to various stakeholders. In reaction to this poor performance the ministry of Education set up in SMASSE – service training for the teachers of science and mathematics. SMASSE in service training in biology results at Tabagon secondary school in Baringo District form four K C S E results were used thus Ex-post factor research design was employed. The research also involved the implementation of SMASSE concepts and the results were obtained from the academic department. The data from K C S E results were summarized in form of tables and description statistic was used to analyze the data. The results were discussed to find out if there existed a relation ship between the pre SMASSE and discussed to find out if there existed a relationship between the pre-SMASSE and post SMASSE period. The results revealed that SMASSE project hat a positive impact on the K C S E biology results. The researcher recommended that there should be a continued training even after a teacher completing the four cycles.

LIST OF ABBREVIATION

ASEI	- Activity, student, experiment, improvisation.
INSET	- In service, Education and training
K C S E	- Kenya Certificate of secondary Education.
MOEST	-ministry of education and technology.
PDSI	-plan, Do, see and improve.
SMASSE	- strengthening of mathematics and science in secondary education.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Rationale of the study

1.2 Background information

Analysis of national examination clearly reveals that poor performance in biology is a perennial ordeal nationwide. This miserable performance has elicited a lot of concern to various stakeholders. Tabagon Girls Secondary School is not an exception. Despite a host of many factors attributed to this dismal performance, the researchers have underpinned the mode of teaching and student involvement as the most rampant causes, Ramoni (E. A Standard, April 3, 2004)

As an attempt to counter this poor performance, the Kenya government through the Ministry of Science and Education and Technology (MOEST) in conjunction with Japanese agency, JICA started so as to alienate the teaching and learning of science and mathematics.

SMASSE – INSET was ushered in Kenya education scene in July 1998 where it operated on pilot basis in selected district till the year 2004.

The pilot basis by July 1998 was Kisii, Gucha, Kakamega, Kajiado, Makueni, Muranga, Butere Mumias and Lugari.

Source: a paper on INSET objectives, cycle one of district inset, 2004 Uasin Gishu district.

The scope of coverage was extended to cover the following District by October 2000, which included Meru south, Kilifi, Taita Taveta, Baringo, Kiambu and Garissa.

Source: a paper on INSET objectives, cycle one INSET 2004 Uasin Gishu District

Pilot phase of the project was implemented and came to an end by 30th June 2003 ushering in phase two of SMASSE project, which covers all Districts within the republic of Kenya. SMASSE in-service training is made of four cycles with each cycle designed to address specific issue at which then yield INSET objectives.

Baringo District was in pilot phase of the project and it was also covered in the second phase like any other district in the republic of Kenya. This implied that Tabagon Girls Secondary School in Baringo district benefited from in-service training the intention of the research was to develop a complete picture of the impact of SMASSE-INSET in teaching of biology in relation to K.C.S.E performance in Tabagon girls Secondary School.

1.3 Problem Statement

There has been a general poor performance in biology national over the years. For example in the year 2000 it has been estimated that the students who sat for the biology K. C.S. E examinations stand to be below 30 percent With the mean grade of D+.

Tabagon girl's secondary school teachers participated in SMASSE in-service training in the year 2002. Post-SMASSE results in biology indicated slight improvements in the performance of the students taught by the teachers who under went in-service training. This is what prompted the researcher to carry out a study on the impact of SMASSE in-service training on the performance of students Tabagon girls secondary school.

1.4 Purpose of the study.

The research was geared towards investigating the relationship between the SMASSE in –service training and performance in K C S E for pre-SMASSE and post- SMASSE periods.

1.5 Research objectives

The research was conducted to: -

General objectives

This study was determined the effect of SMASSE in-service training of teachers on the performance of biology students in K C S E examination.

Specific objectives

- I. To find out whether teachers implemented the SMASSE in-service training concept in their teaching after they were in - serviced.
- II. To find out whether there is relationship between pre SMASSE and post SMASSE years
(2002, 2003, 2004, 2005, 2006,) and pre-SMASSE years (2000, 2001).
- III. To investigate whether there is an impact of SMASSE in – service training on the K C S E performance.

1.6 Research questions

The following research questions guided the study.

- I. Did the teachers implement the SMASSE in-service training concept in teaching of biology?
- II. Did SMASSE in – service training had an impact In biology performance?
- III. Was there any relationship between the pre-SMASSE and post- SMASSE K C S E results?

1.6 Significance of the study

- I. This study was significant because:-
- II. The findings will be used to convince biology teachers to embrace SMASSE in-service concept and fully implement the performance of biology.
- III. It provides information on the important role played by the teachers and students in improving the performance of biology in K C S E examinations.
- IV. The findings will also contribute to a pool of knowledge forming the basis for further research so that other researchers may use in related studies else where in the republic of Kenya.

1.7 Limitations of the research

The followings were the challenges in carrying out the research; -
Firstly SMASSE is very young in Kenya Education area and thus there was imitated literature hence lack of exhaustive comparison.
Secondly, the time frame work allocated for the project was very limited and it was carried along side the school teaching programme.

1.8 Assumption of the study

Since one of the twines was a questionnaire, it was assumed that the respondents were honest, willing and frank in their responses.
It was also assumed that all other factors contributing to performance were held constant, which includes entry behavior, attitude towards the subjects was positioned and finally there were enough teaching staff and teaching learning resources.

1.9 Definition of Terms

- I. Attitude – it is a way of thinking or feeling about something or something usually reflected in personal behavior.
- II. Good performance – this is a situation where students achieve relatively well in exams especially to a level where they can be eligible for higher education or employment.
- III. Impact of SMASSE in –service training – it is the extent to which the in service training has influenced Biology results whether positively or negatively.
- IV. In- service training – A form of training designed for those who are in service as refresher courses and to attune them with evolving developments in a system so they are up to date.
- V. Performance of Biology – This is the level of achievement of a student in Biology with respect to attainment of academic skills, knowledge and concepts as compared to other or some adopted criteria.
- VI. Poor performance – This is the situation where students do not achieve comparatively well in exams and especially to a level in which they cannot be eligible for higher education or employment.

1.9 Theory

This study is based on two theories Jean Piaget's theory of intellectual development and Skinners theory of motivation. Piaget's theory of intellectual development deal exclusively with cognitive development beginning with primitive reflexes and motor co-ordination of infancy and extending to the thinking and problem-solving of adolescent and adults. In this theoretical agreement, scientific and mathematical abilities are stressed. These abilities include abstract and logical reasoning generation of hypothesis and organizing mental activities into more complex structures.

In Piaget's theory knowledge is assumed to have a specific goal or purpose to aid a person or student in adaptation to the environment, the child or adult does not receive information passively and though are not simply or imitation of other. Neither is cognitive progress and thinking processes seen as primarily a product of maturation of the brain knowledge is acquired and thinking processes became more complex and efficient as a consequence of the maturing child's interaction with the world. Piaget's central thesis is that the individual is active, curious and inventive and interaction with the life cycle. Human beings seek convective throughout the life cycle. Human being seek contact and interaction with the environmental, search out challenge and most important, interpret events.

Student continually construct and reconstruct their knowledge of the world trying to make sense of experience and attempting to organize their knowledge into more efficient and coherent structure (Mussen Conger, Kagan and Huston, 1984, Driver 1983)

Piaget's work emphasizes the skills process of logical "structures" thought to describe to students intellectual operations (Dibently and Watts 1992) he claims that in all development experience and maturing are necessary components. Thus like any other process skills of prediction and hypothesizing depend on experience and maturing level of an individual. As student develop and understand more Science concept and processes, their prediction and explanation should become more sophisticated frequently reflecting a rich scientific knowledge base evidence of logic, higher level of analysis and greater tolerance of criticism and uncertainty (NAS, 1995) Piaget's theory of cognitive development is that aspect of development that deals with thinking, problem solving intelligence and language (Black and Pucket, 1996).

Piaget conceptualized a stage of theory of cognitive development especially on student development and specifically on how student develop knowledge. In Piaget's view, cognitive development is combined as a result of the maturation of brain and nervous system and the experiences that help individual adapt to the environment. He contends that cognitive development is a combined result of the maturation of brain and nervous system and the experiences that help individuals adapt to the environment. He contends that cognitive development in all students will follow predictable and qualitative distinct levels or stages, which will occur during specific period of a child's life. These stages are said to emerge in an invariant and universal sequence.

All students pass through the same order. No stage or sub-stage can be skipped and each must be negotiated in turn. Each move to advanced stage is built on the preceding ones, but as new characteristic and new organizational structure (Mussen Conger, Kagan and Huston, 1984) student proceed through there stage at

their rate and the age at which each stage is negotiating varies from student to student (Kaplan 1991). Differential in rate of entering and exiting the stage are attributed differences in individual genetic timetable and in cultural and environment influences (Black And Pucket, 1996) although the sequence in those stages of the development are in invariant and universal Piaget caution against literal identification of stage asserting that his own findings give rough estimates of the mean age at which various stage are achieved in the cultural milieu from this subjects are drawn. He also noted that intellectually impaired students children may develop at a slower rate or may fail to reach higher stages (Dweretzky, 1996).

The stage progression portion of Piaget's theory has important implications to learning that learning is developmental thus effective teaching and learning is enhanced in terms of attitude, teaching methodology, mastery of content, assortment resource mobilization and utilization through SMASSE-INSET. The SMASSE-INSET is an initiative to improve mathematics and Science learning in secondary schools in Kenya and other countries of the world including some countries in the Africa region.

For the past two year SMASSE has been conducting INSET to sensitize teacher's intervention strategies a possible solution is drawn in the philosophy based on the principles of effective teaching. This philosophy is captured in an acronym ASEI which stand for Activity Student-centered Experiment and improvisation the concept is premised on the realization that the quality of classroom activities is critical for effective teaching and learning and attempt to place more responsibility on students during teaching/learning situation, further ASEI, aim at assisting teacher to shift classroom practice from content-based to activity, lecture

theoretical approach to experiment and research-based approach and recipe type large scale experiments to scale-down experiment and improvisation. ASEI lessons are made possible by Plan DO, see and Improve (PSDI) practice this concept entails careful preparation, teaching the lessons using well and chosen and planned activities evaluating the lesson at all stages of its development and providing a feedback of the evaluation results to improve lesson instruction and future planning and implementation.

From the fore-going explanation Piaget's theory it is evident that the individual must be active, curious and inventive throughout the lifecycle. Skinner theory postulated a motivation theory that has also important implication to learning. Its control argument was that student motivation to undertake a task depends on expected reward in this regard a positive perceived reward include positive motivation and subsequently realizes high achievement.

The negatively perceived rewards head to negative attitude and achievement. It is also implicit that student's high performance is influenced by teaching experience of the teacher available instruction resource and the teaching strategies (Orodho, 1996). The interaction strategies will translate into student high performance (Ibid)

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Over the years, the performance in Mathematics and Science at the secondary school level has been dismal performance. Mathematics at the secondary level has been estimated, on average, to be below 20 percent while that biology, chemistry and physics stand below 30 percent. This chapter, therefore, endeavor's to give related literature on the poor performance and various ways those interested parties have attempted to reverse the trend. Many researchers have been often concerned themselves on general academic performance in the education sector little or none has been conducted to relate the K.C.S.E performance in Mathematics and Science with SMASSE in with SMASSE in-service training, this could be attributed to the fact that SMASSE is new in Kenya education Scene.

2.2 Challenges in mathematics and Science Teaching in Kenya

The findings on poor performance in service and mathematics subject in Kenya have been documented. The baseline survey on the situation of mathematics and Science was conducted at the onset of SMASSE in 1998, pointed out the following problem being attitudinal factor, teaching methodology, mastery of content, resource and guidance.

Attitude

Many teachers have negative attitude towards teaching as profession and specifically the teaching mathematics and Science. Such teachers put little effort in the preparation and actual teaching

of the subjects, creativity and preparation are hardly visible in Mathematics and Sciences lessons and facilities are hard to come by. Attitudinal factors are also observed in student's learning school managers attitude mathematics and science manifest in their failure to provide non-teaching material with the excuse that they are too expensive.

Teaching Methodology

Many teachers still grapple with the whole question whatever it is the process or the content that is important for effective learning. Today class presentations are teachers-centered and mostly content-based with little or no active learned & involvement experiment are ignored altogether with lack of equipments or apparatus and / or materials as all-time excuse when done, experiments are often recipe type, teachers concentrate on completing syllabus at the expense student's understand of content.

Mastery of Content

Teachers lack sufficient subject content mastery. In embracing the world declaration on education for all (EFA) and framework to meet basic learning needs (UNESCO), 1990) many African states have been working steadily towards universal free primary education. This has led to significant increase in basic education that many under qualified teachers who would not otherwise qualify to teach in secondary school are engaged in teaching mathematics and sciences. These teachers often have poor mastery of content, lack skills and innovativeness and have poor work ethics. Similar tendencies are seen in qualified teachers whose attitudes are manifested in failure to plan their work, missing lessons, going late to class and in corrected students work the teachers are of low morale attributed to low salaries poor working condition and unsupportive school administration.

Resources

Teachers complain of lack of teaching/ learning resources, yet what is available are not efficiently used. Improvisation and scaled down experiments are not considered. Managers misdirect the management of financial resources towards non-academic investments such as constructing dining halls, administration blocks or buying school buses, amongst others. Essential facilities such as laboratories, teaching materials and textbooks are not made available.

Guidance

In most cases quality control officers and school principals do not provide adequate guidance to teachers in the curriculum interpretation and implementation teachers are left to try it out in classroom, thus at time miss the national education goals on objective for the subjects.

2.3 Mathematics and Science Teaching in Secondary Schools in Kenya

In learning situation, there has to be an objective, the learner and the instructor or the teacher's problem is to get the student master the objective by use of stimuli paired with relevant methodology. It is imperative that most important factor in learning situation is a good competent teacher.

In order to master mathematics and Science properly, teaching methods ought to be improved Piaget's, (1973) observed "The goal of education was to increase the amount of knowledge but to create possibilities for the child to invent and discover to create men who are capable of doing new things".

Conventionally, the traditional function of a teacher include, organizing and summarizing vast quantities of materials, stressing

important points, respecting and reviewing facts and theories and presenting interesting examples and illustrations. These roles are being challenged and thus there is need for a more extensive and accurate knowledge and makes it essential to improve science and mathematics.

Koech commission, (1999) pointed out that it was imperative to have qualified and highly motivated teaching force capable of understanding the needs of the learners so has to improve the performance of science and mathematics. In an attempt to rid out this problem.

Kamunge report, (1988) on the other hand had recommended teacher education programs to be expanded to produce more professionally qualified university graduate teacher for secondary schools there was a need therefore for teachers to develop liking for the subject so as to deliver to the students as Bell, (1983) puts that liking and developing interest in Mathematics and Science leads to greater effort and hence high achievement and willingness to purchase the subject studies.

2.4 Boost for mathematics and science teaching in Kenya

The performance in mathematics and science in the 8-4-4 system of education had deviated over the years from the set targets. A critical analysis of K.C.S.E examination subjects over the last six years (1996-2001) for Baringo district indicated that in the overall trend, most of the students scored a grade below D (plain in mathematics, physics and chemistry with biology. Performances was better as compared with other subject the other two science subjects with most students scored a mean grade C – (minus) and above. This was based on a report on baseline studies conducted in Baringo district and presented by the Science group at Sacho High school in August 2001(Anguzu and Adongo, 2001) for further, data

for performance in K.C.S.E for Baringo District from 1996-2001 for Mathematics and Science was no better but a reflection of the national performance during the period.

In an attempt the dismal performance in Science and Mathematics, the government through the ministry of education in collaboration with the Japanese International co-operation Agency (JICA) came up with SMASSE in-service training as an intervention strategy to reverse the trends.

According to www.scidev.net (2003) the initiative of SMASSE was to train 3500 teachers in five years time i.e. 2008 (Source www.scidev.net (2003) Boost for science and mathematics in Kenya).

2.4.1 ASEI Movement

The word ASEI is an acronym standing for activity, student, experiment and improvisation.

The ASEI is a SMASSE initiative whose focus is to assist teachers to reflect on teaching and skills for effective to occur. It also aims at encouraging teachers to focus on instructional strategies that will support meaningful learning and make lessons interesting to the learners.

Through improvisation, the teacher is able to demystify conventional experiments by scaling down experiment thereby relating mathematics and science to real life situations.

The learner is the focus of attention and activities are planned for the learners through the development of ASEI lessons.

In these lessons bridge is created to enable the learners to relate and integrate practical activities with theoretical knowledge. The

emphasis is on teaching for understanding by activity engaging the learners in the construction of knowledge.

ASEI also considers the quality of classroom activities as critical to achieving effective teaching and learning. These activities should be designed to increase learners. Participation and also carefully selected, sequenced and directed to provide meaningful experience to the learners.

In performing the experiments, ASEI advocated for improvisation their conventional equipment / apparatus or chemicals are not available in order to perform scaled down experiments.

The movement also calls for integration of practical work with theory providing a bridge to enhance learning improvisation creates a awareness to teachers of unlimited opportunities that exist in seeking and using locally available resources.(Oyaya and Njuguna)

2.4.2 The PDSI Approach

In order to attain the ASEI movement it is essential to adopt the P D S I approach which is an acronym standing for plan activities according to ASEI movement, Do the Planned activity, See how effective the activity was done and evaluate the process to check whether the objective were achieved as planned.

Improve on the whole process based on the out come of the evaluation and therefore plan, do see and improve (PDSI) approach in this case the teachers are able to teach more effectively because they are able to teach more class room practice and improves, scale down or simple experiments and more importantly develop and practice them in teaching and learning material which are applicable to their local setting (Oyaya and Njuguna, 2000)

The deficiencies of teaching and curriculum implementation are some of the teacher's quality that impact negatively on achievement in biology professional training enables teachers to impact knowledge more effectively than those teachers who have received no training. Kinyanjui (1979) points out that the caliber of teacher in any school system forms an important input on the school outcomes.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology and the tools that were used in collecting the data.

3.2 Research design

The research study used an ex-post facto method whereby the SMASSE in-service training was taken to be the independent variable, being the intervention strategy influencing the performance in K.C.S.E biology result, which served as the dependent variable. The independent variable was studied in retrospect for its possible relationship to affect K. C. S.E results, as the dependent variable.

3.3 Environment

The research study was carried out at Tabagon secondary school in Sacho Division, Baringo District, Kenya. It is a single streamed school with a class range of students between 25-40 and an average of 72 students in the year 2006 being a double-streamed class.

3.4 Subjects

The research involved the candidate class (form IV) who had done their K.C.S.E examinations. The number of students varied from one year to another. The number of Biology teachers used as respondents were five of which two teachers were specialists in the subject and the three teaching Biology with subjects.

3.4 Instrumentation

The respondents filled in a structured questionnaire as the basis for obtaining data on whether biology teachers implemented the SMASSE in-service training concepts.

3.5 Data Collection Procedures

The biology K.C.S.E results for the year 2000, 2001, 2002, 2003, 2004, 2005 and 2006, were obtained from the academic file with the assistance of the academic master. The researcher personally distributed the questionnaire to five Biology teachers to obtain a data on their implementation of the SMASSE project concepts in their teaching. The dully-filled questionnaires were collected and assembled together with the K.C.S.E biology results for analysis.

Statistical Data Treatment

The data collected from the results of the presented in form of tables to ease the comparison. Descriptive statistics was employed on the data collected. The results tabulated were discussed to find out the relationship between the pre-SMASSE and post-SMASSE years.

Formula Used

$$\frac{x}{N} \times 100\%$$

Where X = Number of grades scored by the students

N = Total number of students

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

Introduction

The results obtained from questionnaires that were administered to five respondents, which yielded data on how the teachers perceived, and implemented data on, the K.C.S.E results from the academic file. The data was found to be suitably presented in table form.

4.1 Results from the questionnaires

The findings of the study established that the five Biology teachers in the school of which two out five teachers were specialized in teaching of biology and three of them had extra subjects other teaching biology.

Table 1: Cycles attended by the teachers

4 cycles	3 cycles	2 cycles	1 cycle	No cycle
2 teachers	3 teachers	-----	-----	-----

The findings of the study established that five biology teachers had a least attended one of the SMASSE cycles. Two teachers had attended all the four cycles while the other had attended at most three cycles.

Table 2: Comment on the implementation of SMASSE in- service Concepts

Excellent	Good	Fair	Poor	Undecided
2	3	-----	-----	-----

From the table results it shows two out five respondents rated the implementation of SMASSE being excellent while three out of five respondents rated good on the implementation of SMASSE.

Table 3: view on the SMASSE in-service training impact.

Strongly agree	Agree	Undecided	Disagree	Strongly disagree
3	1	1	-----	-----

From the table above three respondents out of five strongly agreed that SMASSE in-service had a positive impact on the K.C.S.E. Performance while one out of five respondents was undecided.

From the questionnaire 2 out of 5 respondents often imposed wherever there were inadequate facilities 2 out of 5 occasionally and 1 out of 5 never improved.

All the respondent rated discussion and question/answer techniques as very often used lecture approach of teaching Biology was used by most of the teacher project work was occasionally used by most of the teachers. Project work was occasionally used as per 4 out of 5 of the teachers while 1 out of 5 never employed. Apparently all teachers rated very often-used assignment and homework. All teachers never used discovery method in discovering method in teaching Biology.

4.2 ANALYSIS OF K.C.S.E BIOLOGY RESULTS

Table 4: K.C.S.E BIOLOGY ANALYSIS – 2000

ENTRY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	AVE	MG
40	0	0	0	1	3	7	8	15	2	3	1	0	5.612	C

From the table above only four out 40 students managed to get grade B- and B of which 3 students managed to get B- there were

36 students who scored between grade D and C+ modal grade was 15 students. The mean point is 5.612 of mean grade C.

Table 5: K.C.S.E BIOLOGY ANALYSIS 2001

ENTRY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	AVE	MG
35	0	0	1	1	4	7	12	8	2	0	0	0	6.284	C

From the table only 2 students out of 35 managed to get grade B+ and B of which one of the students managed to get B+ the 33 out of 35 students who scored grade between D and B- modal grade was C with 12 students. The average grade C with mean point of 6.284.

Table 6: K.C.S.E BIOLOGY ANALYSIS 2002

ENTRY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	AVE	MG
35	0	0	2	1	4	5	4	11	4	3	1	0	5.774	C

From the table, only 2 students out of 35 managed to get grade B+. There were 33 students who scored between grade B and D- of which one had a grade of D- modal grade is C- with two students. The average point was 5.774 at mean grade of C.

Table 7: K.C.S.E BIOLOGY ANALYSIS 2003

ENTRY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	AVE	MG
39	0	0	1	1	5	14	12	5	0	1	0	0	6.5641	C+

From the table, 4 students out of 39 had a mean grade between B- and D modal grade was C+ with 9 students mean was C+ of mean point 6.5641.

Table 8: K.C.S.E BIOLOGY ANALYSIS 2004

ENTRY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	AVE	MG
35	0	0	2	1	4	5	4	11	4	3	1	0	5.774	C

From the table two had mean grade between B+ and B of which one had B+. There were 37 students who were with a mean grades B- modal grade was C+ with 14 students. Mean grade C+ of mean point 6.5641.

Table 9: K.C.S.E BIOLOGY ANALYSIS 2005

ENTRY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	AVE	MG
40	0	1	3	8	7	9	5	4	2	1	0	0	7.325	C+

From the table, four students out of 40 had a mean between A- and B+ of which one had an A-. There were 36 students who were with a mean grade between B and D modal grade was C+ with 9 students. Mean grade was C+ of mean point 7.325.

Table 10: K.C.S.E BIOLOGY ANALYSIS 2006

ENTRY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	AVE	MG
72	1	0	2	21	17	13	12	5	1	0	0	0	7.625	B-

From the table, three students out of 40 had a mean grade between B+ and A of which one had an A two students were with mean grades of B+. There were 69 students who were with mean grades B and D+ modal grade was B with 21 students. Mean grade was B- of mean point 7.625.

4.3 DISCUSSION OF FINDINGS

Analysis of the dully-filled questionnaire revealed that the teachers implemented the SMASSE in-service training concepts and their teaching concept had changed from traditional heuristic approach such lecture method to expository learner centered methods.

The change in teaching approaches led to correspondence positive impact on the K.C.S.E Biology performance especially in the years 2005 and 2006. It is evident that there was a marked improvement especially in the years of depicted by summary table with reference to table, the year 2006 had the highest number of high grades which were 23 consequently the year 2006 had the highest mean point and a mean grade at 7.625 and B respectively.

With reference to summary Table 11, it was evident that was a general increase in the number of high grade in post – SMASSE years as compared to pre-SMASSE years to high grades in post – SMASSE years. The years 2001 and 2002 represents the transition period characterized by shift of quality grades in this period there's a like hood that teachers implemented partially concepts learned in 1st and 2nd cycle of SMASSE learning to attitude change in student towards Biology and application of practical activity by the teachers.

In the year 2002 it appeared that the teachers faithfully implemented what they had been taught to experiment on the concepts which resulted to improvement in the quality grade. On the contrary the light drop in 2003 is attributed to the fact that the teachers might have relaxed as they were getting used to the INSET having covered at most three cycles.

The year, 2004, 2005, and 2006 experienced full implementation of SMASSE in-service training and thus there was marked

improvement in quality mean grade with the year 2006 having the highest mean grade of B- and mean point of 7.625.

It is also evident that there was an inverse relationship with reference to highest grade and lower grade in pre-SMASSE and post-SMASSE years as seen in table there was increase in percentage of low grade during pre-SMASSE and decrease in percentage of low grade during in post-SMASSE and vice versa for the high grades.

SUMMARY OF RESULTS

The K.C.S.E results of the subsequent year were summarized in the table below

Table 11: SUMMARY TABLE K.C.S.E RESULTS (2000-2006)

	ENTR Y	A	A -	B +	B -	B +	C -	C +	C -	D +	D -	D -	E	AVE	M G
200 0	40	0	0	0	1	3	7	8	1 5	2	3	1	0	5.612	C
200 1	35	0	0	1	1	4	7	1 2	8	2	0	0	0	6.283	C
200 2	35	0	0	2	1	4	5	4 1	1	4	3	1	0	5.774	C
200 3	39	0	0	1	1	5	14	1 2	5	0	1	0	0	6.564 1	C +
200 4	40	0	0	2	2	8	9	7	6	5	1	0	0	6.500	C +
200 5	40	0	1	3	8	7	9	5	4	2	1	0	0	7.325	C +
200 6	72	1	0	2	2 1	1 7	13	1 2	5	1	0	0	0	7.625	B-

Table 12: SUMMARY IN TERM OF HIGHER AND LOWER GRADE

Year	Entry	Grade Number	Between B-A %	Grades number	Between E-D+ %
2000	40	1	2.5	6	15
2001	35	2	5.7	2	5.71
2002	35	3	8.571	8	22.85
2003	40	4	10.26	6	15
2004	39	2	5.12	1	2.56
2005	40	11	27.5	3	7.5
2006	42	23	54.76	1	2.38

CHAPTER FIVE

5.0 Conclusions and Recommendation

5.1 Conclusion

From the results the subsequent years it was evident that the biology results for the pos-SMASSE years were much better than pre-SMASSE years. It was therefore concluded that the SMASSE in-service training had a positive impact on the K.C.S.E Biology results due to changes in teaching methodologies from teacher-centered to student centered as the basis of SMASSE in-service training.

5.2 Recommendations

From the research the researcher made the following recommendation.

- ❖ There is a need to involve head teachers in the SMASSE in-service training, as they are the paramount determining to the success of the implementation of SMASSE.
- ❖ There should be continued training even after a teacher has completed the four cycles.
- ❖ Teachers should take seriously testing and evaluation as integral part of effective teaching.

BIBLIOGRAPHY

1. Anguzu and Adongo (2001) Baseline studies in SMASSE IN SET first cycle Baringo District, SMASSE Resource center
2. BELL. A. Wet ol (1983) A Review of Research in mathematical Education London, NFER-NELSON Publishing Company L T D.
3. Eshiwani, GS (1983) Factors influencing performance among primary and secondary school pupils in Western Province Kenya a policy study.
4. Kamunge (1988) – Report on the Education programs in secondary school (KENYA)
5. Koech (1999) Report of the Commission of Inquiry of Education system in Kenya (Nairobi Government Printer)
6. Magazine of SMASSE- WECSA Association May 2006 Nairobi, Kenya
7. Nui Nancy (2006) SMASSE Newsletter, issue No 16 Nairobi, Kenya.
8. Njoroge, j. (In www scidev) Net, 2003 "Boost for science and mathematics Teaching in Kenya.
9. Oyaya and Njuguna, B (2000) SMASSE project. An unpublished paper presented at the annual conference of Kenya National Secondary School Heads Association.
10. Orodho, J A (2004) Techniques of Research proposal and reports in Education and social science, first edition, Mazola Publishers Nairobi, Kenya.
10. Piaget, J (1973) Science of Education and Psychology of the child, new fork, the Viking press Inc.

APPENDIX A

TRANSMITTAL LETTER

TABAGON SECONDARY
SCHOOL,
P.O BOX 30,
KIPTAGICH
MAY 20TH 2007

HEAD TEACHER,
TABAGON SECONDARY SCHOOL,
P.O BOX 30.
KIPTAGICHI.

DEAR SIR/MADAM

RE: DATA COLLECTION FOR BED RESEARCH PROJECT

I am a student at Kampala international university currently pursuing a degree in Bachelor of Education Science.

I am in the process of collecting data with a view to writing a final entitled; **SMASSE-INSET on in-service training in performance of Biology K. C. S. E examinations of Tabagon girls secondary school, Baringo District Kenya.**

The finding of this study, I hope will provide you as an educationist with useful information on the importance of SMASSE – INSET on in-service training in the provision of quality education in Biology performance in Baringo District Kenya

May I there fore, request you to find in questionnaire and give your response in the space provided.

Any co-operation and assistance to me in this study will be highly appreciated and treated with confidentiality.

Thanks in advance

Yours Faithfully,



RISPAH J. KIPNGOK

APPENDIX B

Research Instrument

Questionnaires For Biology Teachers

Dear Respondents fill The Following Questionnaires

1. A) How many teachers are there in your school?

b) Other than teaching biology, what other subjects do they teach?

2. a) Have you attended the SMASSE in-service training?

b) Indicate the number of cycles

4 cycles (5pts)	3 cycles (4pts)	2 cycle (3pts)	1 cycle (2pts)	No cycle (1pts)	Score

Tick where appropriate

c) Comment on the gender implementation of SMASSE in-service concepts?

Excellent (4pts)	Good (3tps)	Fair (2pts)	Poor (1pt)	Total

d) In your own view rate whether the SMASSE in – service training had a positive impact on the KC SE biology results since its inception.

Strongly	Agree	Undecided	Disagree	Strongly	Total
----------	-------	-----------	----------	----------	-------

Agree (4pts)	(3pts)	(No pt)	(2pts)	Disagree (1pts)	Score Pts

Tick where appropriate

3. a) do you have enough resources; text books both or any other resources, text books model both or any other?

b) In circumstances where above resources are not available how often do you improvise?

Very often (4pts)	Often (3pts)	Occasionally (2pts)	Never (1pt)	Total pts

Tick where appropriate

4. Does the head teacher support our implementation of SMASSE in-service training skill and concept?

Yes	
No	

Tick where appropriate

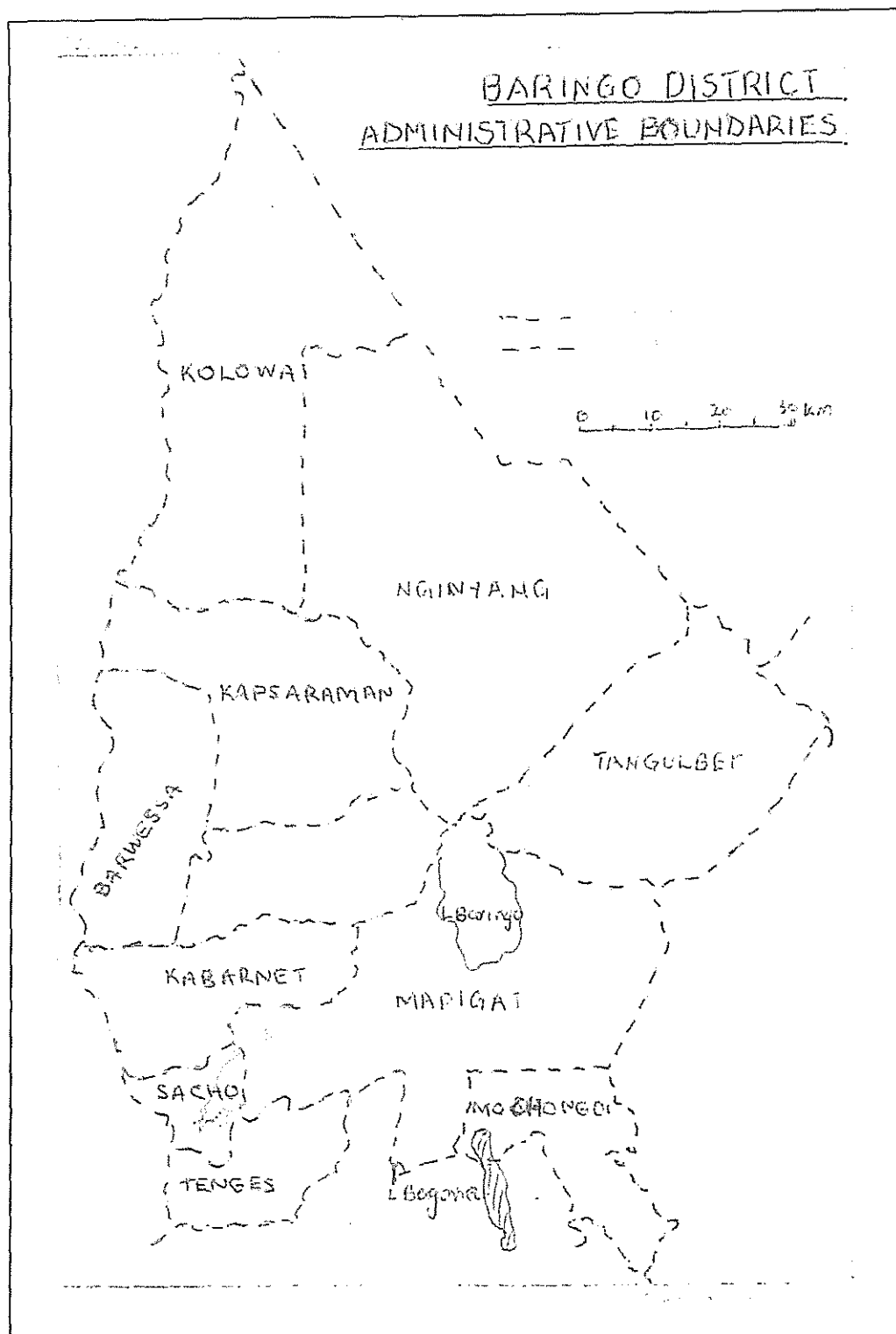
5. The following table shall be the various teaching techniques mostly used in the teaching of biology. How often do you use each of them?

(Indicate with a tick)

TEACHING		FREQUENT		
METHOD	Very often	Often	Occasionally	Never
Lecture				
Discussion				
Demonstration				
Drill/practice				
Review				
Project				
Assignment/home work				
Laboratory				

APPENDIX C

Map of the Study Area



APPENDIX D

CURRICULUM VITAE

PERSONAL BACKGROUND

NAME : KIPNG'OK RISPAAH JEPCHIRCHIR
REG.NO : BED/8976/51/DF
AGE : 27 YEARS
GENDER : FEMALE
MARITAL STATUS: SINGLE
ADDRESS : P.O BOX 41 TENGES
DATE OF BIRTH : 1/8/1979
CONTACT : 0725809608

EDUCATIONAL BACKGROUND

COLLEGE : KAGUMO TEACHERS COLLEGE
PO BOX 18 NYERI (2002-2004)
(OBTAINED DIPLOMA IN EDUCATION)
SECONDARY : KABIMOI SEC SCHOOL
P.O BOX 185, ELDAMA RAVINE (1997-2000)
OBTAINED KENYA A CERTIFICATE OF
EDUCATION)
PRIMARY : TENGES PRIMARY SCHOOL
P. O BOX 41, TENGES (1988-1996)
(OBTAINED KENYA CERTIFICATE OF
PRIMARY
EDUCATION)

RESEARCH EXPERIENCE

COURSE : BACHELOR OF EDUCATION SCIENCE

RESEARCH TITLE: SMASSE IN-SERVICE TRAINING AND
K.C.S.E

EXAMINATIONS PERFORMANCE OF BIOLOGY
IN TABAGON GIRLS SECONDARY SCHOOL
BARINGO DISTRICT – KENYA



Kampala International University
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REF: C:\Documents and Settings\RAU\My Documents\letters\research referral.doc

August 22, 2007

TO WHOM IT MAY CONCERN

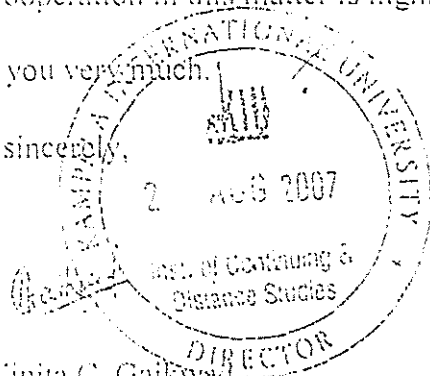
This letter serves to request your permission for our student

to conduct a student research in your school. This research is done on student basis as part of the learning process, and no information learned about the school shall be used for any other purpose.

Your cooperation in this matter is highly appreciated.

Thank you very much.

Yours sincerely,



Mrs. Vinita C. Gaikwad
Deputy Director, ICDS