EFFECTIVENES OF TEACHER ADVISORY CENTRES IN TEACHER

PROFESSIONAL DEVELOPMENT IN KENYA

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DECLARATION

I confirm that this thesis is my original work and it has not been presented in any other university for certification. The thesis has been complemented by referenced works duly acknowledged. Where data, text, graphics, pictures or tables have been borrowed from other works including the internet, the sources are specifically accredited through referencing in accordance with anti – plagiarism regulations.

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DEDICATION

I dedicate this thesis to my husband Samson Ole Kisirkoi for his steadfast support throughout the study and most of the times for accompanying me to the field to collect data and never allowing me a chance to give up or slow down. I also dedicate it to our children Sarah Naserian, Grace Naanyu, Timothy Lemayian, Caleb Lekishon for the support they all gave me and the great concern they showed.

I dedicate it also to my brother - in – law, John Ole Kisirkoi whom I always knew would be proud of me to hold a Ph. D.

Most sincerely, I dedicate this thesis to my parents the late Mr. Henry M'Murithania and Mrs. Tabitha Karimi M'Murithania who gave me a good start in life.

In it all, glory be to the Almighty God!

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LIST OF ABBREVIATIONS AND ACRONYMS

APSI   Assistant Primary School Inspector

ASEI: Activity Student Experiment Improve

ATS1-4: Approved teacher Status 1-4

CEMASTEA: Centre for Mathematics, Science and Teacher Education in Africa

DEO: District Education Officer current Sub County Director of Education (CDEs)

DFID: Department for International Development

DPSI: District Primary School Inspector

EFA: Education For All

EMIS: Education Management Information System

ETS: Educational Testing Service.

INSET: In service training

KBE: Knowledge Based Economy

KESSP: Kenya Education Sector Support Programme

KIE: Kenya Institute of Education now Kenya Institute of Curriculum Development (KICD)

KICD: Kenya Institute of Curriculum Development (former KIE)

KCPE: Kenya Certificate of Primary Education

MDGs: Millennium Development Goals

MOE: Ministry of Education

MOEST: Ministry of Education Science and Technology

OECD Organization for International Co-operation and Development

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P1: Primary Teacher one

PCK: Pedagogic Content Knowledge

PTC: Primary Teacher College

PDSI: Plan Do See and Improve

QASO: Quality Assurance and Standards Officer

SAIDE: South African Institute for Distance Education

SPRED 1: Strengthening Primary Education phase one

SPRED 2: Strengthening Primary Education phase two

TAC: Teacher Advisory Centre

TALIS: Teaching and Learning International Survey

TMA: Tutor Marked Assignment

TPACK: Technological pedagogical content knowledge

TRC: Teacher Resource Centre

SbTD: School based Teacher Development

SMASSE: Strengthening Mathematics and Science in Secondary School

SPSS: Statistical Packages for Social Sciences

STI: Science Technology and Innovation

UNESCO: United Nations Education Scientific Cultural Organization

ABSTRACT

Teacher Advisory Centres (TACs) were established in Kenya in the early 1970s to provide primary school teachers professional support in their classroom instruction for improved learning outcomes. However, there were reports of teachers' inability to access teacher professional development activities. There were also reports of poor learning outcomes and teachers' use of teacher centred teaching learning approaches. This study aimed at establishing the effectiveness of TACs in teacher professional development in Kenya. The objectives of the study were to determine the effectiveness of TACs in conducting in service courses and holding professional meetings for teachers with invited guest speakers to address identified teacher professional needs; establish the effectiveness of TAC tutors in conducting classroom observation and demonstration lessons; determine the extent to which TACs facilitate teachers to use teaching learning resources to enhance instruction and to find out the extent to which teachers' use learner centred teaching learning approaches. The theories advanced by Desimone and Shulman that demonstrates that teacher professional development influences teachers' instruction and ultimately improves students' learning guided this study. Descriptive survey research design was adopted and this study was conducted in Kisii, Nakuru, Bomet, Nyeri and Kirinyaga counties. The sample size was five counties, 35 TAC tutors, 70 schools, 490 teachers and 12 DEOs. Cluster sampling was employed. Purposive sampling was used to select counties and simple random sampling was used to select districts then all the zones in the sampled districts were used in the study. Public primary schools and teachers were purposively sampled. Descriptive statistics, frequencies and percentages, were used to analyze data which were presented in figures, charts and words. Effectiveness of TACs in teacher professional development was found to be inadequate. A large percentage of TAC tutors did not identify teacher professional needs before conducting TPD activities. The majority of TAC tutors also rarely invited guest speakers. It was recommended that sustainable in service courses for teachers and professional meetings with invited guest speakers should be conducted regularly based on identified teacher professional needs. Classroom observation should focus on enhancement of classroom instruction. TAC tutors' capacity should be enhanced to develop and apply classroom observation skills and to develop and use teaching learning resources to enhance instruction. Teachers should be facilitated to develop and use teaching learning resources and to apply learner centred teaching learning strategies. Further studies could be conducted on TAC revitalization. The strategies used by Kirinyaga county to achieve sterling KCPE performance between 2007 and 2012 could be investigated and recommendations made whether other counties could emulate it.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

This study investigated the effectiveness of Teacher Advisory Centres (TACs) in teacher professional development in Kenya. This chapter presents the background of the study, statement of the problem, purpose of the study, objectives and research questions of the study, assumptions of the study, limitations and delimitations, significance of the study, theoretical and conceptual framework and finally operational definition of terms.

1.2 Background of the Study

The critical role of quality education in determining the social, political and economic development of any country in the wake of globalization and dynamic pace of technology cannot be overemphasized. Kenya relies on education and training for human resource development. The country plans to create a globally competitive and adaptive human resource base through life long education and training (Republic of Kenya, 2007). Learners require quality teachers who will prepare them to actively participate in an increasingly competitive and complex, global environment where innovation, initiative, entrepreneurship and commitment to continuous learning are as important as knowledge; where more new knowledge and intensive economy are ever emerging (European Union, 2010; Palmer, 2005 & UNESCO, 2008). Knowledge construction is the emerging aspiration as the country strives to become a knowledge based economy and it cannot be achieved through teacher

centred teaching, transmission, learning approaches but through teaching strategies that enhance knowledge construction, entrepreneurship, creativity and innovation (Palmer, 2005 & Republic of Kenya, 2007). Abbot and Fouts (2003) found a significant correlation between constructivist teaching and high learner achievement.

A paradigm shift in teaching learning strategies to reflect the new challenges is an urgent need and the teacher is the key player in classroom instruction. Teachers are the most significant change agents in educational reforms (Villegas-Reimer, 2003) and the crucial element in all successful curriculum development and implementation (Kelly, 2008). They are the education system's principal resource and the achievement of school children depends significantly on the kind of teachers they are assigned to (Kupermintz, 2003). Teachers are the focal point of classroom instructional activity, curriculum delivery and the critical determinants of the quality of education offered (MOEST, 2003). The level of development of any country is dependent on the quality of its teachers who determine the quality of education (Kelly, 2009). Research from case studies of selected states in United States of America found that teacher preparation is the strongest correlates of student achievement in reading and mathematics (Darling Hammond, 2000). Therefore, an effective educational development strategy should focus on enhancing the quality of teaching (Hanushek & Wobman, 2007). Teacher quality should be highly prioritized and sustained through quality teacher professional development.

The teacher has to accurately interpret the curriculum and implement it effectively for quality education to be realized. Ball (2003) reported that a teacher with good content knowledge and pedagogical skills can break down mathematical content into less polished abstract forms making it accessible to students who are at different cognitive levels. Carson (2014) demonstrates that there is no poor learner in the hands of an effective, quality teacher and a supportive care giver. Through effective teaching, mentoring and giving learners a chance, a teacher could mould and positively influence life of a learner. Carson gives an account of how effective, quality teachers and a supportive mother shaped his own life though he had been at the bottom of his class and drifting to hopelessness. The teachers developed in Carson enthusiasm to learn, self esteem and inspiration when he seemed hopeless. They stimulated Carson's interest and helped him discover his talents, explore and exploit his potential. Today Carson is a celebrated neurosurgeon.

Teachers need to be professionally developed in order for them to be effective and of high quality through organized, regular teacher professional development programmes comprising: pre service, induction and in service courses (European Union, 2010 & Villegas- Reimer, 2003).

1.2.1 Teacher Professional Development in Kenya.

Teacher professional development in Kenya takes the form of pre service and in service training. Pre service teacher education in many countries, Kenya

included, has been reported to be inadequate (Arechaga, 2001; Marcello, 2009 & Mwangi, 2011). Primary teacher trainees are enrolled for the certificate course with an aggregate grade of a C (plain) at the Kenya Certificate of Secondary Education (KCSE) which was even an improvement in 2004 from earlier D + (plus) where the highest grade is A (plain). Teachers who had scored D + (plus) KCSE aggregate grade are still active in the teaching profession (MOEST, 2004). The low entry grade has significant implications for the development of pedagogic content knowledge that is critical in enabling a teacher to break down content to levels that different learners can understand, facilitate learners to construct their own knowledge, develop teaching learning resources to support learning, develop appropriate teaching learning approaches and develop classroom assessment tools. The standard of all technically qualified personnel needs to be raised to international levels as expressed in the Kenya Vision 2030, and that should include teachers. A case for possible benchmarking is Israel, where a teacher must hold a second degree then train as a teacher of a given level of education (MOE State of Israel, 2000).

Another criticism of the pre service teacher education in Kenya is its traditional concurrent content pedagogy model. The model has been criticized for its subject centred nature that leads to predominant traditional teacher centred approach to teaching, didactically delivered (Mwangi, 2011). The model tends to be most favorable in Kenyan public primary schools situation where there is

congestion in most classrooms and allows minimal learner participation and minimal knowledge construction but saves on time to cover massive content and prepare learners for highly competitive examinations. However the model may not contribute to improvement of quality of education. The consecutive model where the teacher trainee is prepared to master content first then train as a teacher might ensure greater content mastery and emphasis on teacher trainees' teaching learning strategies.

Based on the discussed reported inadequacies of pre service programmes, practising teachers then require continuous professional development for enhancement of content mastery, updating knowledge, skills and development of learner centred teaching learning strategies and to create learner friendly learning environment which is conducive to effective learning. Even with the best pre service training, sustained teacher professional development would still be a priority because no amount of pre service training is enough to sustain a teacher throughout the teaching career due to the dynamism in society that needs to be addressed through education (Organization for International Co-operation and Development [OECD], 2009).

Effective teacher professional development should target curricula and instructional strategies that relate to students' learning and should be delivered to the teachers using the strategies which teachers are expected to use to instruct learners (Joyce & Showers, 2002). Effective TPD should deepen

teachers' knowledge of their teaching subject, sharpen teaching skills and strategies, update teachers on dynamic developments in their teaching area and in education in general. It should also generate and contribute new knowledge; increase teachers' ability to assess students' work and to provide constructive feedback and redirect teaching. The classroom environment should be friendly with enthusiastic teachers and learners. Teaching learning strategies should be learner centred, interactive, reflective, engaging, relevant, and personalized, collaborative and related to the daily activities of the teachers (Andrew & Triggs, 2001). Most meaningful teacher professional development also takes place when there are meaningful interactions where teachers are conceived as reflective practitioners and facilitators who guide learners to construct their own knowledge (McLaughlin & Zarrow, 2001). Mastery of subject matter, understanding how students learn, and practising effective teaching methods translate into greater student achievement (Elmore, 2002 & UNESCO, 2003) and hence need to be central in teacher professional development programmes. These were significant variables of TAC effectiveness in teacher professional development investigated in this study and they guided in selection of theoretical framework.

Kenya recognized the key role of sustained teacher professional development in improving teacher quality quite early in the country's history. Ayot (1982), reported that the government's concern about improvement of quality of teachers after political independence in 1963 prompted inclusion of the

establishment of Teacher Advisory Centres (TACs) in the 1963 Development Plan. In 1970, twenty one (21) teachers' centres were established and by 1996, one thousand four hundred (1,400) TACs had been opened throughout the country MOE (1997). Clear roles of TACs were spelt out (MOE, 1995) as to:

i. Identify the training needs of teachers in their respective zones

ii. Organize and conduct in-service seminars, induction courses, and professional meetings to meet the professional needs of the teachers

iii. Invite a variety of professionals from institutions such as Kenya National Examinations Council and Kenya Institute of Curriculum DevelopmentE to give talks to teachers on curriculum, teaching approaches and assessment

iv. Visit schools, observe teaching techniques, give demonstration lessons and advise teachers on methods and resources needed for teaching and learning

v. Provide professional guidance and counseling to teachers; and disseminate information on examinations, curriculum and textbook selection.

vi. Collect a variety of resources including books, consumables, audio-visual aids,(such as KICD tapes), reprographic equipment and materials for making visual aids, teaching aids, kits and handouts for different subjects

vii. Assist in assessment of learning outcomes in schools in the zones. (MOE, 1995).

Teachers' Advisory Centres (TACs) were therefore established in 1970s to provide primary school teachers professional development opportunities in response to the teachers' identified professional needs (MOE, 1995). The Sessional paper No.1 of 2005 (Republic of Kenya, 2005), a policy document, provided a comprehensive focus on teacher professional development and utilization within which in service training of teachers was a priority. Emphasis was laid on continuous improvement of teaching through teachers' skills upgrading. In addition, the Kenya Vision 2030 (Republic of Kenya, 2007) proposes that to improve the productivity and competitiveness of Kenya human resource pool, all students will be provided with a better learning environment including improved teaching skills and resources.

Given such policy support the expectation would be vibrant TAC activities and improved learning outcomes. On the contrary there was overwhelming research evidence of recorded poor learning outcome. The (UWEZO, 2013) assessment report indicated that only half of the children in Standard 1-8 aged 6-16 years acquired the highest numeracy competency expected of Standard two learners. Similarly, the Kenya National Examinations Council (KNEC, 2010) National Assessment System for Monitoring Learning Achievement (NASMLA) assessement of Standard three learners in numeracy and literacy reported poor learning achievement. The report indicated that learner achievement in both reading (297.58) and numeracy (295.6) were below the standardized mean of 300. The regional Southern and Eastern Africa Monitoring Educational Quality

(SACMEQ) assessment of literacy of Standard six pupils reported that while (64.8%) of Standard six pupils had reached the minimum level of mastery on the reading test, only (23%) had attained the English reading mastery level deemed desirable for successful learning in Standard seven (Bunyi, Wangia, Mukoma & Limboro, 2011). The findings suggested that (12.2%) of the learners had not even reached the minimum reading mastery level. Researchers (Hardman et al, 2009 & KNEC, 2010) have reported that teaching and learning in Kenyan primary schools were characterized by transmission, teacher centred teaching learning approaches. The Sessional Paper No. 1 of 2005 (Republic of Kenya, 2005) also reported that teaching in many primary schools in Kenya was dominated by transimission teacher centred teaching approaches where pupils were passive and were expected to recall facts in classes dominated by the teacher.

Siringi (2012) reported that some candidates who sat KCPE could hardly construct a sentence in English or Kiswahili and displayed a composition written by a KCPE candidate that revealed a combination of unfavourable home factors, school factors, including poor teaching and mental conditions that should have been identified and addressed early in a situation where there was effective teacher support and initiative of parties involved. The composition read in part:

Fig 1.1: Sample of a KCPE Candidate's Composition
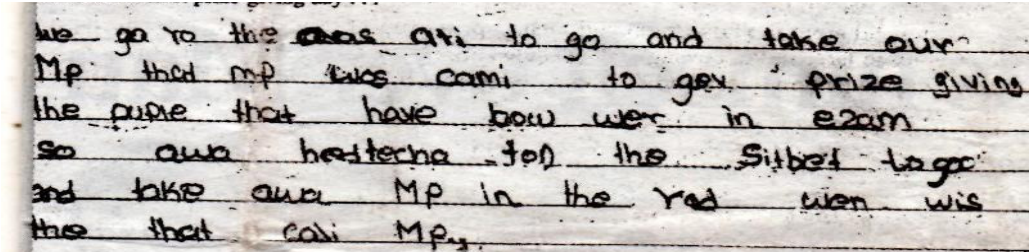
Source: Siringi (2012 p. 9)

1.3 Statement of the Problem

The problem that necessitated this study was that despite the clear mandate of TACs to conduct teacher professional development activities to enhance classroom instruction for improved learning outcomes and the existence of spelt out clearly spelt out duties and responsibilities of TACs, there were reports that many primary school teachers could not access professional development activities. This denied many of the teachers a chance to update their teaching content and teaching strategies. The teachers also lacked an avenue to share their daily professional challenges and issues which they faced in classroom instruction and such needs ended up without professional redress.

In addition, there were many research reports that indicated that many learners went through the primary school course without acquiring basic literacy and numeracy skills. There were also further reports that teaching and learning in Kenyan primary schools were characterized by transmission and teacher centred teaching learning approaches. These were happening despite the fact

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that TACs were established to provide primary school teachers professional support in classroom practice on regular basis by conducting the specified TAC duties and responsibilities. These indicators of problem necessitated a study on effectiveness of TACs in teacher professional development in Kenya.

1.4 Purpose of the Study

The purpose of this study was to establish the extent to which TACs conducted their duties and responsibilities and teachers applied modern progressive principles in teaching influencing learning approaches of their students.

1.5 Objectives of the Study

The objectives of the study were to:

i. Determine effectiveness of TACs in conducting in service courses and holding professional meetings for teachers with invited guest speakers to address identified teacher professional needs;

ii. Establish the extent to which TAC conduct classroom observation and lesson demonstration to address the teachers' identified professional needs;

iii. Determine the extent to which TAC tutors facilitate teachers to select, develop, use teaching learning resources to enhance instruction.

Find out the extent to which teachers use learner centred teaching learning approaches in class.

1.6 Research Questions

This study was guided by research questions. Objective one was investigated by addressing the following two research questions:

   i. To what extent do the in service courses address the identified teacher professional needs?

   ii. How regularly do TAC tutors invite guest speakers to address teachers on identified professional needs?

Objective two was addressed through the following research question:

   iii. How often do TAC tutors conduct classroom observation and hold demonstration lessons for teachers to address the identified professional needs?

Objective three was addressed through the following research question:

   iv. How effectively do TACs train teachers to select, develop and use teaching learning resources in class for instruction?

Objective four was addressed through the following research question:

   v. To what extent do teachers' teaching approaches display friendly learning environment and learner participation in their learning?

The following research question was addressed in each objective to guide in investigating the perceptions of teachers towards TPD activities by TAC tutors to trace impact of TAC activities in the classroom.

iv) How do teachers rate the significance of the following TAC activities in enhancing teaching and learning: in service courses, classroom observation, demonstration lessons, enhancement of teachers' content mastery and training of teachers to use learner centred teaching learning approaches?

1.7 Significance of the Study

This study investigated the effectiveness of TACs in teacher professional development in Kenya. It was an area that had attracted interest in the past but the effectiveness of TACs in teacher professional development remained questionable due to the fact that although the TACs were expected to guide primary school teachers in classroom instruction, the teachers persistently faced professional difficulties that needed redress. This study is significant because it addressed teacher professional development which is particularly critical because, if effective, it could positively influence teachers' teaching approaches and students' learning (Desimone, 2009).

The practical significance of the study was that the current performance of TACs was established and, if addressed, the TACs could perform their duties and responsibilities more effectively for purposes of improving classroom instruction and learning outcomes. This improvement in the TACs' performance would benefit parents because their children would receive quality teaching which would in return improve their children's academic performance. The learners will be the immediate beneficiaries of the improved

modern learner centred teaching learning approaches and friendly learning environments. The improved learning environment would result in enhanced acquisition and application of concepts and principles. The teachers would benefit because their professionalism would be furthered resulting in self satisfaction from their practice and products. In addition the Kenya Institute of Curriculum Development, Quality Assurance and Standards Officers and education development partners would access more information from this study regarding teacher professional development which has been an area of their concern.

1.8 Assumptions of the Study

The study was based on the assumptions that:

  i.   TAC tutors conducted teacher professional development activities in their respective zones

  ii.   Teachers attended teacher professional development sessions organized by TACs

  iii. All the respondents would be cooperative and truthful when providing required information.

1.9 Limitations of the Study

The study faced a number of limitations. TAC tutors were not ready to participate in the study due to their busy schedule. The researcher had to persuaded the DEO prior to data collection day, to release the TAC tutors to participate in the study. Some TAC tutors were found serving in more than one

zone in which case the TAC tutor serving the two centres reported on TAC activities of both centres. In addition some teachers found it difficult to spare time to participate in the study due to their tight teaching schedules which forced the researcher and the teachers to mutually agree on a convenient day. All teachers were not willing to be observed teaching and the researcher had to convince some of them to agree to teach as the researcher observed. The self report by use of questionnaire could pose reliability issues but the researcher also included observation schedule where the researcher personally observed the teachers teaching directly for purposes of moderating and triangulating the research findings.

1.10 Delimitations of the Study

This study was delimited only to establishing the extent to which TAC tutors performed their teacher professional development duties and responsibilities and the teachers' classroom practice; to establish whether the teaching approaches were learner centred. That required a cross sectional survey of how the situation was at the time of the study. Students learning outcomes, though important, were not within the scope of this study. TAC activities related to curriculum implementation and classroom instruction were the only ones targeted in this study. The study was limited to only five out of the 47 counties to cater for financial limitation and time constraints facing the study and still be within acceptable study sample size and coverage. The delimitations made the

study possible within the limited time of the course of Ph.D study and was affordable and manageable.

1.11 Theoretical Framework

This study was influenced by Desimone's (2009) core conceptual framework for studying effectiveness of teacher professional development which was tested by Kang, Cha and Bong (2013) and found to be a justified solid theoretical framework. It postulates that professional development increases teachers' knowledge and skills and positively impacts on teachers' attitudes and beliefs improving their content mastery and pedagogical skills. This leads to the teachers' enhanced instructional approaches that ultimately lead to improved students' learning outcomes. The model further holds the view that teachers learn as students do and TPD should include activities which would be practiced by teachers in class with learners. It explains that teacher professional development is effective if its impact can be traced in the classroom as teachers teach and ultimately lead to improved learning outcome. The activities for teacher learning advocated by the model include in service, training, classroom observation and lesson demonstration and development and use of teaching learning resources.

The Pedagogic content Knowledge (CPK) model by Shulman (1986) also guided this study. It claims that teachers need knowledge of what teaching approaches fit the content and also knowledge of how elements of the content can be arranged for better teaching and the strategies most likely to be fruitful

in reorganizing the understanding of learners for effective learning outcome. It advocates the blending of content and pedagogy, by teachers, into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction. The model therefore offers teachers elucidation on representing and formulating the academic content in a manner that is comprehensible to learners. It expounds to teachers how content and pedagogy could be blended in instruction; to enable the teacher organize subject matter and represent it to learners in a way that each learner understands best, for improved learning outcome. It suggest a number of activities for teacher learning which include selection, development and use of a variety of appropriate instructional resources, imparting knowledge and skills on approaches for knowledge construction, classroom interactions, content mastery, selection of topics, lesson presentation, use of illustrations, explanations and demonstrations among others. It suggests in service for teachers and training.

The two theories (Desimone, 2009 & Shulman, 1986) and this study aim at teacher learning and advocate similar activities associated with teacher learning and share variables for teacher professional development which are associated with positive impact on teacher learning and students' learning outcome. These variables include in service, training, professional meetings, classroom

observation, lesson demonstration, and resources for enhancing learning environment.

Teachers' engagement in the activities as they learn during professional development would take them through learning experiences that would influence their practice, beliefs and attitudes; enrich their knowledge and skills which would, in turn, influence their classroom instruction and would be observed in the teachers' teaching strategies and approaches. Specifically the impact of teacher learning during TPD by TACs would be observed in class as the teachers teach, manifested in form of classroom interactions, confidence and fluency of teachers as they teach, teachers' mastery of content, teacher and learner enthusiasm, creativity and learners' innovation and enhanced learning environments with use of teaching learning resources. In this study the intervening variables were held constant by concentrating only with teachers who had attended TAC activities.

1.12 Conceptual Framework

The two theoretical frameworks (Desimone, 2009 & Shulman, 1986) guided construction of the conceptual framework in Figure 1.2.

Independent Variables		Dependent variables
• In-service Training • professional needs • Professional meetings with guest speakers • Classroom observation • Demonstration lessons. • selection, development and use of teaching learning resources	**Intervening variables** • TPD by other providers • Role models • School's own TPD • School culture and environs	• teacher made teaching learning resources • Teachers trained in selection, development and use of teaching learning resources • learner centred teaching & learning approaches • varied teaching strategies • Confident, fluent teachers • display of mastery of content • Class interactions: learner – learner & learner-teacher • Enthusiastic, motivated teachers & learners • Lively, creative, innovative, active learners, • Friendly, attractive learning environment

Figure 1.2: Effectiveness of TACs in Teacher Professional Development

Figure 1.2 presents the conceptual framework for this study. This study held the view that teachers learn as well as pupils do by being engaged in teaching learning activities which they try in their own classrooms. It was therefore conceptualized that if the TAC tutors conducted their duties and responsibilities effectively and teachers participated in TPD activities, teachers would learn facilitated by TAC tutors using the stated TAC activities. During TPD offered by TACs teachers would use teaching learning resources, varied teaching learning techniques and teach learners using the same strategies used by TAC tutors in the course of TPD and consequently there would be improved

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learning outcomes. The intervening variables were held constant in this study. They were perceived as: courses attended by teachers on their own initiative and TPDs offered by other providers besides TAC tutors; the school environment and school based TPDs, school culture and teacher's' beliefs and attitudes. This study concerned itself only with teachers who had attended TPD activities by TACs.

The independent variables expected to interact with the dependent variables to cause the desired outcome were: in service courses, identified professional needs; professional meetings; training, teaching learning resources; classroom observation and demonstration lessons drawn from the objectives. The dependent variables that indicate the outcome that would result after teachers attend effective TPD activities by TACs that would be observed in classroom would be: learner centred teaching and learning approaches, enthusiastic teachers and learners, lively and active classes, friendly and attractive learning environments, improved interactions - between learners themselves and between learners and teachers. Other dependent variables were perceived as friendly, confident, fluent teachers, varied teaching approaches, active lively and creative, innovative learners. The interplay between the independent and the dependent variables with the intervening variables held constant would play a significant role in addresssing the stated problem and the issues brought out in this study and would ultimately bring about improved learning outcomes.

1.13 Operational Definition of Key Terms

Effectiveness of TACs: determined by the extent to which TACs conduct the specified TAC duties and responsibilities and the level of teachers' use of learner centred teaching learning approaches.

Learner centred teaching learning approaches: learners' involvement in learning and knowledge construction, learner engagement in learning activities; free class interactions and enthusiastic, creative lively learners, active learning.

Teacher professional development: TACs continuous interventions to address identified teacher professional needs through performance of specified TAC duties and responsibilities and the result would be learner centred teaching approaches and improved learning outcomes.

Content mastery: Deep understanding of the subject matter in such a way that the teacher can present it in different ways to different ability learners for the learners to understand better.

Pedagogic skills: A conceptual map of how to teach a subject; knowledge of instructional strategies and representations of knowledge; ability to select appropriate teaching learning strategies for specific learners to cater for their different learning styles and other learning differences.

Pre service: Initial teacher education and training before serving as a teacher

Teaching learning resources: are resources used by the teacher to aid teaching and students' learning. They are sometimes called teaching aids

In service: education and training of teachers while they are serving as teachers

CHAPTER TWO:LITERATURE REVIEW

2.1 Introduction

This chapter presents both international and national reviewed literature related to this study. The study investigated the effectiveness of Teacher Advisory Centres (TACs) in teacher professional development in Kenya. It studied the extent to which TACs perform their duties and responsibilities spelt out in MOE (1995). The chapter is organized in the following topics:

     i)   An Overview of Pre - service Teacher Training

     ii) Teacher Professional Development

     iii) Teaching Strategies and Classroom Practice

     iv) Resources for Enhancing Teaching and Learning

     v) Teacher Professional Development Policy Support in Kenya

     vi) Selected Reports on Teacher Professional Development in Kenya:

          a. Teacher Professional Development by European Union

          b. National Examinations Council: Monitoring Learner Achievement Kenya

          c. Strengthening Mathematics and Science in Secondary Education

          d. Selected studies on Teacher Professional Development in Kenya

     vii) Summary

2.2 An Overview of Pre service Teacher Training

The pre service teacher education in Kenya and in other countries is the preparation of teacher trainees before serving as teachers in actual classroom teaching. It has been strongly criticized by education researchers (Arechaga,

2001; Marcello, 2009 & Mwangi, 2011) for being inadequate and therefore teachers need professional support for effective teaching and learning. Researchers, who influenced this study, such as Ur (1997) perceived both teacher training and teacher professional development as partners in development of teacher competence. Most issues addressed in teacher professional development are related to those in pre service teacher training.

The pre service teacher training model in Kenya is mainly the concurrent content – based pedagogical model associated with transferring content mainly delivered in didactic manner (Mwangi, 2011). Marcello (2009) points out that there is high dissatisfaction in regards to pre service teacher training ability to address professional needs of teachers when in actual practice. Pre service teacher training programmes are said to be bureaucratic organizations in which theory and practice are divorced. It is further reported that there is fragmentation of knowledge taught and fragile link to schools (Marcello, 2009). Hence the trainees feel lost when they start practicing the skills they learnt theoretically. Moreover (Ur, 1997) argued that teacher training model leaves no scope for teachers' own reflection and initiative. That is contrary to social constructivist; Vygotzkian conception of nature of learning, according to which learning is achieved by the learners constructing their own understanding of reality through interaction with others; a view that this study embraces.

The Organization for Economic Co-operation and Development (OECD, 2009) also observed that no matter how good pre service training is, it can't prepare teachers for all challenges they face throughout their teaching career and that teachers should be provided opportunities for continuous sustained professional development to maintain high standard of teaching.

Further, research has established that pre service teacher education courses tend to be ineffective in changing the traditional beliefs and images about teachers and teaching that student teachers bring to their pre-service education (Arechaga, 2001). Moreover, student teachers leave college before they have had enough classroom practice and their classroom practices have been reported to be related to their traditional belief about certain subjects (Poland & Triggs, 1997) such as Mathematics which they might have been taught poorly and developed dislike for the subjects. The teachers then may in turn make the learners whom they teach dislike the same subjects.

This study was further influenced by the argument that if teachers do not learn and get subjected to proper professional developmental training in order to change their belief system, they would continue to teach in ways not fundamentally different from the way they themselves were taught and perpetuate a style of teaching and learning similar to that which they experienced when at school themselves despite the initial teacher training (Poland & Triggs, 1997). The cyclic trend may then continue unless broken

and this study is concerned with teacher professional development as a possible tool to bring about desired change and break any such trend. Traditional approach of transmission of knowledge and fixed beliefs would be perpetuated if no intervention measure is taken. The approach is claimed to inhibit creativity and innovation which are critical elements in critical pedagogy and in knowledge construction. There is a clear established gap in pre service teacher training.

Villegas-Reimer (2003) reported that in Latin America, the problem in pre service teacher preparation programme includes less than ideal characteristics of most candidates who enter the profession which is comparable to the PI Certificate candidate whose entry level to teacher training college was D+ (plus) and later upgraded to C (plain) at Kenya Certificate of Secondary Education (KCSE) reported in Ministry of Education (MOE, 2004). Villegas-Reimer cited weakness of pre service that are familiar in Kenya Pre service Primary Teacher One (P1) course. He stated the following weaknesses: curricula of poor quality such as too much emphasis on theory and little or none on practice, programmes that are too short, a weak relationship between programmes and school practices and poor preparation of teacher educators. Villegas-Reimer then cited challenges facing teaching profession such as lack of attractive characteristics to the profession - low status and salary which in turn determines the calibre of those who enter the profession, the impact on their self esteem and their commitment to the job. As a result, in most cases,

teaching attracts people who have no other job alternative or who are passing time as they look for a better job (Warwick & Reimer, 1995) while teaching career should be for only those people who are committed to it. The cited challenges and issues are true to Kenyan teacher education situation as well and hence there are clear gaps in teaching profession even right at teacher trainee recruitment.

In general, Villegas - Reimer (2003) reported that there tends to be a problem in teacher preparation in many countries of the world and mainly in developing countries and expounds that in Pakistan, the quality of teacher training is low. In India pre-service programmes take generally one year. Most students leave the institutions lacking in basic knowledge of the subject matter; they are also deficient in pedagogical training and ill equipped to work in schools. The same case is found in Brazilian teachers. Villegas-Reimer (2003) reported similar criticism of pre service training in some developed countries. In USA it was reported that in majority of institutions' education courses were taught by adjunct faculties, curricula were set by external agency; teacher preparation universities and colleges had weak linkage with schools and cooperating teachers in the field; such issues and others call for change in teacher education. In Kenya the Primary teacher education curriculum (Ministry of Education [MOE], 2004) emphasizes content at the expense of development of pedagogical skills. A course such as Information Communication Technology (ICT) that should prepare teacher trainees to use technology as a teaching

learning tool concentrates on computer literacy (Kisirkoi, 2013). The primary teacher Education curriculum (MOE, 2004) lays emphasis on content and theoretical presentation of teaching approaches and methods at the expense of practicum and teaching practice, which is also another clear gap in teacher preparation.

Villegas- Reimer (2003) also reported on a study by Asia Pacific Economic Cooperation Organization (APEC) a situation that compares well with teacher training in Kenya today. The report showed that there was increase in duration of teacher preparation but elementary teachers were expected to hold a certificate of a level below that of a bachelor's degree as is the case with the Kenya primary teacher one (P1) teacher certificate course. Secondary school teachers were supposed to have successfully completed university level course just as in Kenya where Bachelor of education degree is required for teachers of secondary schools and the duration of study was increased from three to four years since the inception of 8-4-4 system of education in 1985.

Comparison could be further drawn between Kenya and other countries' situations regarding primary school teacher preparation. Villegas- Reimer (2003) reported that in Alberta, Canada and Chinese Taipei primary school teachers specialized in at least one teaching subject. In Kenya primary school teachers specialize in a teaching area (MOE, 2004) which is either science or Arts subjects but when they start teaching in schools, they are made to teach all

school subjects in the primary school curriculum (Kenya Institute of Education [KIE], 2010).

The studies reveal gaps in teacher pre service training that require to be filled in any upcoming Teacher Professional Development (TPD) or in revitalized Teacher Advisory Centres (TACs) TPD activities and justify need for sustained TPD to raise teachers morale, enthusiasm and motivate them among other purposes of a TPD.

2.3 Teacher Professional Development

Teacher Professional Development (TPD) is critical for quality and effective teaching and learning, especially due to the identified inadequacies of pre service teacher training. The conceptualization of teacher professional development tends to be changing and its definition varies which presents a gap. This study finally draws its definition of the term 'teacher professional development' from a number of other definitions of the term to serve its specific purpose. It is argued that the concept of teacher professional development is not clear among educational researchers as reported by Evans (2002) who contends that there is no one agreed definition of the term among researchers. This in itself is a gap. Evans argued that even those considered leading writers in the field (Darling – Hammond, 1999; Fullan & Hargreaves, 1992 & Leitherwood, 1992), do not define precisely what they mean by the term, teacher professional development' but end up describing or commenting

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on it. However all the ideas and perceptions by researchers regarding teacher professional development are valid and are worth consideration while exploring the issues and coming up with recommendations for this study.

Evans (2002) conceptualized teacher professional development in a broad sense as a process where teachers' professionalism may be considered to be enhanced and the term teacher is used inclusive of all teachers from the pre-school level to post school and development extends from individuals to whole staff department. To Evans the development covers both attitudinal and functional development and it inspired this study. She expounds that the two areas cover intellectual and learning new ways of operation and performance. These are incorporated in Pedagogical Content Knowledge (PCK). Evans (2002) also perceived that teacher professional development occurs through a process of reframing of experiences that facilitates the use of pedagogical knowledge. Elements of teacher professional development involve learning. Evans proposes that teachers are likely to be developed by sending them for courses, imposing reforms on them and placing on them a particular professional culture or climate or presenting to them problems and challenges and this study is informed by those perceptions. Head and Taylor (1997) asserted that after experiencing effective professional development teachers would continuously criticize their classroom practice by reflecting on their performance and work to improve their traditional classroom practice; the teacher becomes a reflective practitioner – a view to be considered in planning

TPD activities. Teacher professional development should be conceptualized as ongoing, continuous, and embedded in teachers' daily lives (Desimone, 2009)

Arechaga (2001) viewed teacher professional development as change and growth to become the best teacher that one could possibly become to the extent that teachers regularly ask themselves, 'how can I become the better teacher? How can I enjoy my teaching more? How can I feel that I am helping learning? These are valid questions for teachers at all times. Professional development of teachers is also perceived as a self reflective process where the teacher interested in personal professional development questions old teaching habits with a view to improving them. This emphasizes reflection as an important aspect of teachers' professional development and this perception too sheds light to this study because teachers should always strive to better themselves.

Scope of professional development is further widened by Aggarwal (2005) who argues that professional development comprises those activities in which professionals are engaged in for the purpose of achieving professional competence and improving their practice in the effective management of teaching and learning process. He expounded that a competent teacher creates pedagogical situations in the classroom to ensure that learning takes place effectively. This view too enriches this study because teachers should embrace the recommended practice to better their practice. Ur (1997) then further

expounded that teachers would keep in view that the aim of education is to develop harmonious personalities who are culturally refined, emotionally stable, ethically sound mentally alert, morally upright, physically strong, socially efficient and spiritually enlightened. And that is a view of holistic education which this study embraces. To Underhill (as cited in Arechaga, 2001) teacher development is one version of personal development as a teacher; a process of increasing ones conscious choices about thinking, feeling and behaviour as a teacher. It should be holistic. Teacher development is further perceived as a process of a teacher becoming increasingly aware of quality of the learning which is an appropriate expectation of the teacher so that a teacher keeps improving quality of their practice.

Professional development is viewed broadly by European Union (2010) as the body of systematic activities to prepare teachers for their job, including initial training, induction courses and continuous teacher support. Another aspect of teacher professional development according to the European Union was in service training and continuous professional development within school settings. Marcello (2009) too viewed teacher professional development as a contribution to the development of the teacher's professional skills by means of a variety of both formal and informal experiences as individuals and a collective process that should be accomplished in the workplace of the teacher - school. Teaching and Learning International Survey (OECD, 2009) adopted a broad definition of teacher professional development to include activities that

develop an individual's skill, knowledge, expertise and other characteristic as teachers. The activities included courses, workshops, formal qualification programmes, collaboration through schools or teachers across schools, coaching, mentorship and sharing good practices. OECD also pointed out that effective TPD is not a one shot but it is ongoing; including training practices and feedback. It also pointed out that successful programmes involve teachers in activities similar to those they will use with students and encourage development of teachers' learning communities.

Harvel (2003) argued in favour of a critical aspect of TPD that enhances interactivity and points out that TPD could be enriched by technology and contends that online professional development combined with face to face provides two of the most essential elements of effective professional development. Technology integration provides ideal interactive opportunity for the teachers which the teachers could pass to students. Interactivity is critical in raising learner enthusiasm and in development of critical thinking. When technology is integrated in education, it enhances classroom teaching and learning (Mugenda, 2011). In addition Technological Pedagogical Content Knowledge (TPK) later coined to (TPACK) is the theoretical basis for integration of technology in curriculum which is the current trend in TPD. The teacher integrates technology in curriculum for improved communication of content and skills and to develop e-teaching resources enriching TPD (Mishra &Koeshler, 2006). So and Kim (2009) in their study based on TPACK theory,

while investigating problem based learning, found that in integration of technology, students learn independently and are responsible for their own learning; tasks become interesting, stimulate critical thinking and develop learner creativity. However this study did not incorporate ICT integration in education due to its great demand and doubts that schools had embraced it.

Technology Integration in education caters for learners different learning styles and is critical in making learning engaging (Schmidt, Thomson, Mishra, Koehler & Shin,2009). TPACK address technological, pedagogical and content knowledge which are related and critical in enhancing teaching and learning. TPACK is said to be a useful frame of thinking about what knowledge teachers must have to integrate technology into teaching and how they might develop the knowledge (Schmidt, Thomson, Mishra, Koehler & Shin,2009) which is crucial in catering for learners' individual learning styles such as visual, audio and kinesthetic and also addressing more senses in learning.

So and Kim (2009) however observed that many teacher education programmes have not been preparing teachers adequately to integrate technology and many teachers in schools are reluctant to integrate technology for use in teaching and learning - a situation true to Kenyan context

An interesting recent development in teacher professional development is e – Twinning. (Vaurikari, Crawley, Gilleran, Ciemeca, 2010). argued that e-

Twinning professional development network has high potential to satisfy some teacher's professional development needs in Europe. It was argued that informal information such as dialogue played a significant role in improvement of teaching and was mentioned as the most frequent activity for teacher professional development with participation rate of 90% in most of the participating countries. It was reported that e-Twinning develops individual skills, knowledge and other teacher characteristics and allows up skilling in areas such as ICT.

The governance and organization of teacher professional development programmes in developed countries have undergone shifts to the school (Leu, 2004). In America, in service teacher development in the past that relied on more centralized cascade workshops, is reported to be increasingly shifting to programmes that are more decentralized, either at the district or school levels which involve the teacher (Leu, 2004). Leu further reported that TPD conducted at a school or cluster level were usually highly practical and participatory and that facilitation was most frequently carried out by the teachers themselves, with the support of materials that combined information on new approaches with suggestions for reflection and action. Leu then added that the content of programmes was often based on experience sharing among teachers combined with core content based on a country's curriculum reform programme and required new approaches to teaching and learning. Leu (2004) further proposed that TPD programmes should be supported by a variety of

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teacher-learning materials and facilitation guidelines including printed materials, radio support, multimedia kits, and internet-based programmes to support the teacher in conducting class enhanced by the programme. Leu reported that school-based and cluster in service programmes tended to be very popular with teachers who were accustomed to receiving little professional attention. Kenya conducted a school based teacher professional development programme and trained Key Resource Teachers (Kenya Education Sector Support Programme [KESSP], Ministry of Education [MOE], 2005) but sustainability of such programmes posed a great challenge. The view that the concept of professional development has taken decentralized school based dimension is also brought out by Marcelo (2009) who further explained that TPD should be a long term process, covering different types of opportunities and experiences planned to stimulate the development and evolution of the teacher. It should be intensively sustained with the aim of improving teacher's and administrator's effectiveness in raising students' achievement. These ideas and views greatly enriched this study.

Professional development should be continuous bearing in mind the fact that no matter how good an intervention's theory of action or how well designed its components, the design and implementation effort will be wasted if the intervention does not improve teachers' practice (Wylie, & Princeton, 2008) and that should be bone in mind by any TPD provider. Villegas-Reimer (2003) too argued that effective TPD should address teachers' and students' needs and

it should be long term and ongoing and cumulative, providing teachers opportunity to gain new knowledge and skills. It should also focus on students' learning outcomes. TPD should be learner centred enabling the teachers to experience the type of instruction that they are likely to provide their students. Good TPD as presented by Villegas - Reimer (2003) should be a lifelong activity, reflect changes in the teaching practice, focus on students' outcome, and adapt a model based on constructivism and not transmission approach. Moreover Villegas-Reimer (2003) emphasized that TPD has significant positive impact on teachers' beliefs and practices, students' learning and on the implementation of educational reforms.

The US National Science Foundation Teacher Enhancement programme established that the degree to which teachers are exposed to TPD is closely linked to their method of teaching such as both inquiry based teaching practice and development of investigative classroom culture (Villegas-Reimer, 2003). Further, researchers such as Darling - Hammond (cited by Villegas – Reimer, 2003) supported the assertion that teachers who participate in sustained curriculum based professional development reported changes in practice, that in turn were associated with significantly high student achievement scores on state examinations. This is an encouragement as this study focuses on TPD for improved instruction and learning outcomes.

However Gaps exist. Villegas Reimer (2003) reported that in most parts of the world the majority of in service programmes were not quite effective. They

were too short, too unrelated to the needs of teachers and too ineffective to upgrade teaching knowledge. She further pointed out that in a survey of 700 teachers in India, 86% reported that they had received professional training at a teacher educational institution but the quality was not up to date. In service training and ongoing professional development for practicing teachers was reported to be minimal in India. Only 13.6% of primary school teachers and 20% of secondary school teachers reported that they had received in-service training over a period of two years. In Latin America, the content of the in service courses did not cater for the needs of teachers. In service course facilitators were poorly prepared and courses were theory oriented. This was in conflict with OECD (2009) advice that teachers should be exposed to experiences and activities similar to those they were expected to expose learners to. Similar findings of low quality of in service courses and other TPD initiatives were reported in Kenya by Odini (1993), Department for International Development [DFID], 1999); Hardman et al, (2009) and (Kenya National Examinations Council [KNEC], 2010).

These gaps are critical and should be addressed when designing and implementing a TPD.

Finally, in this study, a working definition of effectiveness of Teacher Advisory Centres (TACs) in teacher professional development was arrived at based on the TAC duties and responsibilities spelt out in the Ministry of Education (MOE, 1995) and influenced by the professionals' definition of the

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term TPD and their other arguments. The ideas of TPD by professionals discussed in this section concur with the spelt out duties and responsibilities of TACs. Effectiveness of TACs in TPD was therefore taken to mean the extent to which TACs conduct their duties and responsibilities spelt out in MOE (1995) which would be traced in teachers' use of learner centred teaching learning approaches in class for improved teaching and learning that results to improved learning outcomes. The perception was that if TACs performed their duties and responsibilities effectively the impact would be observed in the teachers' classroom instruction. Teachers would embrace learner centred teaching approaches. This is informed by the view that no matter how good an intervention's theory of action or how well designed its components, the design and implementation effort would be wasted if the intervention does not improve teachers' classroom practice (Wylie, & Princeton, 2008). Gay, Mills & Airisia (2009) argued that effectiveness is achieved after activity outcome. Hence effectiveness of TACs in TPD would be observed in classroom instruction and learning outcomes.

TACs duties and responsibilities that should be conducted by TACs that were summarized in this study and agree with views of TPD professionals were to: conduct in service courses to address teachers' identified professional needs; organize meetings of teachers with experts for enhancement of teachers' mastery of content and pedagogic skills; conduct classroom observation and lesson demonstration; train teachers to develop, select and use teaching

learning resources; train teachers in selection, development and use of teaching learning resources for enhanced instruction. The responsibilities of TACs if well conducted would result in outcomes which would be indicators of TAC effectiveness in TPD and would be observed in class and reported by the teachers. If the study were longitudinal effectiveness would over time come out as the impact of TPD on learning outcome. Effective TPD begins with the understanding of teachers' needs and their work environment in order to address real needs (Gaible & Burns, 2005). Based on this view, this study therefore investigated whether TACs based teacher professional development activities on identified teacher professional needs.

2.4 Teaching Strategies and Classroom Practice

Leu, (2004) observed that teacher professional development would constitute improvement of education only if the professional development was focused on specific changes in teachers' classroom practice. Ingersoll (2001) among other researchers held the view that teacher professional development should address identified teacher classroom practice needs to sharpen teaching strategies and approaches. It also observed that the basis for development of innovative teaching approaches and techniques is deep content knowledge and therefore teachers must be proficient in general pedagogic knowledge and pedagogic content knowledge (Adedoyin, 2011). Deep knowledge of subject matter is considered as the critical precondition of Pedagogic Content Knowledge (PCK). A teacher with good content and pedagogical knowledge would be able

to break up content and represent it to the learner in the form the learner best understands (Koehler, 2011). The most frequently analytical variables used when attempting to explain why some teachers are more effective than others are the subject matter mastery and pedagogical knowledge. Such a teacher could be facilitated to develop further and acquire technological knowledge and integrate the three forms of knowledge, select technology tools and design learning activities for use in enhancing teaching and learning and application of effective teaching approaches and techniques and that is the essence of TPACK which is a further development of PCK (Koehler, 2011). This is expected to make learning interactive and provide learners opportunity to construct their own knowledge.

The teacher is chiefly entrusted with curriculum implementation, and content mastery is critical in interpreting the syllabus, planning for teaching and coming up with appropriate pedagogy, technology and resources to implement curriculum by representing the curriculum content as designed in a manner that each learner enjoys and understands best. The teacher has to thoroughly understand the content and then plan means of communicating it to the learners and then communicate it through selected teaching learning approaches, strategies, technologies and resources that are central to this study whose main concern is improvement of classroom practice for enhanced teaching and learning and should be the core activities in teacher professional development.

Twelve principles of effective teaching observed in classroom practice, reported by Organization for International Co-operation and Development (OECD, 2009) and Brophy (2001), enrich the variables in this study's conceptual framework which are to be observed in class as evidence of learner centred classroom environment. The principles were: creating supportive classroom climate, providing learners opportunity to learn, raising teacher and learner enthusiasm, enhancing learner creativity and innovativeness, establishing learning orientation, promoting coherent content presentation. The other principles of effective teaching include providing learners opportunity for thoughtful discourse, practice and application; providing student assistance-scaffolding, cooperative learning, goal oriented assessment in measuring expected learning outcomes (Brophy, 2001& OECD, 2009).

The principles of good classroom practice informed the selection of variables for investigation and development of tools for this study. The principles are in agreement with European Union (2010) cited characteristics that were associated with good classroom practice and were focus of investigation in classroom observation in this study. The characteristics were: clarity in presentation adapted to the cognitive level of the learner, flexibility in varying teaching behavior, use of teaching aids, organizing different activities and teacher and learner enthusiasm expressed in verbal and non verbal behavior of the teacher. Other reported effective teaching characteristics include: teacher enthusiasm or business like behavior, providing student opportunity to learn

criterion material, making use of stimulating comments, varying level of cognitive questions and class interactions (European Union, 2010).It also brought out the view that in effective teaching testing should be only on work covered.

Researchers report that self efficacy is a major predictor of teachers' competence and commitment to teaching (Bandura, 1997 & Hoy & Davis, 2005) and it is observable in classroom practice; that view also influenced this study. The researchers argued that there is a positive relationship between teachers' efficacy, beliefs and students academic achievement. They further asserted that teachers with high self efficacy tend to exhibit great level of planning, organization and they are more open to ideas and more willing to experiment with new methods, work longer with poor students and exhibit greater enthusiasm for teaching (Hoy & Davis, 2005). Scheerens (2008) provided the following teaching variables based on teacher background characteristics that influenced this study: content knowledge, pedagogic knowledge, insight in student learning and pedagogic content knowledge. He illustrated that constructivist teaching approach produced the highest learning outcomes. Scheerens (2008) summarized instructional variables in six categories and rated their learning effectiveness as shown in the Table: 2.1

Table 2.1: Teaching Factors

No.	Category of Teaching Factor	Mean Effect on Learning
i)	Curricular	.077
ii)	Teacher classroom Management	.095
iii)	Teaching Strategy (structured, direct, transmission)	.087
iv)	Teaching Strategy (constructivist-oriented)	.135
v)	Climate/environment, support, positive interactions	.117
v)	Feedback/ monitoring/ assessment/ tests	.065

Source: Scheerens (2008)

From Table 2.1 constructivist teaching approach tend to display the highest teaching effect on learning outcome with mean of .135 followed by supportive classroom climate created by the teacher which scored.117. Teacher classroom management also plays an important role and scored .095 teaching strategy .087 followed by curricula that scored .077. Feedback, monitoring and assessment scored .065. Special stress should be laid on use of constructivists approach and establishing a quality learning environment. This is further strengthened by the view that constructing knowledge for oneself leads to genuine learning and mastery (Jones, 2007) hence knowledge construction should be the focus in TPD. All the variables presented by Scheerens are important in learning and should be addressed in teacher professional development because they all contribute to learning in varied degrees and they were all considered vital in this study especially in selecting variables to investigate.

Classroom environment should encourage: creativity, problem solving, research exploration and sharing of ideas (Jones, 2007 & Klein, 1999). Further classroom interactions should be more responsive and centred on the child (United Nations Educational Scientific Cultural Organization [UNESCO], 2008) and that should be clearly spelt out in the curriculum. For example, in Israel the objective of curriculum for junior high school, grade seven to nine is to develop critical, creative, innovative, thinking and to understand research and problem solving methods (MOE State of Israel, 2000). This engagement of learners is critical in learning. Brain research findings (Sparrow & Frid, 2006) indicate that learners have one hemisphere that is more prevalent than the other. Therefore activities should be provided to cater for both brain hemispheres of the learners because learners' thought processes vary.

Brain research has also supported need for relaxed learner friendly environment. It has shown that learning takes place in the neocotex which does not function well under stress or fear Klein (as cited in Sparrow & Frid, 2006) therefore learning environment should be attractive, friendly and stress free. Constructivists feel that teachers should act as facilitators who provide appropriate activities and support pupil's to personally construct meanings rather than receive them ready made from the teacher (scheerens, 2008). Clearly research shows that effective teaching must apply learner centred teaching learning approaches which was one of the concerns of this study. Schereens (as cited in UNESCO, 2008) asserted that studies of school

effectiveness identify the way teachers teach to be of critical importance in any reform designed to improve education quality. The outcomes emphasized are broader than basic recital of facts and information therefore the manner of classroom practice and instruction was central in this study and this influenced the decision that effective TPD must lead to teacher use of learner friendly learner centred teaching approaches which was investigated in this study.

This study was further influenced by Johnston (2004) view that learning is not about passivity and order; it is about the messy process of discovery and construction of knowledge which leads to genuine learning and content mastery. The (UNESCO, 2008) report advocated use of a mixture of strategies where challenges such as lack of resources and large classes were faced. Some useful teaching methods on the continuum between chalk and talk learning and full exploratory pacification by learners could be another strategy. Possibility of mild interactive type of structured teaching that involves frequently stopping to ensure students have understood could be used. These suggested approaches formed variables that were investigated in determining whether learner centred approaches were used in class by the teacher during classroom observation.

Use of a suitable learning model or sourced assistance from experts in some complex teaching concepts, content, skills and attitudes that calls for specialized expertise was recommended (Crolyne, 2008). The TAC tutor Handbook (MOE, 1995) allows TAC tutors to source expert assistance from

institutions such as KNEC and KICD which could be extended to others such as Teacher Education in Sub Saharan Africa (TESSA). This supports the use of invited guest speakers in TPD activities by TACs.

The literature from research studies in this chapter enriched this study by providing insight on variables on classroom practice for investigation.

2.5 Resources for Enhancing Teaching and Learning

Teaching learning resources support students' learning by effectively communicating knowledge and skills, and effective use of resources has been found to significantly increase students' achievement (Bitner, N. & Bitner, 2002). Therefore research has established that resources aid in communicating knowledge, skills and attitudes. Technology too should be used as a teaching learning resource not as a mere delivery medium but as a delivery tool supporting cognitive activities (So & Kim, 2009, p.108). They can significantly increase student achievement by supporting student learning. Resources are used in various ways in representation of subject matter especially for purpose of problem based learning which was reported to develop critical thinking, scaffolding, and independent learning which were reported to improve learning outcome. The resources should be tailored to the intended content to be used with student and the desired knowledge and skills to be developed.

Resources could be made by the teacher and the learners; they could also be improvised using locally available materials, sourced locally or borrowed from other institutions. This study investigated teachers' use of resources in class. Maduna (2002) reported that researchers have discovered that teaching aids enable the teacher and children to engage in solid conversations on concrete and abstract concepts. Maduna also put forward an argument that use of concrete objects for learners' manipulation, enable teachers to demonstrate and illustrate mathematical concepts, properties and procedures to create an environment conducive to learning. Maduna further expounds that when children are given objects to work with and a familiar background they are able to solve problems that teachers never thought they could. Maduna found out that even tools of real life such as scales, clocks, tape measures, containers among others or pictures of those tools used in class provide evidence that real life enhanced mathematical learning.

The MOE (1995) reported that TACs were mandated to facilitate teachers to develop, select and use teaching learning resources hence resources development, selection and use should formed part of investigation in this study. In addition Odini (1993) and MOE (1995) recorded the following as basic resources expected to be found in a TAC: library books, syllabuses, course books and teachers' reference books. The non books included audio and video tapes, slides, charts and basic tools for making teaching aids. A modern teachers' resource centre would include computers and accessories with

internet connectivity to aid development of technology assisted teaching and learning aids for technology integration in teaching and learning. TACs should be effectively equipped with teaching learning resources.

The Internet, with its social media tools and multitudes of information resources is a very useful source of learning resources and a tools for on line learning as well. It allows integration of e-learning for interactivity to enhance teaching and learning. Computers are rich resource which teachers could use for use in teaching and learning and support learning in the constructivism mode. Technology is crucial especially because they access "authentic" and produce real-world learning environments that allow the learner to construct their own knowledge (Duffy & Jonassen, 1992) as is the constructivists view that learning experiences should be. Computer Aided Learning (CAL) software support performance of laboratory experiments in science subjects such as chemistry, biology and physics.

Computer Aided Learning could also be used to teach students subjects such as literature, geography, history, social studies and mathematics. Computer games could be designed to improve learners' knowledge in areas such as spelling or to test knowledge in other subjects and disciplines and also for learners' learning for enjoyment at their own leisure. Assistive software could be used with learners with special needs. Some programmes also are designed to cater for needs of learners with different learning styles and the gifted. Technology

also plays a key role in integrating the affect in teaching and learning making learning fun. Multimedia software provides students in subjects such as English learning rich linguistic environment that accommodates their needs by providing animations, videos and graphics to demonstrate difficult concepts as well as clear audio to model pronunciation (Duffy & Jonassen, 1992).

Good Computer Assisted Language Learning (CALL) software stimulates the natural language learning process focusing on listening comprehension, reading, speaking and writing. CALL software provides real life images, written texts and voices of native speakers, an interactive learning process and key language skills for students and teachers. E-learning delivers programs of study online. Students use the networked computers to interact in a learning environment among themselves and with the teacher. The teacher could download materials from the Internet, print it and give it to the students to work on it or if internet connected upload it for use by students in soft form. The students could also interact with the teacher and with each other.

E-learning provides for extensive international collaboration opportunities for students and teachers through web chatting, posting of assignments, online student to student chats and discussion forum (Bitner & Bitner, 2002). E-learning allows interaction between the teacher and the learner and learners among themselves (Mugenda, 2011). However Kisirkoi (2013) established that

the Primary Teacher Education curriculum in Kenya does not prepare teachers to integrate technology in education.

The role that educational resources could play in enhancing learning was recognized by education policy makers in Kenya. Literature on improvement of quality of basic primary education consistently prioritizes textbooks and learning materials for pupils (DFID, 1999). Ono & Frederick (2010) argued that the role of the teacher is not just to teach the content, but also to support the children in their use of texts and other learning materials. An additional attribute of such learning material is that children can get on with learning when their teacher is absent (DFID, 1999). The Kenya Vision 2030 cites provision of learning resources as one way of improving learning environment (Republic of Kenya, 2007).

Concern for provision of learning resources is not new in Kenya but its sustainability poses a major challenge. The secondary Teacher Resource Centres in Kenya and TACs in SPRED,1 of 1991 -1996 project (MOE, 1997) had set up a book box loan system for distributing multiple copies of set books for the English examinations lasses in secondary and class readers for primary schools (MOE, 1995). They were arranged in sets, put in boxes and borrowed by schools for use by students for a given period of time. They required an organized procedure for lending and retrieval. In the impact study by MOE (1997) most teachers indicated that the use of books had improved the pupils'

language skills in vocabulary, spelling, speech, reading and composition writing. About 80% of the teachers used the books with students during library lessons (MOE, 1997). However Kisirkoi (2011) reported that there were no more such resources in TACs. Sustainability is a gap that should be addressed in TPD.

The KNEC (2010) study recommended that as a matter of professional practice, teachers should make use of TACs for production of teaching and learning resources. Israel presents best practice where each teacher visits the teachers' centre in the school's locality once a week to develop teaching aids and to plan interactive lessons for use in class with learners (MOE State of Israel, 2000). Teacher Education in Sub Saharan Africa (TESSA) also provides open education resources to support teaching and learning and on line teaching learning resources.

The studies provide information on accessing learning resources and the role they play in enhancing teaching and learning. It therefore makes a case for investigation of development and use of teaching learning resources in this study.

2.6 Teacher Professional Development Policy Support in Kenya

Study of historical education reports in Kenya since independence revealed that in the past there had been great concern for teacher professional development

at government policy decision making level and many recommendations had been made emphasizing TPD for teachers. Republic of Kenya (1964) report had recommended that there should be vocational courses for serving teachers to bring the teachers abreast of new developments, particularly in science. Republic of Kenya (1976, 11b Recommendation 225 and 244, p.112) recommended that in service courses on guidance and counseling should be provided for practicing teachers and to also provide retraining programmes for serving teachers in order to facilitate the implementation of the new secondary school curriculum.

Republic of Kenya (1988, recommendation 9.20, p. 68) made a detailed recommendation regarding Teacher Advisory Centres. It observed that Teacher Advisory Centres were started to complement the work of primary school inspectors in the districts and recommended that they should become an integral part of the in service teacher education. It acknowledged that district centres and sub centres were utilized for in service training of teachers on curriculum changes and teaching methodology to improve the quality of teaching in primary schools. TACs duties and responsibilities were stated in the policy documents as to', conduct demonstration lessons using teachers and develop teaching aids from local materials. TACs should also conduct studies on local educational needs and disseminate information on curriculum innovations. It was noted that TACs mainly concentrated on primary education and its local districts' needs. It recommended the restructuring and developing

the TACs into District Resource centres in order to provide services to all teachers in a district including secondary school teachers. Each should have had appropriate and adequate physical facilities, equipment, funds and qualified professionals and technical personnel to provide services required by various types of teachers. To date the recommendations have never been fully implemented and if implemented then they were not sustained.

The Republic of Kenya (1999, p. 41; Recommendation 7.41, p. 92) states that education for technological and industrial development in service programmes should be regularly organized for teachers to improve teachers' pedagogical skills and that all head teachers should undergo school management and administrative training to enable them to be front line quality control managers in their own schools. The recommendation was implemented and the Kenya Education Management Institute (KEMI) currently trains school managers (MOE, 2011)**.** Further recommendation (7.43, p. 95) stated the Alternative Basic Education teachers those that meet Ministry's quality standards should undergo in service training. The recommendation was not fully implemented and sustained. The historical documents established from governments' policy documents that TACs were the mandated TPD providers in Kenya and teacher professional development was in the government's agenda.

Despite the clear past government support for TPD at all levels and mandate to TACs, on teacher preparation UNESCO (2005) reported that teachers were not

prepared for the Free Primary Education when it was introduced in 2003. Majority of the teachers admitted that they were not prepared to handle the large number of pupils who had enrolled in school (KNEC, 2010). Teachers also reported that they had not been prepared to handle pupils of such significant age differences and learning capabilities in the same class. This was a gap that called for investigation.

2.7 Strategies for Teacher Professional Development

Teacher professional development like teaching and learning requires effective strategies to communicate knowledge, skills and attitudes to the teachers as learners. The active-learning approach posits that teachers (just like students) will learn, develop skills, and practice them in their classrooms more effectively if they were actively involved in the learning process rather than as passive receivers of information (OECD, 2009). TPD activities and experiences should be designed in a way that teachers could apply them in class when teaching.

TACs in Kenya were modeled after British teacher learning centres of the 1990s (DFID, 1999) but tend to retain the traditional teacher training approach to date without moving with changing times. Consequently Hardman et al (2009) reported that the classroom practice observed encouraged mere memorization of facts and use of transmission approach which was a gap.

Different countries confronted with teacher professional development challenges were reported to have employed different strategies worth consideration in this study for more information and decision making. Strategies cited in the UNESCO (2008) report for improvement of teacher quality included an initial training, a balance between residential campus training with school based experience as in Cuba and United Kingdom. A combination of distance learning mode was suggested to be more cost effective than full time training. However such modes required sufficient monitoring capacity in schools and appropriate materials for distance learning especially for teacher candidates in rural areas. China was reported to have established lifelong learning structures for teachers. This was a possible teacher professional development strategy for Kenya. In Sri Lanka, on-going professional activities were reported such as study opportunities, training workshops, in-service to improve the teachers' professional skills particularly the newly qualified and untrained teachers.

The (UNESCO, 2008) report cited Philippines where a school based training programme for science and mathematics teachers was piloted. Teachers were trained within their school so that there was immediate application and feedback on the techniques learned. School based teacher training was a commendable approach to teacher support strategy. The report gave examples of Romania where school based teacher professional development programmes initiated in 2003 for teachers in rural areas had resulted in improved learner

achievement in grade eight. It encouraged unqualified teachers to take upgrading courses which improved teacher satisfaction and motivation. As a motivation, in some European Union countries, teachers who attended in service courses accrued credits for promotion and got salary increment (European Union, 2010).

Cluster based mentoring in Pakistan was used to deliver school based training to teachers in selected districts of Sindh and Bulachustan provinces. The programme sought to improve teachers' content knowledge in mathematics, science, social studies and languages; develop classroom pedagogical practices especially in multi-grade settings. It also aimed at assisting teachers in developing to develop teaching and learning resources using locally available materials. The same approach was introduced to Kenya by UNICEF in lower primary schools under the project, Quality Education, but it lacked plan for sustainability.

In Britain, the retraining of experienced teachers was one of the most crucial components of teacher professional development. 'Education Centres' or 'teachers' centres' of the 1990s (DFID, 1999) served many purposes such as: providing facilities for courses, local curriculum development venue, local production of resource materials centre, a social centre where teachers could meet and mutually discuss. Such centres were then the hub and pivot of curriculum innovation and teacher support centres. In service courses were

usually held during the school vacations so that teachers were not absent during school time. The trend was observed to be changing and school based teacher professional development was encouraged instead of in service conducted at the teacher centres and centre based in service training tended to be declining (DFID, 1999).

In Israel, teacher professional development was considered a critical programme in the country's education system (MOE State of Israel, 2000). Teachers were allowed a day off duty every week to visit the centres close to their schools where they engaged in teacher development activities as well as developing teaching learning support materials for use in their classrooms the following week. Developing learners' mental faculties was of key concern. Salary increment based on credits accrued was used for motivation. Generally teachers were professionally developed in order to: update themselves on their subject areas, upgrade their pedagogical skills, and get orientation on any changes in the curriculum (MOE, State of Israel, 2000). The Israel model of TPD could be emulated by Kenya. It also enriched this study and content mastery was identified as variable of investigation.

In Ethiopia teacher professional development was conducted to help achieve the goals of the Basic Education System Overhaul (BESO one, 1995-2002) and BESO two, 2002-2007) facilitated by USAID. The objectives of the teacher professional development were to support teacher capacity to teach effectively

according to the new active-learning-based curriculum introduced in 1994, using appropriate new student-centered and problem-solving approaches. Clusters of schools were formed for teacher professional development.

The programme helped teachers to improve mastery of their subject content, acquire new teaching approaches that required teachers to engage students in the development of higher order thinking skills. The programme also aimed at helping teachers to develop more positive attitudes, cooperative approaches to their work at the school level, and strengthen professionalism. As a result, teachers practised a range of active learning classroom approaches in various subject areas. Teachers were also introduced to reflective practice and action research.

In the yearly classroom observations during BESO two (2002-2007), as well as teacher self-assessment, changes in teacher attitudes and practice were identified. Teachers used active learning approaches a variety of classroom approaches more frequently. Better school-level collaboration among teachers and higher morale were also observed. Student engagement in lessons was observed and reported to be livelier. A limited programme of locally administered student assessment indicated that there was improved learning in schools.

There is a clear shift from traditional transmission of knowledge for examination preparation in support of context based TPD. Aggarwal (2005) observes that learning for the sake of being examined in a mechanical manner takes away the joy of being young and de- links school knowledge from everyday experience hence not a preferred approach. Learner friendly engaging methods of teaching are preferred and OECD (2009) reported that there was a growing interest in developing schools as learning organizations and ways possible for teachers to share their expertise and experiences. Therefore strengthening internal school conditions to promote school based teacher professional development is considered an important prerequisite for addressing continuous changes in the learning environment (European Union, 2010). A combination of distance learning and face to face mode was suggested to be more cost effective than full time teacher training. The model was found challenging because it required sufficient monitoring capacity in schools and appropriate materials for distance learning and incentives for teacher candidates for the extra effort and to keep them on course (European Union, 2010).

A study in Sub Saharan Africa also revealed a tendency to shift to school based teacher professional development (Mattson, 2006). MOE (1997) also reported that SPRED two project in Kenya also adapted school based teacher development approach in the School based Teacher Development (SbTD) programme. The TAC tutor played a crucial role in mentoring the teachers

taking the in service course through distance learning in the SbTD programme. The TAC was not the initiator of the activities but worked under guidance of the British Department for International Development (DFID) and MOE officials. They marked the Tutor Marked Assignments (TMAs) as reported by Mattson (2006), held monthly tutorials and carried out classroom observations (Mattson, 2006). The gap in the programmes was sustainability. The reality in Kenya is that most effective donor funded and assisted programmes usually went down after donor assistance subsided, a gap which TPD progamme should address at inception.

As regards approaches and techniques of conducting teacher professional development, the cascade model had been used quite often but unfortunately it had major gaps; it was more often reduced to a trickle by the time it reached the classroom teacher (Hay, 2000) who implements the curriculum. The teacher Resource Centres (TRCs) for secondary school teachers in the Secondary English Project (SELP), which had extensively used cascade in service training model were reported by Mattson (2006) to have become inactive and that teachers took little back from the TRC. DFID (1999) observed that the cascade model of training in cadres, the bottom cadre received inadequate training or in other words or in the words of one of the respondents the 'bottom never got wet or got wet with dirty water' DFID (1999, p. 4). The Strengthening of Primary Education (SPRED, 1) was reported by DFID (1999) as 'not quite successful' with cascade model. The reason

given was that field level personnel and beneficiaries were insufficiently involved in project design leading to over-dependence on British expertise at the top cascade cadre and under utilization of local personnel (DFID, 1999). Therefore the cascade model commonly used in teachers in service had serious gaps that required to be used cautiously and DFID suggested inbuilt effective monitoring at every stage to ensure that the bottom cadre 'gets wet' and also to ensure sustainability.

In service training away from school revealed many gaps. It was criticized for brevity, fragmentation and incoherence. It was also criticized for being out of context and devoid of real classroom situations (Ono & Ferreira, 2010) and it was blamed for teacher absence in schools. The in service activity was therefore found to have some drawbacks. Currently the Kenya Education Management Institute (KEMI) has been offering secondary school principals and deputies diploma in educational management course through distance learning as form of school base staff professional development programme (MOE, 2011). The challenge was that the principals and the deputy principals feel challenged by overload and carry out assignment given in the course for scores and certificate sacrificing skills development. The assessment does not assess their improved practice but are in form of paper and pencil tests. Overall professional development within school tends to be the most preferred (European Union, 2010 & DFID, 1999).

In Japan, lesson study was practised as a model for teacher professional development that encouraged investigation (Ono & Ferreira, 2010). Teachers collaboratively engaged in action research in order to improve quality of instruction. The Strengthening Mathematics and Science in Secondary Education (SMASSE), a Japanese supported project in Kenya, introduced **A**ctivity **S**tudent **E**xperiment **I**mprovisation (ASEI) activities to upgrade aspects of teaching. The activities shifted from knowledge-content based approach to activity focused Learner centred activities. The project came up with **P**lan **D**o **S**ee and **I**mprove (PDSI). Consequently the SMASSE (2009) Impact Study revealed positive outcomes that teachers planned lessons better, attended to students better; teachers were more open to learn, more confident to carry out practical activities, ready to try out new methods, faced the challenge of lack of better resources and challenges of large classes better.

Kenya Education Sector Support Programme (KESSP, 2005-2010; Ministry of Education Science and Technology [MOEST], 2005) reported that MOEST- In service Education and Training (NSET) had developed, designed and successfully implemented the following teacher professional development programmes over 1997-2004 period: School based Teacher Development which trained 50,000 Key Resource Teachers. It had been envisaged that the Key Resource Teachers (KRTs) once trained would be empowered to lead programme of continuous school focused professional development (Hardman et al, 2009)**;** however transmission approach to teaching persisted. Hardman et

al reported that about 95% of the teachers' questions tended to be closed, requiring recall of information. Pupils' questions were only about 2%, an indicator of a class dominated by the teacher and a need for change from traditional knowledge transmission approach to teaching and adapt modern learner centred approaches.

Kenya Education Sector Support Programme (KESSP) report indicated that there were TPD activities provided by School Empowerment Programme that prepared some head teachers to respond to the challenges of Free Primary Education. Cluster programme was implemented and promoted child friendly, gender responsive stimulating learning environments. Other TPD reported in KESSP were provided by the Kenya School Improvement Programme which focused on developing child centred teaching resources using locally available materials and was reported to be successful. The programmes worked with assistance of TAC tutors but the TAC tutors were not the initiators of the activities; they were just invited to facilitate planned activities.

Online teacher professional development approach is another model of teacher in service worth consideration. It is gaining worldwide impact. On the web, teachers hold online discussion forum, chats and video conferences (UNESCO, 2003). However, it is only appropriate where the stakeholders are ready and the infrastructure in place hence it was not included for investigation in this study but it is a viable direction to take in future. The Common Wealth of Learning

(COL) supports distance education approach to teacher professional development (UNESCO, 2003) and it makes use of the web. Information Technology plays a key role in this approach and teachers require computer literacy skills and skills to integrate technology as teaching learning tool, which faces challenges such as teacher computer illiteracy, technophobia and lack of electricity among others. There is however a new paradigm shift in teacher professional development towards use of modern technology to enhance teacher professional development (Koehler, 2011).

2.7.1 Teacher Professional Development by European Union

The study by Teaching and Learning International Survey (TALIS), European Union (2010) focused on primary and lower secondary education in both public and private sectors. The study identified quality of teaching and career education as key factors in securing quality of education. The European member states agreed that the teaching profession should be made an attractive career of choice. It was recommended that teachers should have specialized knowledge of the subject they teach and pedagogical skills. Teacher professional development was to include induction, mentorship and support throughout a teacher's career. Teachers learning needs were to be reviewed and they were to be facilitated to acquire knowledge, skills and competencies through formal, informal and non-formal teaching, including exchanges and placement abroad. It was also agreed that: system of continuum professional development should be in place, school should be set as learning community,

there should be partnership between school, and institutions, teachers should be prepared for cultural awareness classrooms and new teachers should be inducted. In the Literature Review, mastery of subject content was viewed as the basic requirement that is relatively uniformly addressed in initial teacher training. Conclusion was arrived at that deep knowledge of subject matter is the critical precondition of pedagogic content knowledge. The report concurred with Shulman's (1986) view that pedagogic knowledge includes knowledge of the appropriate use of teaching materials and media as well as strategic knowledge on application of teaching strategies. The variables in the agreement enriched this study and were found to be in agreement with TAC duties and responsibilities.

Teachers were encouraged to participate in professional development in the participating European countries by providing them incentives. For example in Luxembourg, Poland, Portugal, Slovakia, and Spain, teachers accrued credit for attending professional development courses for consideration for promotion. In Italy, Cyprus and Greece continuous professional development was an obligation for newly appointed teachers (European Union, 2010). In Czech Republic teachers were entitled twelve working days in a year for independent study. In Italy some schools suspend classes to conduct intensive teacher development initiatives; teachers were exempted five days in a year to attend professional development activities. In Romania teachers were granted one day per week for professional development. Most countries allocated teachers time

for professional development. Specific continuous professional development linked to introduction of new reforms and organized by relevant authorities was in general the professional duty for teachers in all countries (European Union, 2010). The report highlighted variables key in teacher professional development and some approaches to be taken by other countries to make TPD accessible and attractive to teachers.

2.7.2 Monitoring Learner Achievement

The study conducted by the Kenya National Examinations Council (KNEC, 2010) on Monitoring Learner Achievements in Kenya established that about 40% of all the sampled teachers had not received in service training since 2003. Over 38% teachers had stated that TACs were more than five kilometers away and therefore not easily accessible, while 6% indicated a resource centres did not exist in their zones. The study recommended that as a matter of professional practice, teachers should make use of TACs for production of teaching and learning resources. It also recommended that the number of TACs should be increased. In service for teachers of English language was rated by the majority as very useful. It emerged that majority of teachers appreciate in service. About ¾ of sampled schools didn't have electricity but used pressure lamps and lanterns. About 6.6% had access to solar power. The study recommended that teachers needed to upgrade their professional training as that was one approach to improve pupils learning achievement. Need for help in the creation of structure and institutional arrangement that support and

enhance the role of teachers as lifelong learners was established. The study recommended that teachers should be sensitive to differentiated instruction of pupils with special education needs. They should also observe proper time management and effective planning for teaching and learning. This would ensure effective syllabus coverage. About 8.6% of the teachers indicated that they did not have any experience in teaching mathematics yet they taught it.

The gap identified in this study was that many teachers could not access sufficient professional development which they required to positively impact on their teaching and learning and learner achievements. The study highlights need for teacher professional development across the country and need for improvement of teaching - learning approaches.

2.7.3 Strengthening Mathematics and Sciences in Secondary Education

Strengthening Mathematics and Sciences in Secondary Education (SMASSE) project was a joint venture between the Kenya government through Ministry of Education (MOE) and Government of Japan through Japan International Cooperation Agency (JICA) initially on pilot basis (MOE, 2009). It provided In-service opportunities to teachers in secondary schools in Kenya. It later incorporated Primary schools and Primary Teacher Training colleges. It employed lesson study an approach to teaching borrowed from Japan. It used cascade system of training where national trainers were trained to train district trainers from the whole country. District trainers then train teachers in the

whole country and in other countries of Africa and the teachers implement the skills acquired in the classroom.

SMASSE initiative in Kenya came about as a result of poor performance in Biology, Chemistry and Physics in national examinations by secondary schools in Kenya. SMASSE intervention addressed: attitude towards the subjects, pedagogy, mastery of content, teacher-learning resources and administration and management of learning. It applied the principle of **A**ctivity **S**tudent **E**xperiment **I**mprovisation (ASEI) to upgrade aspects of teaching. INSET activities aimed at shifting from knowledge content based approach to activity focused teacher learning. It changed teaching mode from teacher centred teaching to student centred learning; from theoretical method to experiment; from chalk and talk to research based approach. It also changed approach from teacher demonstrations to small scale learner improvisation through **P**lan **D**o **S**ee (lesson study) and **I**mprove (PDSI) approaches that were interactive and learner centred. Climbing learning was another approach employed where the teacher made the student understand concepts and meaning of each learning element through filling in the concept map, explanation of the learning elements, formula, the examples and solving self made problems with great learner involvement.

The SMASSE (2004) impact study reported some positive changes in classroom practice that teachers planned lessons better, attended to students,

teachers were more open to learn, more confident to carry out practical activities, tried out new methods, faced the challenge of lack of resources better and faced challenges of large classes better. The impact observed on students was that students were actively involved in learning, showed great interest and responsiveness, attended lessons more punctually, carried out discussions beyond class time and asked questions in and out of class. The students' interest in mathematics arose. Students were provided with opportunities to develop key competences such as problem solving, analysis, synthesis and application of relevant information. The approach was reported to have demystified mathematics activities having been related to students 'real life' experiences. The reported outcome support the report by Scheerens (2008) and Jones (2004) that constructivist teaching approach has high learning outcome and is the preferred approach for teacher professional development so that teachers transfer the knowledge and skills to the classroom. It comes out clear that TPD has to be interactive and allow for knowledge construction. It was clear that learner centred teacher approach has better learning outcome.

2.7.4 Selected Studies on Teacher Advisory Centres in Kenya

A number of studies on Teacher Advisory Centres (TACs) in Kenya from 1982 to 2012 have been conducted but none was found to have been initiated by TACs. The purpose of the studies was dependent on the needs of the initiator. This in itself was a major gap. The study of In-service Training of Primary School Teachers - Teacher Advisory Centres (TACs) in Kenya (Ayot 1980 –

1982) was supported by United Kingdom (UK) Overseas Development Administration (ODA). It aimed at establishing TACs performance which was found to be dismal. The study revealed factors which hindered TACs performance in teacher professional development. TACs were found to be unevenly distributed all over the country mostly in unfriendly learning environment which were inaccessible to teachers; they were located in places such as market places, secondary schools, teachers colleges, district equipment stores and in temporary buildings, primary schools, trading centres, the DEOs, equivalent of the current County Director of Education offices.

The centres were not well furnished and lacked library facilities and adequately trained tutors. The proposed staff establishment for the centres was a qualified lecturer, two assistant lecturers, five support staff, a librarian, a driver, a messenger and a watchman. Each centre should have had a vehicle allowing movement between schools and centres by tutors when visiting schools for classroom observation and lesson demonstration which was not effected as revealed by the later studies. TAC tutors were not trained on their TACs role. Administrative structure was not clear. Some reported to District Primary School Inspectors (DPSI), others to the District Education Officers (DEO) who are the current County Education Officers, and Assistant Primary School Inspectors (APSI). TACs were supposed to be under the then Chief Inspector of Schools (CIS) the current Director, Quality Assurance and Standard but they were supervised by District Primary School Inspectors (DPSI) who were too

busy to guide TAC tutors. Supervision and standard maintenance remained under the Chief Inspector of School. The centres lacked housing for the equipments. TAC tutors had no job description. Each worked independently. There was lack of co-ordination and communication between centres. The TAC conditions seem to have been bad from the beginning and with no improvement. Similar TAC functions were further elaborated in the TAC tutors' Handbook (MOE, 1995) developed by Strengthening Primary Education phase one (SPRED, which was also supported by UK Overseas Development Administration (ODA) that was implemented in Kenya from 1991 to1996. It had intended to institutionalize primary level TAC based in service training more firmly by upgrading training, resources and professional administrative support. A study on the Impact of the Book loan Scheme, the Bicycle Project and the Teacher Advisory Centre (TAC) Operations MOE (1997) supported by UK was conducted to establish the impact on TACs operations which had been introduced by the SPRED,1 project. It had introduced the Book Box Loan Scheme (Book Loan Library) and the Bicycle provision Project in sampled Districts in 1994 and 1995. Bicycles were to facilitate TAC tutors to access schools and book box library were to be loaned to schools to develop learners reading skills.

There was no clear criteria given for the selection of the following districts TACs for study which were not representative of Kenya: Bureti, Garissa, Nairobi, Kitale Municipality, Kajiado, Kuria, Lugari, Meru South, and Nyeri

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Kwale, Kilifi, Mombasa, Tharaka Nithi, Isiolo, Embu, Machakos, Mwingi, Kitui, Narok, Nakuru, Mt. Elgon, Baringo, Kakamega, Kuria, Homa Bay, Suba, Siaya, Samburu and Kisumu.

The purpose of the study was to assess the capacity of TACs, the efficiency of their operations, and to provide researched information to support the design of SPRED, II project which was also based on needs of the TPD providing donor or development partner.

On the impact of the Book Box Loan Scheme on pupils, most teachers indicated that the use of books had improved the pupils' language skills in vocabulary, spelling, speech, reading and composition writing. About 80% of the teachers used the books with pupils during library lessons. It was recommended that the book scheme should be sustained and that a scheme of service for TACs should be established with a view to attracting and retaining qualified and competent personnel. On the bicycle scheme bicycle maintenance was a challenge because it had not been accounted for in the project. Report on the Impact of the Book loan Scheme, the Bicycle Project and the Teacher Advisory Centres (TACs) Operations (MOE, 1997) revealed that TAC conditions and circumstances had not become any favourable since their inception and TAC performance of their TPD activities was dismal.

The report indicated that about 78% TAC tutors were unaware of TAC functions - a factor that caused confusion in their work. Most TAC tutors were

not trained in TAC management hence their performance was minimal. There had been high turnover of TAC tutors. Out of 1,400 TACs trained in 1996, in 1997 only less than half were available; the rest had been promoted to zonal school inspectors and few remained in centres to perform TACs roles. Selection criteria had not been followed in appointment of TAC tutors and problematic head teachers and class-teachers had been deployed as TAC tutors; facilities were inadequate; 80% TAC tutors had no office equipment; 91% TAC tutors expressed concern over lack of transport or funds and had not visited schools due to inaccessibility. Only few teachers had visited the centres perhaps due to lack of awareness or lack of centre usefulness. There was little regular monitoring of TACs by Education officers. Zonal inspectors of schools regarded TAC tutors as professionally inferior to themselves and their working relationship with TAC tutors was not cordial hindering collaborative team work.

A study to establish the impact of the national School based Teacher Development (SbTD) programme using distant learning mode that had been implemented in Kenya between 2001 and 2005 for purpose of enhancing teaching and learning in primary schools in Kenya was conducted by Hardman et al (2009). The study was also supported by the UK Department for International Development (DfID). TAC tutors but not the centres were engaged in the SbTD programme; therefore TAC tutors were invited as individuals to facilitate the activities already planned and their initiative again

was not clear which was a gap. The aims of the programme were primarily to improve the quality of teaching and learning in primary schools through teachers acquiring new skills that promote active learning. Some TAC tutors were trained to equip them with skills to enable them conduct effective group based support service to the teachers. Hardman et al (2009) reported that as regards usefulness of TAC tutors 74% of the Key Resource Teachers found TAC tutors effective in guiding them in Tutor Marked Assignment (TMAs), providing useful feedback on class observation and being available to provide teachers professional support when required. This was because they had been adequately facilitated by DFID and indication that with facilitation TAC tutors could perform their TPD duties. However it had been envisaged that the Key Resource Teachers (KRTs) once trained would be empowered to lead programme of ongoing school based teacher professional development (Hardman et al, 2009) which the research did not find to have succeeded. The role of KRTs in schools currently is not clear though they were trained. TACs cannot be credited for the activities because they did not initiate any and they had been called upon to help.

Compared to earlier baseline surveys (Hardman et al, 2009) reported that in the SbTD programme, some teachers were more interactive with pupils in the whole class teaching and greater use of group work was observed especially in the classes of the teachers who had gone through SbTD programme. This shows that effective teacher professional support could improve teaching and

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learning. However in the whole class sections of the lessons, the discourse was found to be made up of teacher initiated question and answer sessions interrupted by brief lectures. Hardman et al (2009) observed that cued elicitations and teacher checks mainly functioned as ritualized participation strategies designed to keep pupils involved other than requiring an answer to a question. Teacher explanation, teacher question and cued elicitations made up majority of initiation move. About 95% of the teachers' questions tended to be closed, requiring recall of information. Pupils' questions were very rare; about 2%. Boys were twice as likely to be asked a question as girls. Most answers received no teacher follow up perhaps because teachers lacked content mastery. Classroom practice encouraged mere memorization of facts and not reconstruction of knowledge; a practice which is not in congruence with the current international shift in teaching and learning to constructivism approach. The studies confirmed that TAC is the recognized structure mandated to facilitate teacher professional development in the country but their role in activities was not clear because they did not initiate activities and that required investigation. The TACs faced challenges which did not seem to have been addressed because other studies such as Mwangi (2011) found TACs facing challenges that had already been earlier identified.

2.8 Summary

Gaps in the studies cited on TACs teacher professional development activities were glaring. TACs had not initiated any of the activities in the studies and their effectiveness in TPD of their own initiative remained unclear which was

one common characteristic of TACs professional development activities emerging from the different studies. Another gap was that the study samples were not representative of the entire republic of Kenya, instead they represented disadvantaged districts with some areas used in both studies like Kajiado, Kitui, and Kwale with no justification provided where TAC's initiative to facilitate teacher professional development did not come out. The studies were initiated by development partners or donors namely, the United Kingdom (UK) overseas Development Administration which was later named UK Department of International Development (DFID) and mainly to satisfy set rationale based on the organizations' needs, such as to draw lessons from the experiences of the programmes to apply them in later projects; for example to assist in the design of SPRED 11 project's future operations. None of the studies specifically set out to conduct a national investigation of TAC effectiveness in teacher professional development.

 Another serious gap was reported by SPRED 1(DFID,1999) that it had been unsuccessful in ensuring institutionalization of the operation of TACs and strengthening structural links between the in service and pre-service systems. TACs were not integrated into the education system, head teachers were not sufficiently involved to have owned the activities. This appears to be a great hindrance to TAC operations. Sector structures were not developed and relied on UK experts hence risking sustainability once experts left. The study design and procedures followed such as description of the study design and other

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methodology structures were not clear. The cascade training employed risked sacrificing training quality (DFID,1999), the top cadre would be trained to train bottom cadres and no monitoring was put in place to ensure that the same quality training was accessed by the bottom cadres who were the actual implementers of the TPD activities in the classroom.

Orwa's 1986 study design though an academic study would face a lot of criticism today. The topic itself was too broad, general and unresearchable. The design was not clear. He reported that he relied on 'Currie's questions'. His recommendations did not concern TACs specifically. In the studies the learning outcome was not assured as was evident in Hardman et al (2009) study and sustainability of the programmes was always an issue that should be seriously addressed. Teaching and learning was not found to facilitate learners to construct knowledge through innovative activities. It was only SbTD that seemed to have made efforts to involve learners in learning (Hardman et al , 2009) but tended to show feeble outcomes. None of the past studies was mainly concerned with effectiveness of TACs in TPD in entire Kenya which was the gap the current study addressed. The current study was on the effectiveness of TACs in teacher professional development in Kenya.

Recommendations made by the different studies did not seem to have been effected. The recommendations included: Recruitment criteria should be followed when recruiting TAC personnel; TAC tutors should be properly in

serviced in relation to their roles once appointed and they should learn to popularize the centres; newly recruited TAC tutors should be trained in TAC management. TAC tutors should conduct research in primary teaching methods at their local schools to be used as basis of their TPD activities. Centres should be equipped with primary school curriculum materials currently in use. Books on primary methods and reference materials should be made available in the centres. Support materials such as audio – visual aids, cassette players, radio should be made available at the centre too. There should be clear policy for financing the centres on TAC structures. TACs should be facilitated with transport to enable TAC tutors to visit schools to support teachers. These were areas focused in this study.

Reviewed literature established that TPD was a prerequisite to enhanced teacher quality and improved learner outcome but it was not clear why TACs were not effective in TPD. It was also made clear that pre service was not adequate for quality effective teaching. Reviewed literature clarified that TPD should be based on identified needs which was picked up as the focus in this study. In addition it was preferred that TPD shifts from traditional one - shot - out - of station to continued school based activities based on constructivist approach that facilitates construction of knowledge.

Studies further revealed a gap that perceptions and conceptualization of TPD were not rigid and was not agreed on by experts in the area.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter explains the research design and methodology that was employed to generate data in this study. According to Creswell (2009) methodology describes an overall approach to research design. This chapter presents details of research design, sampling design, instruments used for data collection, determination of validity and reliability of the instruments, pilot testing the instruments, data collection procedures and data analysis.

3.2 Research Design

This study employed descriptive survey research design which according to Creswell (2009); Kerlinger (2000); Gay, Mills and Airisia (2009) allows the researcher to collect factual data from a large population about people's opinions and habits and report the way things are and what people think and do. The survey was cross sectional; data were collected at one point in time. The TAC tutors' performance of TPD activities was studied as it was and the respondents' views and perceptions were captured. The design allowed use of questionnaires to collect the respondents' views and opinions regarding TAC activities in teacher professional development and it was found to be the most appropriate for this study. An observation schedule was also used to guide in observing teachers' classroom instruction and general classroom practice. TAC tutors were spread out in 47 counties and the researcher sampled five counties comprising 10.63% of the target population in reference to Gay, Mills

and Airisia (2009) who state that a sample of 10% is sufficient in a large population and this study's clusters had large subjects. The study respondents were then sampled from the sampled five counties.

In this study, the extent to which TAC tutors performed their spelt out duties and responsibilities in teacher professional development in MOE (1995) and the teachers' level of use of learner centred teaching learning approaches were the determinants of TACs' level of effectiveness in teacher professional development. In the DFD (1999) study, it was argued that if the impact of TPD activities by TAC tutors could be traced in the classroom as the teachers taught then the TAC tutors in that zone could be said to be effective in TPD.

It was perceived that the independent variables would interact with the dependent variables with the intervening variables held constant to bring about the desired results. The independent variables in this study were: in service courses, teacher professional needs; professional meetings; training, teaching learning resources; classroom observation and demonstration lessons. The dependent variables that indicate the outcome after interaction with the independent variables were: Learner centered teaching and learning approaches, enthusiastic teachers and learners, lively and active classes, friendly and attractive learning environment. The intervening variables were held constant by focusing only on teachers who had attended TAC's TPD activities only.

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3.3 Location of the Study

The study was conducted in Nakuru, Bomet, Kisii, Nyeri, and Kirinyaga counties in Kenya. Bomet county is in the former Rift Valley Province. It lies between latitudes of 0.8^0 East and longitude of 35. 25^0 South. It has a population of 730,129 and covers an area of 1,997 square km. Nukuru county is also located in the former Rift Valley province. It lies between latitude of 0.5^0 South and longitude 36^0 East. It covers an area of 2, 325.8 square km and has a population of 1,603,325. Nyeri county is in the former central province of Kenya. The county lies between a latitude 0.4^0 South and 37^0 East. Its population is 661,156 in an area covering 3, 356 square km. Kirinyaga County is also located in the former Central province. It lies between latitudes 0.5^0 South and longitude 37^0 East and covers 1,205.4 square km. It has a population of 528, 0544. Kisii county is located in the former Nyanza Province in south western Kenya. The county lies between latitudes 1^0 South and 35^0 East. It covers an area of 1,332.7square km and has a population of about 1,236875 (Devolution Round Up June, 2014 & Kenya Open Data, 2014).

The counties were purposively selected in reference to Gay, Mills & Airisia, (2009) who advised that a researcher could select a sample using purposive sampling based on one's experience and knowledge of the group to be sampled. Selection of the five counties was also guided by a criterion drawn from the Kenya National Examinations Council (KNEC), Kenya Certificate of Primary Education Examination (KCPE) grading system used in attempt to

ensure sampling validity. According to KNEC, 500 marks at KCPE is the highest score that a candidate could score and 250 is the average grade. For the purpose of this study the KCPE performance of the counties was categorized as follows: less than 235 poor; 236 to 249 mediocre, 250 to 260 average and 260 to 300 and above were categorized as above average. The performance of the counties in KCPE between 2007 and 2011 is summarized in Table 3.1.

Table 3.1 KCPE 2007 – 2011 Mean Grade of the Sampled Counties

County	Year					Performance
	2007	2008	2009	2010	2011	
Kisii	203.9	216.4	221.3	229.84	232.55	Poor
Nakuru	240.61	239.34	240.43	241.38	242.38	Mediocre
Bomet	248.74	246.8	249.20	244.56	247.66	Mediocre
Nyeri	250.3	249.8	250.5	251.52	252.08	Average
Kirinyaga	269.69	277.06	274.00	274.32	274.67	Above average

Key: Poor:<235; Mediocre: 236-249**;** Average: 250-260**;**
above average: 261-300
Source: Then Rift Valley Province Education Office

Kisii County was selected because of repeated poor KCPE results. Nakuru and Bomet Counties were selected based on their mediocre Kenya Certificate of Primary Education results between 2007 and 2011. The two counties with mediocre results, Nakuru and Bomet, were used in the study because they represented the majority of the counties with similar scores; which were 22 counties out of 47 counties. Nyeri county was selected because it had been repeatedly attaining average performance at KCPE while Kirinyaga County was selected for the study because its KCPE performance had been

consistently above average. Counties meeting the criteria and falling in similar locality were selected to save on cost and to ensure accessibility.

3.4 Target Population

The target population, the universe or absolute population is the total population for the study to which the researcher wants to generalize the results of the study (Mugenda, O. & Mugenda, 2003). The results of this study were generalized to the entire country, Kenya. The study's target population was therefore the 47 Counties in Kenya, all the TAC tutors in each of the zones spread throughout the entire country and all the teachers who had attended the Teacher Professional development activities organized by TAC tutors spread out across the country.

An accessible population was drawn from the target population according to Mugenda, O. and Mugenda (2003, p.9) who pointed out that it is impractical to select a representative sample from the target population because it may be difficult to identify individual members. The accessible population which was a more narrowly defined and manageable population was then drawn and care was taken to ensure sampling validity by ensuring that it was as representative as possible to the target population. The researcher employed the KCPE examination results criteria in categorizing all the counties and purposively sampled five counties that fell in the criteria and were in close proximity to save on time and cost due to the vastness of the target population.

The accessible population for this study was in clusters drawn from the five counties which comprised 34 DEOs who were the heads of the then Districts, currently changed to sub counties and DEOs as chair of District Education Boards were the ones overseeing all the activities of the officers in the then districts. The next cluster was drawn from the districts, the current sub counties and were 115 zones each managed by a TAC tutor hence 115 TAC tutors who were the main respondents of this study formed the cluster. As earlier explained TAC tutors were mandated to provide teachers professional development. The next cluster was drawn from the zones and were the 215 public primary Schools with teachers who had participated in TPD activities organized by TACs. From the schools there were a total of 2,200 teachers who had participated in TPD activities organized by TACs. The summary of the clusters comprising the accessible population is as on Table 3.2

Table 3.2 Accessible Population

County	District	Zones	Schools participating in TAC , TPD	Teachers Attending TAC , TPD
Kisii	9	34	25	300
Nakuru	9	32	50	450
Bomet	4	10	40	300
Nyeri	8	28	70	900
Kirinyaga	4	11	30	250
Total	**34**	**115**	**215**	**2,200**

Source: TAC Tutors and Schools, 2011

To arrive at the stated accessible population shown on Table 3.2, a 10.63 % of the total 47 counties in Kenya were first purposively sampled to come up with a manageable number of the five counties used in this study. This was guided by Gay, Mills and Airisia (2009) who advised that a sample of 10% was enough for a large population; the clusters in the five counties contained large numbers. Gay, Mills and Airisia also advised that a researcher could select a sample using purposive sampling based on ones experience and knowledge of the group sampled.

The accessible population was still large and the researcher had to draw a sample from it for use in the study guided by Mugenda, O. and Mugenda (2003) who explained that researchers further carefully select a given number of members or cases from the accessible population to be representative of the whole population and used as the study sample.

3.5 Sampling Techniques

In this study cluster sampling technique was employed in different stages in a process called multistage sampling which Gay, Mills and Airisia (2009) explained that it is the selection of clusters within clusters and that it may be the only feasible method of selecting a sample when the researcher is unable to obtain a list of all members of the population which was the case in this study where the numbers of all teachers who had attended TPD activities by TACs

had not been established. In this study, first five counties as already reported were selected using purposive sampling, then 12 districts, the current, sub counties were sampled using simple random sampling from the five counties, then 35 zones found in the sampled sub counties which were all used in the study and from the 35 zones all the 35 TAC tutors were used in the study. From the 35 zones two schools were selected per zone using purposive sampling to select only the schools with teachers who had attended TAC activities of TPD making a total of 70 schools and seven teachers were purposively selected from each school based on their attendance of TAC activities and 490 teachers were selected; one teacher from each school was sampled to be observed teaching making a total of 70 teachers to be observed teaching and other 420 teachers were sampled to fill in questionnaires. Therefore, purposive and simple random sampling techniques were used to sample the different respondents in the different level of clusters of this study who were DEOs, TAC tutors and teachers. The details of sampling the clusters within clusters are provided in the following subsections.

3.5.1 Sampling District Education Officers (DEOs)

To sample the District Education Officers, who are currently the county Directors of Education, the counties were first purposively sampled. A total of five counties (10.63%) of the 47 counties in Kenya, in reference to Gay, Mills & Airisia (2009) were selected using purposive sampling following a criteria derived, by the researcher, from the Kenya National examinations Council

(KNEC) where 500 marks is maximum marks a candidate could score and 250 marks is average mark and it was used to categorize the counties. Purposive sampling was used because the counties were vast and extensive and many could fall in the criteria from any part of the country and difficult to access, so those within close proximity of one already selected and met the KCPE established criteria were purposively selected. Gay, Mills and Airisia (2009) had advised that a researcher could base purposive sampling of a sample on ones experience and prior knowledge. For purpose of this study, the counties were also categorized according to their performance in the Kenya Certificate of Primary Examination (KCPE) as: above average, average, mediocre and poor as explained in subsection shown on Table 3.1.

Then simple random sampling was employed to select 12 districts from the selected counties, which was 30% of 34 districts in the five counties as guided by Gay, Mills and Airisia (2009). Each District was headed by a DEO the current County Director of Education and all the 12 DEOs of each sampled district became study respondent; therefore all the 12 DEOs were sampled to participate in this study.

3.5.2 Sampling TAC tutors

To select TAC tutors for the study, first five counties were purposively selected which had 34 districts; 12 districts which made 30% of the 34 districts as guided by Gay, Mills and Airisia (2009) were selected using simple random

sampling as already explained. The 34 districts had a total of 35 zones each with a TAC managed by a TAC tutor according to MOE (1995), hence all the 35 TAC tutors who manage the TACs in the zones were used in the study as is expected in multi stage sampling of cluster sampling where all the final respondents are used in the study (Gay, Mills & Airisia, 2009). Table 3.3 provides the details.

3.5.3 Sampling Teachers

From each of the sampled 35 zones, for purpose of realistic management of the study in the available time and finance, only two schools were purposively selected. Therefore a total of 70 schools were purposively sampled for the study. Visiting that number of schools and collecting data by one researcher who in each case had to sit in a class for 30 or 35 minutes depending on the level was just manageable and enough to check performance and impact of TAC activities on classroom practice. Teachers were selected from the purposively sampled schools. From each selected school, seven teachers were purposively sampled on basis of their attendance of TAC activities, making a total of 490 teachers sampled to participate in the study. One of the teachers was sampled to be observed teaching, making a total of 70 teachers sampled to be observed teaching. Another six teachers from each school were sampled to fill in questionnaires, making a total of 420 teachers sampled to fill in questionnaires.

It is important to note that the researcher was limited by the criteria-teachers who had attended TPD activities organized by TAC tutors and the concern was to establish effectiveness of TACs in teacher professional development in general and not based on performance in specific subjects. Therefore concentrating on other technicalities like different subjects and specific number of teachers in lower or upper primary was not the main focus in this study.

3.5.4 Sample Size

The sample for this study, which was a smaller representative group, was drawn from the accessible population, carefully selected to be representative of the whole population (Mugenda, O. & Mugenda, 2003). The study sample consisted five counties which was 10.63% of 47 counties purposively sampled guided by Gay, Mills and Airisia (2009), 12 DEOs who headed the sampled districts which were sampled using simple random sampling using Table of random numbers, 35 TAC tutors who were all the TAC tutors in the sampled zones from the sampled districts; 70 schools which were purposively sampled based on their teachers attendance of TPD activities by TAC tutors and 490 teachers purposively sampled based on their attendance of TAC activities. Out of the 490 teachers 70 were observed teaching and 420 filled in questionnaires. The sampling was guided by Gay, Mills and Airisia (2009) who advised that simple random sampling is the process of selecting a sample in such a way that all the individuals in the defined population have an independent chance of selection for the sample. They also advised that a researcher selects a sample

using purposive sampling based on ones experience and knowledge of the group to be sampled. The study respondents were the TAC tutors, DEOs and teachers who had participated in teacher professional development activities facilitated by the TAC tutors. The summary is shown on Table 3.3

Table: 3.3 Sample Size

	County	Districts	zones	Schools	Teachers observed teaching	Teachers filled in questionnaire	Total teacher Sample
	Kisii	3	9	18	18	108	126
	Nakuru	3	8	16	16	96	112
	Bomet	2	6	12	12	72	84
	Nyeri	2	8	16	16	96	112
	Kirinyaga	2	4	8	8	48	56
Total	**5**	**12**	**35**	**70**	**70**	**420**	**490**

3.6 Instrumentation

The researcher constructed instruments to be used in the study as guided by Orodho (2004, 2008 & 2009). In total, four instruments were developed to be used to collect data from all subjects in the sample. The instruments were: TAC Effectiveness Questionnaire for TAC Tutors; TAC Effectiveness Questionnaire for Teachers; TAC Effectiveness Questionnaire for DEOs and TAC Effectiveness Classroom Observation Schedule. All the instruments were pilot tested and corrections made on all identified errors before full scale use in the study as recommended by Creswell (2009). The researcher personally administered the instruments and conducted classroom observations.

3.6.1 TAC Effectiveness Questionnaire for TAC Tutors

The TAC Effectiveness Questionnaire for TAC tutors was administered to the TAC tutors. It was used to collect the respondents' demographic data - their education level, preparation to work as TAC tutors and work experience. The instrument was also used to gather data from the TAC tutors regarding their performance of TPD duties and their observed teachers' classroom practice; whether teachers used learner centred teaching learning approaches. It also gathered data on identification of teacher professional needs before conducting TPD activities; initiator of in service courses, topics covered by the initiators of TPD activities. Value of in service courses to teachers, invitation of guest speakers, source of the speakers, challenges faced in conducting teacher professional development and suggestion for TAC sustainability were all investigated using the instrument which was also used to gather data on classroom observation and teachers' use of resources. The investigation on value of TAC activities and observed teachers' classroom practice were meant to bring out TAC effectiveness in their performance of TPD activities. If the impact of their training was traced in the classroom then TACs would be said to be effective in TPD (DFID,1999).

3.6.2 The TAC Effectiveness Questionnaire for Teachers

The TAC Effectiveness Questionnaire for teachers was used to collect data from teachers who had been identified by TAC tutors to have attended TPD

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activities which the TAC tutors had organized. They were therefore purposively selected as recipients of TAC tutors' services in teacher professional development. Teachers provided factual information as well as views and opinions regarding TAC activities. In addition, the study assumption had been that TAC tutor impact of TPD would be observed in the teachers' classroom practice.

The TAC Effectiveness Questionnaire for teachers was therefore used to gather data on whether the in service organized by TAC tutors addressed teachers' professional needs, value of in service courses and invited guest speakers to address teachers, classroom observation, teacher use of TAC resources, and dominant method used in teaching meant to find out whether they used learner centred or teacher centred teaching learning approaches, classroom interactions, teacher mastery of content and teaching approaches. It was also used to collect data on teachers' TPD attendance, activities and topics covered during TPD. It also collected data on the challenges and interventions to mitigate the challenges and gathered suggestions on means of ensuring TAC sustainability. The investigation was also meant to find out the impact of TAC TPD activities in classroom instruction to establish whether the impact could be traced in the classroom as would be the case with an effective TPD (Desimone, 2009).

3.6.3 TAC Effectiveness Questionnaire for DEOs

The DEOs were valuable respondents in the study because TAC tutors, though employees of Teachers Service Commission of Kenya (TSC) at the time of this study, served under the DEOs to perform activities of the Public Service Commission (PSC). The TAC Effectiveness Questionnaire for DEOs was used to gather data on their views regarding TAC tutors performance of their stated duties and responsibilities and the response was used for enhanced validity and reliability of data gathered from other respondents.

The instrument was used to gather demographic data and also data on duties and responsibilities of TAC tutors. It gathered data on TAC tutor involvement in duties meant for AEOs and DEOs. It was also used to report on the challenges faced by TACs and gather suggestions on how the challenges could be addressed.

3.6.4 TAC Effectiveness Classroom Observation Schedule

The observation schedule was used to gather data on the teachers' real classroom practice to supplement the self report by the other respondents who had filled in questionnaires. The instrument was meant to capture whether traces of TAC tutor impact of performance of TPD activities by TACs could be observed in the classroom instruction and practices. The researcher was able to observe live teaching and learning in progress and made conclusions on the approaches used in teaching and learning in class guided by the observation

schedule. The TAC effectiveness classroom observation schedule was meant to cater for some of the limitations of self reporting as advocated by Mugenda, O. and Mugenda (2003). The researcher observed learners and teachers during instruction. The observation focused on indicators of learner centred teaching and teacher centred teaching approaches which included teacher and learner enthusiasm; learners' creativity, class interactions, use of teaching learning resources; teacher mastery of content; teacher's behavior in the classroom and teaching learning approaches, use of questions kind of learning environment created (Scheerens, 2008).

3.6.5 Validity

This study focused on content validity which was determined by expert judgment and it could not be computed quantitatively (Creswell, 2009; Gay, Mills & Airisia, 2009 & Kerlinger, 2000 & Orodho, 2004). The objectives of the study and the research questions formed the criteria for determining content validity. The TAC duties and responsibilities and manner of classroom instruction were used to draw study objectives and research questions by the researcher and they formed the criteria for determining content validity of the instruments.

The TAC duties and responsibilities were to: conduct in service courses to address teachers' identified professional needs; organize meetings of teachers with experts for enhancement of teachers' mastery of content and pedagogic

skills and conduct classroom observation and lesson demonstration. Other TAC duties and responsibilities were to: train teachers to develop, select and use teaching learning resources (MOE, 1995). Classroom instruction whether learner centred or teacher centred also formed content of the study

Some field Quality Assurance and Standards Officers (QASOs) and KIE officers, who train TAC tutors on their duties examined the instruments to check whether the intended objectives and research questions were well captured in the instruments. Hence using the objectives and research questions as the criteria, the officers examined the validity of the content selected, whether it covered the total criteria - research objectives and research questions. They therefore examined how well the instruments established sampling validity by sampling the total content provided in the criterion. The officers also studied the items to ensure that they were in a format that was appropriate for the study respondents and the classroom observer. Some selected TAC tutors from Nandi and Eldoret who did not participate in the study also examined the items in the questionnaire against the same criteria and made their comments and necessary corrections were made. The pilot study also enhanced the content validity of the instruments as advocated by Creswell (2009). Some of the instruments contained many items (28 and 21) to ensure that the objectives and the research questions were effectively addressed. Colleagues from Maasai Mara university, school of Education also studied the

instruments and confirmed that the corrected instruments followed the criteria-
the research objectives and the research questions.

3.6.6 Reliability

In this study split half reliability was used repeatedly to verify the degree to which the instruments yield consistently the same results after the repeated trials according to Mugenda, O. and Mugenda (2003). The researcher had developed four instruments as follows: TAC Effectiveness Questionnaire for Teachers; TAC Effectiveness Questionnaire for TAC tutors; TAC Effectiveness Questionnaire for DEOs and TAC Effectiveness classroom observation schedule. In each case, before use of the instruments for pilot testing, split half reliability was established through manual calculations because data were manually manageable and then after pilot study reliability was verified through assistance of Statistical Package of Social Sciences (SPSS) in the revised instruments for the actual study. Split half reliability was found appropriate because it is a measure of internal consistency of a test according to Gay, Mills and Airisia (2009) who argued that the odd even strategy for splitting test works out well regardless of test organization. In addition Mugenda, O and Mugenda (2003) explained that the major advantage of split half approach is that it eliminates the chance error due to differing test conditions as in test retest and equivalent form techniques and that data with split half reliability have a high correlation coefficient. This study therefore chose split half approach.

The items in each instrument used in this study were randomly split into two equal sets using even and odd numbers strategy to come up with two equal sets of items. This was in an attempt to randomize and standardize them. All items bearing even numbers made a set and items bearing odd numbers made another set. However, splitting the items was not applied to classroom observation schedule where two observers scored and came up with two sets of scores. Split half reliability for each questionnaire was established following the six steps procedure provided by Gay, Mills and Airisia (2009). The procedure for establishing split half reliability followed was as follows: total items in the instrument were administered; the items were then divided into two halves by selecting the odd items to make one sub test and the even items made another sub test - questionnaire; each participant's score on each sub test- questionnaire was computed. The two sets of scores were correlated using Spearman rho coefficient of correlation or rank order

following the formula: $\text{rho} = 1 - \dfrac{6\sum d}{n(n^2-1)}$ to establish reliability of half test.

Reliability coefficient was then established for total test using Spearman

Brown Prophesy formula: $\text{rtotal test} = \dfrac{2(r\ \text{split half})}{1+(r\ \text{split half})}$.

To establish reliability of the TAC Effectiveness Questionnaire for teachers, the whole questionnaire was administered to the respondents. Each item was scored out of a total score of three. Clarity and relationship to objectives and research question scored two and reasonable response was scored one in each

item. Then 20 items which are divisible by two out of the 21 open ended items were used to establish the reliability. The items were randomly split into two equal sets along even and odd numbers to come up with two equal tests of 10 items each. The two sets of scores were correlated using Spearman rank order correlation coefficient (rho) for split half and then Spearman Brown Prophecy formula coefficient for total test. The questionnaire scored .86 correlation coefficient. The instrument was then used for pilot study. According to Plowright (2011) a reliability of at least .5 correlation coefficient is acceptable hence the instrument was acceptable. While Kerlinger (2000) said that .7 correlation coefficient and above was acceptable, hence the instrument was accepted. The final data from the actual study was collected and coded and ran on SPSS for reliability correlation coefficient using Spearman – Brown and the correlation coefficient was .75 correlation coefficient

In TAC Effectiveness Questionnaire for TAC tutors 28 items were used. They were split into two and each set had 14 items. The same procedure proposed by Gay, Airisia and Mills was followed using rho and Spearman-Brown Prophecy formula and it yielded .87correlation coefficient. The instrument was used in the pilot study. The items used in the actual study yielded .77 correlation coefficient when correlated with the aid of SPSS.

The TAC Effectiveness Questionnaire for DEO had six items which were split into two and the same process was used as in the other questionnaires. The

questionnaire yielded.86 correlation coefficient and was used in the pilot study. When data were collected and reliability was calculated with aid of SPSS using Spearman-Brown Coefficient the data yielded .75 correlation of coefficient.

To establish correlation coefficient of the TAC Effectiveness classroom observation schedule, two observers discussed the items and agreed to follow the given criteria for scoring the items. Kerlinger (2000) argued that reliability of an observation system is determined by agreement among observers. As in the other instruments, the observers awarded each item out of a maximum of three scores. Their observation was guided by an observation schedule. Two scores were based on the clarity of the item and its adherence to the objectives and the research questions and one mark was awarded to each item by each researcher based on their own fair judgment of the situation observed. They came up with two sets of scores for each of the seven items. The results by the two observers were correlated as advocated by Kerlinger (2000) using Spearman rho and then Spearman Brown Prophesy formula and yielded .85 correlation of coefficient. The instrument was then used in the actual study. Actual research data were not again tested for reliability because only the researcher conducted classroom observation in the actual research data. People were not willing to co - observe because the exercise was tedious, costly and time consuming.

The researcher settled on the SPSS assisted calculations of correlation coefficient except for the TAC Effectiveness Observation schedule which retained the initially established reliability. The reliability of the four instruments was therefore as follows: TAC effectiveness questionnaire for teachers .755, TAC effectiveness questionnaire for TAC tutors .772 correlation coefficient, TAC effectiveness questionnaire for DEOs .751correlation coefficient and TAC effectiveness classroom observation schedule.85 correlation coefficient

In conclusion, use of questionnaire and observation schedule, proof reading by some QASO and TAC tutors, KIE officers, teachers, colleagues from Maasai Mara University and the pilot testing; all as recommended by Gall and Borg (1983), enhanced the reliability of the research instruments.

3.6.7 Piloting

The instruments were pilot tested on a small representative sample of the target population outside the five counties used in the main study. The methodology used in the actual study was followed also in the pilot study which employed purposive sampling and simple random sampling to select the study sample and the respondents. Purposive sampling was appropriate to select targeted specific subjects for the study, who met specified criteria as was advocated by Gay, Arisia & Mills (2009). In selecting the counties, the specific criteria was Kenya Certificate of Primary Education (KCPE) results representing poor

performance, mediocre, average and above average, covering the period 2007-2011 used to select counties. These had to be selected purposively. The counties selected were the following in the grades indicated: Isiolo - poor; Narok - mediocre; Kajiado- average and Elgeiyo Marakwet - above average. The pilot sample selected was 20 respondents who filled in the TAC Effectiveness questionnaire for teachers, four TAC tutors filled in TAC Effectiveness Questionnaire for TAC tutors and two DEOs filled in the TAC Effectiveness Questionnaire for DEOs.

The instruments were administered to the respondents who were encouraged to explain whether the items contained complicated, difficult or ambiguous words, unclear questions, errors, sensitive issues, and also to comment on length of the instruments, the space provided for writing in the questionnaire and the time provided to fill in the questionnaires. The respondents gave their suggestions on areas of the instruments to be revised and their comments were used to improve the instruments. The pilot report therefore was used to make corrections on the instruments before use in the study and to ensure that the exercise yielded valid and reliable data. Errors on use of words, concepts and statements which could be misconstrued and cause misinterpretation and bias were identified and corrected. For example, in the questionnaire for TAC tutors question one, the word 'means' was substituted for 'criteria'; 'length of time as TAC tutor' was changed to 'work experience'; 'topic discussed' was changed to 'areas facilitated'; areas to increase writing space were indicated; rating as

poor; fair, very good was changed to very high, high, average, low, very low. Suggestion was made that the duties of TAC tutors should be listed for respondents to tick rather than writing them down with no reference. Repeated items were deleted.

The pilot data were analyzed using descriptive statistics with help of the Statistical Package of Social Sciences (SPSS) and the results critiqued to determine whether they reflected the intended study objectives. The results revealed that the effectiveness of TACs in teacher professional development had gaps as indicated in the research problem. For example regarding areas and topics covered in in-service, 11(55%) teachers out of 20 reported they were not relevant. A total of 13 (65%) teachers out of 20 reported that issues discussed after classroom observation were not relevant to TPD. TAC resources were viewed as the greatest challenge with 12(60%) teachers suggesting that provision of resources would be a measure to revitalize TACs. The two DEOs used in pilot study confirmed that the TAC tutors were over worked and they had no time to conduct their duties and responsibilities. Teachers observed were reported to have been using teacher centred teaching approaches. The survey research design, instruments, descriptive statistics as a means of data analysis and use of SPSS were found effective and were adapted in the study. The reliability coefficient using responses from teacher questionnaire was calculated using Spearman Brown correlation coefficient ran on SPSS and the

result was .75 correlation coefficient and in actual study the correlation coefficient was .75.

Pilot testing aided in establishing content validity of the instruments and improvement of the question format and scales and to make corrections on the instruments (Creswell 2009 & Orodho, 2009).

3.7 Data Collection Procedures

The researcher observed the ethical considerations in research throughout this study. After authority was granted by Kenyatta University, the researcher then secured permit from the National Council of Science and Technology and paid a courtesy call to the DEOs to plan a convenient time to collect data from TAC tutors and the teachers in schools in their districts. Letters were written to the TAC tutors and to the head teachers in schools granting the researcher permission to conduct research in their institutions. Respondents participated in the study on their free will and confidentiality was maintained. Anti – plagiarism regulations were also observed.

In the first phase of data collection, the researcher visited the DEOs to seek their permission to collect data from the TAC tutors and teachers. They were the first to fill in their questionnaires administered to them by the researcher. In some cases they argued that they were too busy then the researcher persuaded them and they cooperated and gave researcher time to talk to them. In eight

cases, the DEOs filled in their questionnaire and wrote letters to the sampled schools in the districts asking them to cooperate with the researcher. In four cases, the AEOs who were acting as DEOs filled in the questionnaires. In Total all the 12 DEOs or their representatives filled in the instrument. The researcher then contacted the TAC tutors and the school head teachers to arrange a convenient time to collect data from the TAC tutors and the teachers. In each case a day was spent making contacts and seeking cooperation from the respondents.

In the second phase, the questionnaires were administered to the TAC tutors and the teachers by the researcher. The researcher visited the TAC tutors in each of the sampled zones as had been previously agreed in an earlier discussion when meeting the DEOs. The researcher in each case administered instruments to the TAC tutors then visited schools to collect data from the teachers.

The researcher personally administered the instruments and conducted classroom observation. In some cases teachers proved difficult claiming that they had no time to waste filling in questionnaires. As a result, the researcher held a meeting with the teachers with permission of head teachers and explained to the teachers the academic significance of the study and its educational value. In all cases the sampled teachers were convinced and filled

in their questionnaire. The researcher then waited for the respondents to fill in the questionnaires sometimes while observing a teacher teaching in class.

Administration of the TAC Effectiveness classroom observation schedule proved challenging. Many teachers were not willing to be observed teaching because even after explaining the academic nature of the study, some teachers felt that they should have been given some form of incentive to induce them to participate in the study. In some cases the head teacher would direct the researcher to observe their best performing teachers. Some head teachers asked the researcher to influence the promotion of their preferred teachers and even secure jobs for their own children and other relatives. Other respondents demanded to be paid for the time they spent attending to the researcher's affairs. The researcher finally managed to observe teachers teaching in class as other teachers filled in the questionnaires.

The researcher observed entire lessons to be able to make informed judgment and fill in the observation schedule. The approach also limited class disruptions. The researcher was able to observe the nature of classroom interactions, teacher and learner creativity, teachers' and learners' behaviour in class that spelt out the type of classroom environment created. The researcher also observed use of resources in teaching and learning. The researcher was able to determine use of learner centred or teacher centred teaching learning approaches during the classroom observation. The indicators were learner

engagement in learning, interactions, construction of meaning as opposed to transmission, questions and answer where students were allowed time to think and answer questions. A total of 70 teachers were observed teaching as targeted and another total of 332 teachers filled in questionnaires. Data collection process was successful.

3.8 Data Analysis

Descriptive Statistics, specifically frequencies and percentages, were employed to analyze data generated through use of the four research instruments and in response to the four research objectives. After data were collected, the instruments were organized by their title and each was given an identification number then data were categorized and organized in themes and in some items data were combined and organized under appropriate themes guided by Kerlinger (2000). The themes were drawn from the research objectives and research questions.

The responses were assigned codes which ranged from numerals zero to eight as different cases dictated and code books for each instrument were created. Therefore all the responses from all the questionnaires and for all research objectives were assigned numerals and analyzed quantitatively. Statistical Package for Social Sciences (SPSS) computer based programme were used as a tool for data analysis for each research instrument. The now quantitative data were analyzed by inputting the coded responses into the computer for analysis

and then ran in the SPSS for descriptive statistics. The outcome was frequency tables indicating valid, Frequency Percent, Valid Percent and Cumulative Percent. Valid percentage and cumulative percentage were deleted and the rest remained. The frequency tables were copied into word document. A few frequency tables were converted to figures to vary the data presentation and were also copied to the thesis word document. The researcher reorganized the data from the different instruments under objectives and research questions and presented in word document in form of figures, frequencies and percentages in relation to objectives and research questions. Some verbatim remarks by some respondents were captured in writing and presented as uttered and unprocessed.

CHAPTER FOUR: PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter presents the findings, interpretation and discussion according to the objectives and research questions of this study. The study investigated the effectiveness of Teacher Advisory Centres (TACs) in Teacher Professional Development (TPD) in Kenya. The objectives of the study were drawn from the TAC duties and responsibilities spelt out in MOE (1995) of the study and they were to:

i) Determine effectiveness of TACs in conducting in service courses and professional meetings for teachers with invited guest speakers to address identified teacher professional needs;

ii) Establish the extent to which TAC tutors conduct classroom observation and lesson demonstration to address the teachers' identified professional needs;

iii) Determine the extent to which TAC tutors facilitate teachers to select, develop and use teaching learning resources to enhance instruction;

iv) Find out the extent to which teachers use learner centred teaching learning approaches in class.

4.2 Return Rate

The return rate is critical general information for this study. It is the percentage

of the sampled respondents who actually provided data for analysis (Curtin,

Presser, Singer & 2000). The return rate in this study was obtained after data

were collected from the four questionnaires and it is as presented in Table 4.1

and 4.2.

Table 4.1 Teachers' Return Rate.

County	Schools	Teachers Filled in Questionnaire	Teachers observed teaching	Teachers Respondents	Targeted teachers	Return Rate (%)
Kisii	18	83	13	96	126	76
Nakuru	16	86	18	104	112	93
Bomet	12	56	10	66	84	80
Nyeri	16	66	20	86	112	78
Kirinyaga	8	41	9	50	56	89
Totals	**70**	**332**	**70**	**402**	**490**	**83**

Table 4.1 indicates that the response rate of teacher respondents in the study

was above average from all the five counties with return rate ranging from

96(76%) from Kisii county to 104 (93%) from Nakuru county as shown in

table 4.1. The average return rate of teachers was 83%. The return rate for TAC

tutors and DEOs is presented on table 4.2.

Table: 4.2 TAC tutor and DEOs Return Rate

Respondents	Total sampled	Responded	Return Rate %
DEOs	12	12	100
TAC tutor	35	27	77

Table 4.2 shows that the DEOs return rate was 12(100%) and the TAC tutors' was 27(77%) which were high.

The information on return rate is important because a low return rate could indicate sampling bias and could limit the usefulness and credibility of the study results (Curtin, Presser & Singer, 2000) but in this study the return rate was high in each case because Curtin, Presser & Singer informed that a return rate of 55% and above was acceptable and in this study it was above 55%.

4.2.1 Demographic and Background Information of the Respondents

The respondents in this study were TAC tutors, teachers and the DEOs. Demographic data includes information about their gender composition, education level and preparation for TAC tutors to provide teachers TPD and whether teachers teach subjects they specialized to teach will form important background information for the problem of the study.

 A total of 222 (54.5%) of the teachers were female while 185 (45.5%) were male. On the other hand majority 16(59%) of the TAC tutors were male while

11(41%) were female and the majority DEOs 8(67%) were male while 4(33%) were female. Therefore there were more female teachers than male teachers and more male DEOs and TAC tutors than female. Majority 211 (53%) of the teachers were P1 Certificate holders including 65 (17%) who were P1 certificate holders with ATS1-4. On the other hand, many 16 (51.8%) of TAC tutors were only P1 certificate holders. The academic level of many of the teachers and that of many TAC tutors tended to be largely equivalent and yet TAC tutors were expected to guide teachers in curriculum implementation. In addition many teachers taught large classes of between 60 to over 100 pupils.

Preparation of TAC in TPD was crucial in investigating the study problem. To establish whether TAC tutors were inducted or trained in preparation for performance of their duties and responsibilities, data were gathered from the TAC tutors using the TAC Effectiveness Questionnaire for TAC tutors and Table 4.3 presents findings.

Table 4.3 TAC Tutor's Preparation for TAC Office

Training	f	%
Induction as TAC tutor by MOE	1	3.7
SPRED/ DFID to support KRT in self study	7	25.9
CEMASTEA to support activities	2	7.4
KIE to induct teachers in new syllabus	5	18.5
No training received	12	44.5
Total	**27**	**100.0**

Table 4.3 indicates that only 1(3.7) TAC tutor had been inducted in preparation to work as TAC tutor. Many 12(44.5%) TAC tutors had not gone through any induction or training in preparation to work as TAC tutors. Others 7(25.9) had received training to enable them conduct in service courses initiated by other teacher professional development providers such as Department for International Development (DFID), the Strengthening Primary Education (SPRED) project. Therefore TAC tutors were not prepared for TAC tutors responsibilities and roles.

Teachers trained to teach in primary school since 2004 specialize to teach either Science or Arts subjects according to the Primary Teacher Education (PTE) revised syllabus (MOE, 2004). To establish whether teachers teach the subjects they were trained to teach, data were gathered from teachers using TAC effectiveness Questionnaire for teachers. The responses are presented in Table 4.4.

Table 4.4 Subjects Taught by Teachers

Teaching Subjects	f	%
All subjects in primary school curriculum	292	88.0
Specialized subjects areas	36	10.8
No Response	4	1.2
Total	**332**	**100.0**

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Table 4.4 shows that majority 292 (88%) of the teachers taught all subjects in the primary school curriculum. Only 36(10.8%) taught subjects they were trained to teach. This study established that most teachers in primary schools teach subjects they were not prepared to teach. Such teachers were likely to have a gap in subject content mastery and required professional support.

The general and demographic information provides insights into the respondents of the study. The majority of the male gender held supervisory positions such as DEOs or perceived senior positions such as TAC tutors who were meant to conduct teacher professional development activities for the teachers. The majority of female gender respondents on the other hand were teachers and they were expected to participate in professional development and implement curriculum. It appeared to be a reflection of the Kenyan society and other countries where the female gender was poorly represented in supervisory positions and many are in the teaching profession. In the UK, it was reported that teaching was becoming an all female profession with women outnumbering men in class as much as 13 to one (Gathara, 2011). Mwangi (2011) too found out that a significant proportion (73.3%) of teachers teaching English in Nairobi North district were female.

The TAC tutors and the teachers tended to be of equal educational qualifications yet the TAC tutors were expected to guide teachers in curriculum interpretation and implementation. The issue was that those guiding others

should possess some superior ability in the area of specialization to boast their self efficacy (Bandura, 1997; Hoy & Davis, 2005). Therefore the TAC tutors themselves required professional upgrading and training in curriculum implementation without which their effectiveness and reliability in performance of their duties and responsibilities may remain low. That could be one point to explain their dismal performance in TPD. In addition the TAC tutors had no induction or any form of training to prepare them to work as TAC tutors. This too tends to be part of the explanation of their low performance in their duties.

Teachers in this study too had inadequate education level since the majority of them held only P1 certificate. Research recommends high education for instructors such as teachers and TAC tutors. Marcello (2009) found that students' learning depends primarily on what teachers know and also that content mastery enables one to get mentally organized and well prepared for effective teaching. Marcello further argued that when a teacher does not have sufficient knowledge about the structure of the subject taught, the teacher may convey the content incorrectly and may not be able to represent it in different ways in simplified form or develop and use teaching learning resources. Otieno (2010) reported about teachers who could not work out figures they had asked their pupils to do which in agreement with dismal performance by pupils reported by research such as UWEZO (2010).

Another finding that tends to affect teaching effectiveness was that a large number of the teachers taught too large classes of between 60 to 100 children and even beyond. It was a challenge for such teachers to provide learners individualized attention and to address their different learning styles when classes were too large and unmanageable. The TAC tutors had not identified training teachers in managing large classes as a professional need to be addressed in TPD activities in this study, indicating that their ability to identify professional needs of teachers was questionable.

This study also established that many primary school teachers were made to teach subjects they were not trained to teach. This is in agreement with findings by KNEC (2010) which had found that about 8.6% of the teachers indicated that they did not have any experience in teaching mathematics yet they taught it. Otieno (2010) reported that in some cases even the teachers could not solve arithematic problems they expect students to do. Since 2004 when the PTE curriculum was last revised, the teacher trainees specialize in the subjects of their choice (MOE, 2004). Ingersoll (cited in Villegas – Reimer, 2003) argued that requiring teachers to teach subjects for which they had not been trained or educated harms both teachers and students and good learning outcomes are compromised. This could explain the cause of low achievement of literacy and numeracy skills after going through the primary school course cited by Siringi (2012) and others in the background of this study such as UWEZO (2013)

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4.3 In service Courses and Meetings with Teachers

The first objective of the study sought to determine effectiveness of TACs in conducting in service courses and holding professional meetings for teachers with invited guest speakers to address identified teacher professional needs. It was investigated by addressing two main areas which were: in service courses for teachers in response to identified teacher professional needs and holding meetings for teachers with guest speakers. Data were collected on whether teacher professional needs were identified to inform the in service courses, initiator of in service courses, in service response to teachers' needs and teachers' value of the in service courses. As regards invitation of guest speakers data were gathered on frequency of invitation and source of the guest speakers

4.3.1 In service Courses

To establish the effectiveness of TACs in conducting in service courses for teachers to address to identified teacher professional needs, data were collected from the TAC tutors using the TAC Effectiveness Questionnaire for TAC tutors. The TAC tutors were required to respond to the item inquiring whether they identified Teacher Professional Development (TPD) needs before conducting in service courses and the TAC tutors' responses are presented on Table 4.5

Table 4.5 Identification of Teacher Professional Needs

Needs Identification	f	%
Identified needs	1	3.7
Did not identify needs	13	48.2
TPD based on National exam performance	12	44.4
No response	1	3.7
Total	**27**	**100**

From Table 4.5, only 1(3.7%) TAC tutor reported to have identified TPD needs of teachers before conducting in service courses. Many 13(48.2%) of TAC tutors reported that they did not identify teacher professional needs before conducting in service courses. The frequency of TACs in holding in service courses for teachers based on identified teacher professional needs was therefore very limited. Failure of TAC activities to meet teacher professional needs could be an indicator that teachers' needs had not been identified which shows TACs ineffectiveness in TPD activities. A large number 12(44.4%) of TAC tutors reported that they conducted in service courses based on the national examination performance and not necessarily identified needs.

The study then sought to establish from the TAC tutors, the initiator of the in service courses in an attempt to establish whether TAC tutors played any role in initiation of in service courses for teachers. Table 4.6 presents the findings.

Table 4.6 Initiator of In Service Courses

In service courses Initiator	f	%
TAC tutor	1	3.7
MOE	10	37
Book Publishers	10	37
KIE	4	14.9
No response	2	7.4
Total	**27**	**100.0**

The data on Table 4.6 indicates that only 1(3.7%) TAC tutor reported to have

initiated in service courses. The rest who were the majority totaling 24(88.8%)

did not initiate the in service courses and therefore they appeared to be running

in service courses initiated by other organizations and the role the TAC tutors

played in it was not clear. The study revealed that TAC tutors played an

insignificant role in initiation of TPD activities and there were many providers

of in service courses for teachers therefore TAC tutors cannot take credit for

the activity and could not control the area covered.

The study also sought to find out the type of the topics covered during TPD in

order to further establish whether the topics were related to classroom practice.

Data were collected from TAC tutors using TAC Effectiveness Questionnaires

for TAC tutors. The responses were presented in table 4.7

Table 4.7: Topics Covered During In service Courses

Topics for In service	f	%
National Examinations analysis and exam improvement	14	51.8
Training in subject content and methodology	2	7.4
Record keeping and teacher guidance and counseling	6	22.3
Textbook selection	5	18.5
Total	**27**	**100.0**

Table 4.7 indicates that only 2(7.4%) TAC tutors reported that the topics covered were on subject content and methodology. The topic reported by most 14(51.8%) of the TAC tutors covered during TPD was National examinations analysis and improvement. Therefore in service courses emphasized more on examinations performance than enhancement of classroom instruction and this agrees with the findings presented area that TAC tutors based their TPD activities on examination performance.

The study also sought to establish from teachers whether the in service courses they attended addressed their professional needs and this was a good measure of TAC effectiveness in TPD. Data were gathered from teachers using the TAC Effectiveness Questionnaire for Teachers. Figure 4.1 presents the responses.

Figure 4. 1: In Service Response to Teachers' Needs
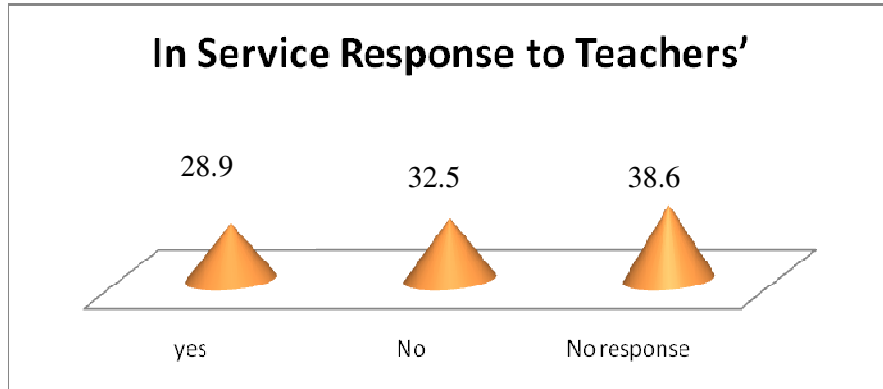
Figure 4.1 indicates that only 28.9% teachers had reported that their professional needs had been addressed and needs of a significant 32.5 % of the teachers was not catered for. The 38.6% none response though less than 50% therefore insignificant according Mugenda, O. and Mugenda (2003) pose concern why such a large number did not respond to the item.

To find out whether teachers valued in service courses, the TAC tutors and teachers were required to rate the usefulness of the in service courses. The TAC Effectiveness Questionnaire for Teachers and TAC Effectiveness Questionnaire for TAC Tutors were used. Figure 4.2 presents the findings from both teachers and TAC tutors.

Figure 4.2: Teachers Value of in Service Courses
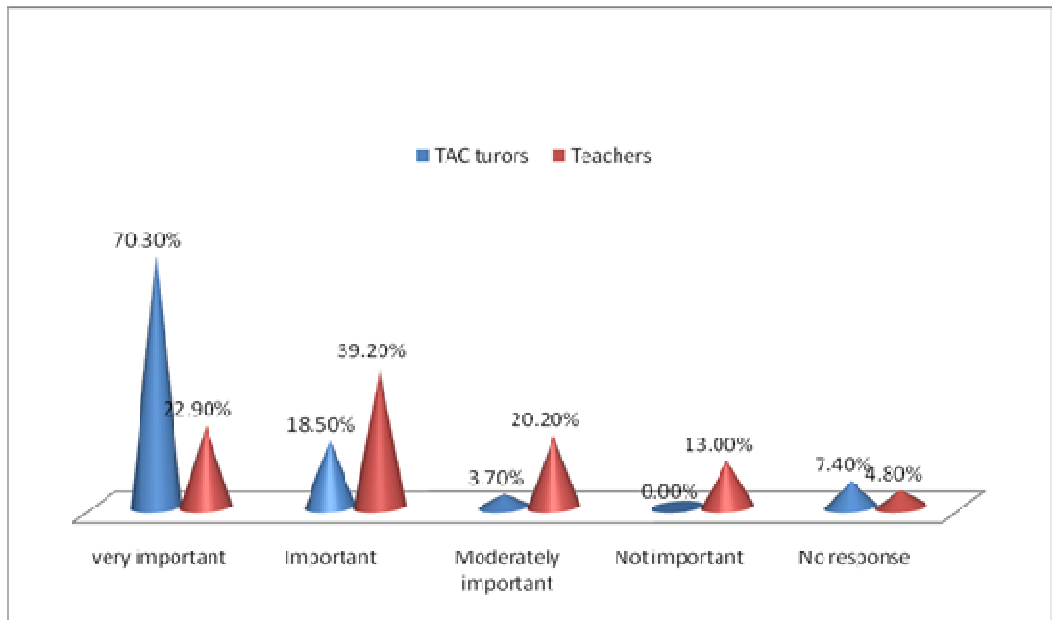
Figure 4.2 indicates that 70.3% of the teachers rated in service courses as 'very important' and 18.5% teachers rated it' important, making a total of 78.8% teachers who valued in service courses. Many 22.9% and 18.5 TAC tutors reported that teachers they had interviewed as they conducted their TPD activities, had rated the value of in service courses as 'very important' and 'important' respectively. It came out clearly from the TAC tutors and teachers that the teachers valued in service courses regardless the quality which is an indicator that teachers crave for professional development activities.

The findings showing failure by TAC tutors to identify teacher professional needs before conducting in service implied that they did not base the in service courses on the teachers' identified needs and the effectiveness of such activities might be doubtful. Effective TPD begins with understanding the teachers'

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needs and their environment, otherwise the training would be a waste of time and resources (European Union, 2010; Gaible & Burns, 2005). There is overwhelming support for identification of teacher professional needs before TPD activities (Darling - Hammond, 2000). In addition the policy documents such as the education commission reports on which TACs were founded: Republic of Kenya 1964, 1976, 1988 and 1999 had emphasized that TACs should meet the local professional needs of teachers indicating that needs would have to be identified. OECD (2009) argued that professional development should always address identified gaps in teachers' practice and in students' achievements. It should always focus on real issues and avoid information that may not benefit the participants and should be based on sound educational practices such as contextual teaching that are learner centred. Gaible and Burns (2005) too contended that TPD begins with the understanding of teachers' needs and their work environment. In addition Ingersoll (2001) advised that teacher professional development must enhance teaching effectiveness or ran the risk of being irrelevant.

This study also revealed that examinations were accorded too much attention at the expense of quality teaching and that agrees with Hardman et al (2009) who reported that teaching in primary schools in Kenya was in form of transmission. Oduor (2011) reported county ranking based on examinations performances which could be an indicator for the reason for schools desire to score high scores at the expense of quality teaching. Many TAC tutors based

their TPD activities on examination performance. Teaching for examination purposes encourages transmission of facts and rote learning which is a form of banking and inhibits creativity (Darling – Hammond, 2000). This may not prepare learners for 21st century challenges and achievement of the Kenya Vision 2030. Aggarwal (2005) observed that learning for the sake of being examined in a mechanical manner takes away the joy of being young and de - links school knowledge from everyday experience. Teaching should be for purpose of understanding content and construction of knowledge (Ingersoll, 2001).

This study revealed that TAC tutors played an insignificant role in initiation of TPD activities and there were many providers of in service courses for teachers and therefore TACs may not credit for the activities. Earlier studies (DFID, 1999; Hardman et al, 2009 & Kisirkoi, 2011) had also established that TACs only participated in activities organized by other bodies but they had not initiated the TPD activities. Commercial book publishers were the main providers of in service courses and their dominance as facilitators of in service courses and in other TPD activities created concern whether they were experts in classroom practice or they might have been driven by need to market their books and other educational products. One wonders whether the activities of other providers besides TACs could be related to findings that the TAC tutors in the five counties in the study faced similar challenges that hampered their efficiency and effectiveness yet Kirinyaga county had been repeatedly leading

in KCPE national examinations over many years as established earlier in this report.

Failure by TAC tutors' in service courses to meet professional needs of teachers was in consistent with Villegas - Reimer (2003) observation that in most parts of the third world the majority of in service programmes were too unrelated to the needs of teachers and too ineffective to upgrade teaching knowledge.

It came out clearly from the TAC tutors that teachers valued in service courses in agreement with other findings from research by DFID (1999), KNEC (2010) and Orwa (1986) who found that teachers valued in service courses. DFID (1999), also found out that teachers from Kenya, England, Naples and Malawi valued teacher professional development activities though the teachers had said the activities had not met their professional needs which appeared a contradiction and assumption was made that teachers value TPD of whatever nature or they value the aspect of being brought together to discuss professional issues.

4.3.2 Teachers and Guest Speakers Meetings

The second part of objective one was intended to establish the effectiveness of TACs in holding professional development meetings for teachers with invited guest to address identified teacher professional needs. The TAC Effectiveness Questionnaire for TAC tutors was used to establish the frequency in which

guest speakers held professional meetings with teachers to address identified teacher professional needs. This was for purpose of finding out whether such professional meetings were ever held. Table 4.8 presents the findings.

Table 4.8 Teachers and Guests Speakers Meetings

Frequency	n	%
Always (all the time)	4	14.8
Often (some time)	3	11.1
Rarely	16	59.3
Never	1	3.7
no response	3	11.1
Total	**27**	**100.0**

Table 4.8 indicates that the majority 16(59.3%) of the TAC tutors reported that guest speakers were rarely invited to hold meetings with teachers to address teachers' professional needs in an area requiring a specialized expert advice. Therefore the frequency of inviting guest speakers was quite insufficient.

Data were gathered from TAC tutors to establish the source of the invited guest speakers, in an attempt to find out whether the speakers were those conversant with classroom instruction. The TAC Effectiveness Questionnaire for TAC tutors was used. The data is presented in Table 4.9

Table 4.9 Source of Guest Speakers

Source	TAC tutors		Teachers	
	f	**%**	**f**	**%**
KIE (now KICD)	1	3.7	15	4.5
MOE	2	7.4	46	13.9
School Book Publishers	13	48.1	57	17.2
TTCs	6	22.3	5	1.5
KCPE top performers	2	7.4	50	15.5
University	1	3.7	5	1.5
CEMASTEA	-	-	8	2.4
KNEC	-	-	4	1.2
No response	2	7.4	142	42.8
Total	**27**	**100.0**	**332**	**100%**

Table 4.9 indicates that a large number 13(48.1%) of TAC tutors and most 57 (17.2%) of the teachers reported that TPD invited guest speakers were book publishers who were also source of in service courses for teachers. Their expertise in classroom practice is doubtful and it appeared that they might have been motivated by desire to market their materials; an assertion that was supported by verbatim comment by a teacher respondent to the researcher.

The verbatim data served purpose of triangulation and implied that the book publishers might have been interested in marketing their materials: The teacher explained:

> The book publishers who facilitated the in service courses took us
> through selection of school course books but only talked about books
> from their company. We were shown the number of the national

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examination questions that could be answered using books published by
their company.

Such a teacher and many others may be unable to compare course books from
other publishers and select the best book that meets MOE book evaluation
criteria such as syllabus coverage as they are supposed to do. They are likely to
only purchase the books presented by publishers who facilitated the TPD
activity and may leave out better quality school course books by other
publishers who may not have had opportunity to talk to the teachers.

To establish the value teachers placed on their meetings with the guest
speakers, data were collected using the TAC Effectiveness Questionnaire for
Teachers. The teachers were required to rate the value they placed on use of
guest speakers during TPD to address their professional needs. Table 4.10
presents the findings.

Table 4.10 Teachers' Value of Guest Speakers Meetings

Rating	n	%
Very Much	64	19.3
Much	117	35.2
Little	46	13.9
None	56	16.8
No response	49	14.8
Total	**332**	**100.0**

Table 4.10 shows that many 117(35.2%) teachers rated value of professional
meetings with guest speakers' as 'much' and another 64(19.3%) rated it as

'very much. This indicates that the majority 181 (54.5%) of the teachers valued their meetings with guest speakers to address teacher professional needs. 'Much' and 'very much' indicate the high value they had for professional meetings with invited guests. Teachers therefore valued meetings with guest speakers which is a further indication that teachers value TPD activities as it was established earlier that they valued in service courses regardless the quality. It appears teachers valued being brought together to discuss professional issues.

The meetings between teachers and invited guest speakers were meant to provide the teachers varied experiences and opportunities to interact with other educationists and experts in their subject areas and profession and to expose them to a variety of approaches and strategies in teaching and also to address an area posing challenge to TPD providers such as TAC tutors (Crolyne, 2008 & MOE, 1995).

It came out clearly from the TAC tutors and teachers that the teachers valued in service courses and work of the guest speakers which was in agreement with research by KNEC (2010) and Orwa (1986) who found that teachers valued professional activities. The difference in duration between the reports also showed that the status had not change over time.

In this study therefore the frequency in which TAC tutors invited guest speakers to address identified teacher professional needs was very minimal; however the teachers valued professional meetings with guest speakers just as they valued in service courses.

Based on research findings and in reference to the research objectives, effectiveness of TACs in conducting in service courses and professional meetings for teachers with invited guests to address identified teacher professional needs was inadequate.

4.4 Classroom Observation and Lesson Demonstration

The second objective of this study was to establish the effectiveness of TACs in conducting classroom observation and lesson demonstration to address the identified teacher professional needs. The TAC Effectiveness Questionnaires for teachers and TAC Effectiveness Questionnaire for TAC tutors were used to collect data from the teachers and the TAC tutors. The areas investigated were: frequency of classroom observation; action taken after classroom observation and value teachers placed on classroom observation and lesson demonstration.

4.4.1 Classroom Observation

The frequency of TAC tutors in conducting classroom observation in a year to establish whether the activity was conducted was established. The TAC Effectiveness Questionnaire for teachers and TAC Effectiveness Questionnaire

for TAC tutors were used to collect data from the teachers and the TAC tutors.

Table 4.11 presents the findings.

Table 4.11 Frequency of Classroom Observation

Classroom observation	f	%
None in a year	66	19.9
1-2 times a year	92	27.7
3-5 times a year	91	27.4
Over 5 times a year	51	15.4
No response	32	9.6
Total	**332**	**100.0**

Table 4.11 indicates that many 92(27.7%) and 91(27.4%) teachers were observed teaching between one to five times in a year which was found to be adequate.

4.4.2 Lesson Demonstration

To establish whether TAC tutors conducted lesson demonstration after classroom observation, TAC Effectiveness Questionnaire for Teachers was used. Table 4.12 presents the findings and the action taken by TAC tutors after classroom observation was investigated.

Table 4.12: Action Taken After Classroom Observation

Action taken	f	%
Trained teachers in content and teaching method	73	21.0
Wrote a report and served copy to head teacher and conducted routine school inspection,	49	15.8
Conducted demonstration lessons	10	3.0
Teachers reprimanded in a staff meeting	96	28.9
No action taken	104	31.3
Total	**332**	**100.0**

Table 4.12 indicates that only 10(3%) teachers reported that TAC tutors conducted demonstration lesson after classroom observation. Many 104 (31.3%) teachers reported that no action was taken after classroom observation. Another large number 96(28.9%) teachers were reprimanded by TAC tutors after classroom observation. It was clear that many teachers did not professionally benefit from TAC tutors after classroom observation though it was established that TAC tutors conducted classroom observation as shown in Table 4.11. A sample of voices of teacher respondents was recorded for purpose of triangulation of findings.

> TAC tutors come and harass us. When I see one in the school
> compound I hide because they only come for fault finding and they
> never find anything that I have done right. I get demoralized. They
> write reports which they never show us but file and give a copy to
> the head teacher. I do not think they even know how to advise
> somebody to improve teaching.

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TAC tutors appeared to have conducted classroom observation but failed to accord it value by scolding teachers, harassing them and failing to add value to their performance in classroom instruction as presented in Table 4.12 and the teacher's voices. It was clear that the effectiveness of TAC tutors in observing teachers teaching and conducting demonstration lessons to meet teachers, identified professional needs was inadequate.

The value teachers placed on classroom observation was established using TAC Effectiveness Questionnaire for Teachers. Table 4.13 presents the findings.

Table 4.13: Teachers Value of Classroom Observation

Rating	f	%
Very Important	3	11.1
Important	1	3.7
Moderately important	18	66.7
Not important	3	11.1
No response	2	7.4
Total	**27**	**100.0**

Table 4.13 indicates that the majority 18(66.7%) of the TAC tutors reported that teachers rated classroom observation as moderately important which indicates that they had little value of classroom observation and 3(11.1%) rated it not important indicating that they did not value classroom observation

conducted by TAC tutors. It was clear that classroom observation was not highly valued by teachers.

From the findings of the study, the effectiveness of TAC tutors in carrying out classroom observation and conducting lesson demonstration to address the teachers' identified professional needs was very low.

Classroom observation is considered critical in teacher professional development. Desimone, (2009) identified it as aspect of active learning which she expounded includes observing expert teachers or being observed, followed by interactive feedback and discussion; reviewing student work in the topic areas being covered; and leading discussions which was not the case in this study. Instead many teachers reported that they were harassed. Classroom observation is conducted in many countries of the world including Cyprus, Czech Republic, Greece, France and Germany (OECD, 2009).Through classroom observation teachers' gaps in classroom practice and other needs are identified and approaches for enhancement are planned. Classroom observation is conducted to find out actual practice of teachers in the classroom aimed at supporting teachers in classroom instruction through class demonstration and other follow up TPD activities as stated by Desimone (2009).

Demonstration lessons are meant to expose teachers to a model of good classroom instruction and variety of teaching approaches which they could emulate and any corrections are meant to enhance classroom instruction because teachers learn just as students do by studying, doing and reflecting

(Darling - Harmmond, 2000). Corrections of undesired practice noted should be made in a collegial manner aimed at improvement of classroom instruction (Scheerens, 2008). After classroom observation the identified gaps should be addressed through lesson demonstration (OECD, 2009) which was not the case from the TAC tutors in this study. Lesson demonstration was very rare. Effectiveness of TAC tutors in observing teachers teaching and conducting demonstration lessons was therefore quite insufficient.

4.5 Teaching Learning Resources for Instruction

The third objective of the study sought to determine the extent to which TAC tutors facilitate teachers to select develop and use teaching learning resources to enhance instruction. TAC Effective Questionnaire for TAC tutors was used to collect data from the TAC tutors who were required to indicate how often they trained teachers to select, develop and use teaching and learning resources to enhance instruction for effective teaching and learning. Figure 4.3 presents the findings.
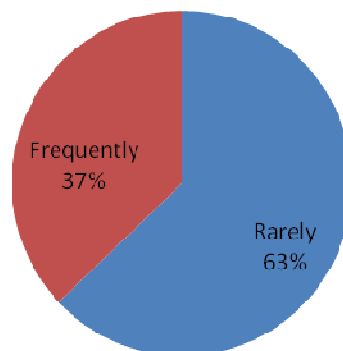
Figure 4. 3: Use of Teaching Learning Resources

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Figure 4.3 indicates that only 37% of the TAC tutors reported that they frequently trained teachers to develop and use teaching learning resources but the majority (63%) of the TAC tutors reported that they rarely trained conducted the activity for enhancement of classroom instruction.

From the findings of the study, the frequency of the TAC tutors in training teachers to develop and use teaching learning resources to enhance teaching and learning was inadequate. In addition verbatim voices of teacher respondents from different counties were recorded for triangulation of data gathered using the instruments. The captured voices across the counties were as follows:

Voice A. Nobody has ever talked to us about teaching learning resources Madam, they do too many things and they have little time for resources

Voice B. There have never been any training conducted by TAC tutor on Resources. They have never trained us on anything

Voice C. Only a publisher trained us on how to use their course books

Voice D. Nobody thinks of training us in resources, there is no time to use them

Voice E. They do not know how to use them let alone training others. They do not know teaching in primary school. How can they train us?

The captured teachers' voices indicated that teachers were not trained to develop, select and use teaching learning resources and the frequency of the TAC tutors in training teachers in use of resources was insufficient

The researcher used the Classroom Observation Schedule to rate teachers' use of teaching learning resources to aid instruction. Figure 4.4 presents the findings.
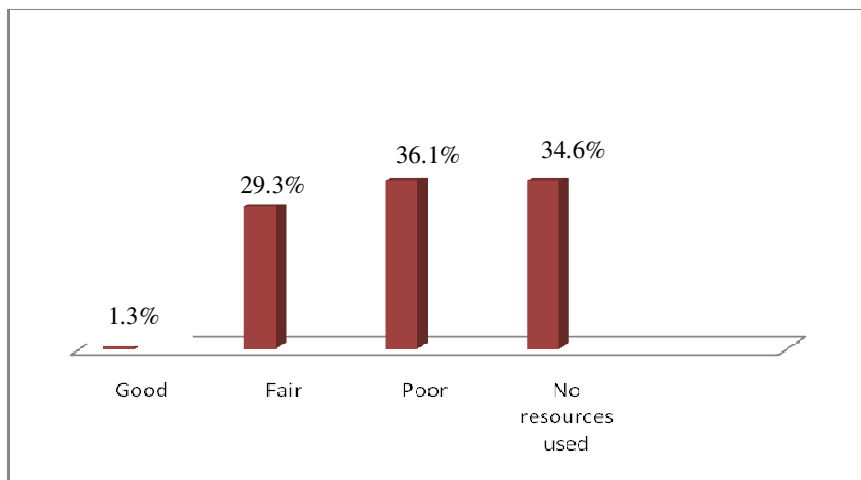
Figure 4. 4: Teachers' Use of Resources

Figure 4.4 indicates that only 1(1.3%) teacher was rated 'good' in use of teaching learning resources, while 36.1% others were rated 'poor' and 34.6% others did not use the resources to enhance instruction.

TAC tutors were also required to report on their observed teachers' manner of use of resources developed or sourced by the teacher for use as teaching aid to enhance teaching and learning besides the course book. Data were gathered using TAC Effectiveness Questionnaire for TAC Tutors. Table 4.14 presents findings.

Table 4.14: Teachers' Manner of Use of Resources

Use of Resources	f	%
Used for teaching and learning	1	3.7
Presented in class but not used	2	7.4
No other resources used except textbook	15	55.6
Poor use - reading textbook content in class	9	33.3
Total	**27**	**100.0**

From the data on Table 4.14, only 1(3.7%) TAC tutor reported that resources were used to aid teaching and learning. The majority 15(56%) of TAC tutors reported that no other resources were used by teachers in class except textbooks; only 2(7.4%) TAC tutors reported that resources were presented in class but they were not used. The TAC tutors observation tended to concur with that of the researcher.

It is clear that the extent to which the TAC tutors facilitated teachers to develop and use teaching learning resources to enhance instruction was quite inadequate.

Teachers were required to report on frequency of their own use of teaching learning resources to aid classroom instruction. TAC effective Questionnaire for Teachers was used. The responses are presented on Table 4.15

Table 4.15: Teachers' Frequency of Use of Resources

Use of Resources	f	%
Always	-	-
Frequently	79	23.8
Rarely	164	49.2
Never	89	27
Total	**332**	**100.0**

Table 4.15 indicates that many164 (49.2%) teachers reported that they rarely used resources to aid instruction. A total of 89(27%) teachers reported that they had 'never' used resources to enhance classroom instruction. This concurs with the report by teachers and TAC tutors that teachers did not use resources to enhance classroom instruction.

Investigation was also conducted using classroom observation schedule to establish the resources in the TAC centres. Figure 4.5 presents the resources in the TAC centres as observed by the researcher using Classroom Observation Schedule.
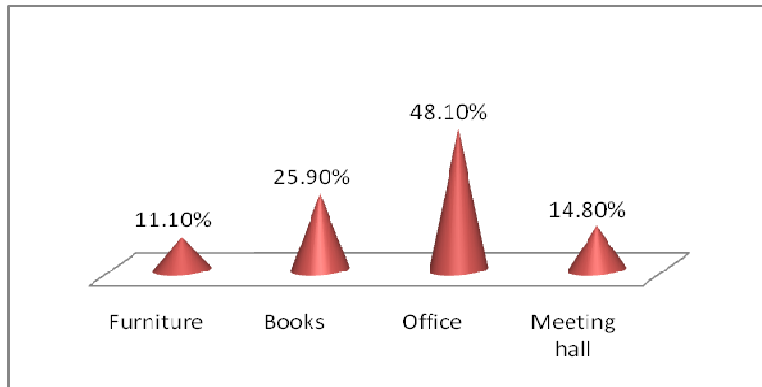
Figure 4. 5: Resources in TAC

Figure 4.5 reveals that TACs had scarce resources in their centres. A total of 11.1% centres had office furniture; 25.9% had some books in their office; 48.1% had an office space; 14.8% had meeting hall and the rest did not have any resources and equipments. This showed that the TAC centres were very poorly equipped with facilities and resources and therefore the TAC tutors could not set up teaching learning resources for classroom use by teachers.

From the findings, it was clear that the extent to which TAC tutors facilitated teachers to use teaching learning resources to enhance instruction was inadequate.

Data collected revealed clearly that TAC tutors were not facilitating teachers to use teaching learning resources to enhance instruction and the resources were not used by most teachers in teaching and learning. The trend is a great disservice to the learner because of many benefits of use of resources in

teaching and learning. Resources aid in addressing more than one senses and the more senses addressed the better the learning outcome (Doyle & Robson, 2002). Resources support students learning and have been found to significantly increase students' achievement (Bitner, N. & Bitner, 2002). They also cater for learners' individual differences and different learning styles. Research has also shown that learners learn best concepts when they are taught by use of concrete resources because resources help to make abstract content concrete (Schwille, Dembere & Schubert, 2007).

Resources promote perception and enhance understanding. They help to reinforce the spoken word, aid memory, retention through involvement of many senses; repetition through a different medium, motivate and arouse learners' interest though interactions (Maduna, 2002). Research indicates that whilst only about 12% of what we learn comes from hearing, 75% comes from what we see (Doyle & Robson, 2002). Educators have recognized the power of audio-visual materials to capture the attention of learners, increase their motivation and enhance their learning experience. Mayer (2001) reported that among teachers who report using TV or video for two or more hours per week, two-thirds find that students learn more when TV or video is used, and close to 70% found that student motivation increases with use of teaching learning resources.

More than half of frequent users of resources also find that students use new vocabulary as a result of use of video (Mayer, 2001). Use of modern technology as learning resources increases learning effects (Ivet & Baron, 2002). Failure to use resources in learning is detrimental to quality of teaching and learning outcomes. Nevertheless teachers in this study did not use resources when teaching and TAC tutors did not seem to have facilitated teachers to use resources. Use of resource is so critical that the modern trend is shifting to integrate technology in education to be able to enhance use of resource from technology to make learning more learner centred and to develop learner creativity, innovativeness and facilitate them to construct their own knowledge, technology enhanced resources promote learner creativity and knowledge construction (Koehler, 2011).

This study also established that resources in the TACs offices were scarce. The TAC centres were very poorly equipped with facilities and resources. This revealed that TAC tutors work under very difficult conditions. TAC office operated without the basic tools for work and it was an indicator that the effectiveness of TACs in delivery of their services was very inadequate. Teachers across the counties reported verbatim that they were not trained to develop, select or use resources and their voices were captured. Use of resources by teachers in this study was observed to be very poor and that indicates that the delivery of content in the schools studied may not be effective. The frequency of TAC tutors in training teachers in development,

selection and use of teaching learning resources was very inadequate and their facilitation of teachers to use resources to enhance instruction was therefore very insufficient almost none.

4.6 Learner Centred Teaching Learning Approaches.

The fourth objective of this study sought to find out the extent to which teachers use learner centred teaching learning approaches for instruction. The TAC Effectiveness Classroom Observation Schedule, TAC Effectiveness Questionnaire for TAC tutors and TAC Effectiveness Questionnaire for teachers were used to gather data. The following were investigated: type of classroom interactions, learner enthusiasm, teachers' manner in class, teachers' mastery of subject content and dominant teaching approaches.

4.6.1 Classroom Interactions

The researcher observed the type of interactions dominating the class as the observed teachers taught using classroom observation schedule. Table 4.16 presents the findings.

Table 4.16: Classroom Interactions

	Teacher-learner interaction		Learner-teacher Interaction		Learner-learner Interaction	
Rating	**f**	**%**	**f**	**%**	**f**	**%**
Very frequent	-	-	2	2.7	3	4
Frequent	55	80	5	9.7	4	10
Rare	8	10.7	18	25.7	21	30
Very rare	7	9.3	45	61.9	42	56
Total	**70**	**100**	**70**	**100.0**	**70**	**100**

Table 4.16 indicates that the majority 55(80%) of the teachers observed by the researcher were using teacher - learner interaction in class; which is interaction initiated by the teacher - a characteristic of teacher centred teaching approach. Learner – teacher, which is interaction initiated by the learner, a characteristic of learner – centred approach was used 'very rarely' as reported by 60% of the teachers. Learner –learner interaction, another characteristic of learner centred approach was very rarely used in teaching. Therefore the dominant teaching approach used by teachers when teaching as observed by the researcher in class was teacher centred characterized with teacher talk, questioning and chorus answers which allowed no further discussions. The teacher determined the correctness of responses with no explanation and room for discussion. The teacher also determined who was to answer questions in class. The focus

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appeared to be transmitting content in a manner that learners would reproduce it easily through rote learning. There was no active learning, construction of meaning, discovery method and collaborative learning.

Harvel (2003) argued that Interactivity is critical in development of critical thinking - a necessity in the 21st century. The teacher, instructor should be able to create a learning environment that motivates students to take responsibility for their own learning and construct their own meaning by use of resources for learning. Learner centred approaches result only in the way teachers teach Brophy (2001). They are also achieved through effective class management and control for effective learning, use of effective communication in class, enthusiastic teachers with good grips of content mastery and who are able to induce learner enthusiasm. Learner centred teaching constructivist approaches are the preferred teaching approaches for their many advantages in developing learners' creativity and innovativeness, critical thinking and problem solving skills (European Union, 2010 & Scheerens 2008).

4.6.2 Learner Enthusiasm in the Learning Environment

The researcher using classroom observation schedule observed learner enthusiasm in classrooms during instruction. It is a variable dominant in learner centred learning environments (Scheerens, 2008) but was investigated in isolation because it is key in effective teaching and learning. The TAC tutor also reported on observed learner enthusiasm and data were collected using

TAC effectiveness Questionnaire for TAC tutors. Table 4.17 presents the findings.

Table 4.17: Learner Enthusiasm

	TAC tutor		Researcher	
Rating	f	%	f	%
High	11	42.7	10	14.3
Average	11	42.7	40	57.1
Low	1	4.7	20	28.6
Very low	4	9.9	-	-
Total	**27**	**100.0**	**70**	**100**

As shown in Table 4.17, majority 40(57%) of the classes were rated by researcher as average in learner enthusiasm. The TAC tutors rated learner enthusiasm between high and average; 11(42.7%) were rated high and another 11(42.7) were rated average. Therefore Learner enthusiasm tends to have been average which was just fair.

Many learners were not found to be enthusiastic in class. It was only a few who responded to the teachers' questions in teacher centred classroom environment where the teachers dominated the class and failed to induce learner enthusiasm. Majority of the learners remained dull perhaps because of teacher centred teaching method and teacher learner type of interaction which did not give them a chance to participate in class. In most cases the teachers decided the

pupils to answer questions which were either right or wrong allowing no room for discussions or explanation.

4.6.3Teachers' Behaviour During Lesson Presentation

Teachers' behaviour during lesson presentation was reported as observed by the researcher and the TAC tutor and was critical in determining the level of friendliness and freedom in the learning environment. The TAC Effectiveness Questionnaire for TAC tutors and classroom observation schedule were used to collect data. Table 4.18 presents the findings.

Table 4.18 Teachers' Classroom Behaviour

Teachers' manner	Researcher		TAC tutor	
	f	%	f	%
Friendly, lively and exciting	61	89.3	26	96.3
Boring,	3	3.7	0	0
Unfriendly	6	15.	1	3.7
Total	**70**	**100.0**	**27**	**100.0**

Table 4.18 indicates that the majority 61(89.3%) of the teachers observed by the researcher teaching and 26 (96.3 %) observed by the TAC tutors in course of their TPD activities were found to be exciting, lively and friendly to the learners. Both the researcher and the TAC tutor tended to agree in their observations and found teachers very enthusiastic when teaching in class which was unlike the learners who were rather dull as presented in Table 4.17. The

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teachers were enthusiastic as they talked most of the time in a chalk and talk classroom environment. The teacher centred approach to teaching and the teacher learner type of interactions did not give learners a chance to participate in class. The teachers failed to induce learner enthusiasm. Teacher enthusiasm in learner friendly environment would have raised learner enthusiasm but it did not which was in contrast to Feldman (2007) who argued that teacher enthusiasm has power to influence students' cognitive, affective and motivational outcomes with its intrinsic motivation. Perhaps the one that brings such result is where the learner is engaged but in this case the learner was a kind of spectator of teachers' endless talk in self amusement that never ignited the class but non verbal look tended to communicate to the learner 'dare you deviate from what I say'.

All the learners were engaged only when writing exercises and the teacher went round marking one question for most of the students and then the bell would end the class. Hardman et al (2009) had found the same transmission type of teaching learning approach.

4.6.4 Teachers' Mastery of Content

Teachers' mastery of teaching subject content was observed by the researcher using the TAC Effectiveness classroom observation schedule. Table 4.19 presents findings.

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Table 4.19: Teacher Mastery of Content

	Teacher Mastery of Content	
Rating	f	%
very good	21	28.0
Good	41	61.3
Fair	7	9.3
Poor	1	1.4
Total	**70**	**100.0**

As indicated in Table 4.19 the researcher rated mastery of subject content of 41 (61.3%) teachers 'good' and 21(28.0%) 'very good'. It was evidenced by accuracy of the content, detailed explanation and description, coherent presentation and ease in representing content to the learners in simplified form but in teacher centred - lecture approach.

Teacher mastery of content in this study was found to be high but it was not matched with development and use of teaching learning resources necessary for effective teaching and enhancing learning. Content mastery provides knowledge about what to present in class and empowers a teacher to represent content in different ways to cater for learners with varied leaning styles (Desimone, 2009 & Koehler, 2011). A competent teacher needs both content mastery and pedagogic competence (Darling – Hammond, 2000, OECD, 2009 & Shulman, 1992) which tended to be unclear in the teacher subjects in this study.

It appeared that majority of teachers had good mastery of subject content they taught despite the fact that majority were P1 certificate holders. However the content mastery was not matched with effective classroom teaching approaches enhanced by use of resources and varied teaching approaches to enable the teacher represented and communicate the content in a manner different learners would grasp hence catering for the different learning styles and other individual learner differences. Perhaps the knowledge was passed to the teacher through transmission as was the characteristic of most classrooms observed in this study, and facts were just memorized and therefore the product was teachers who can talk but lacked personal creativity, innovativeness and initiative to come up with resources that could be used to enhance learning and facilitate learners to construct their own knowledge.

4.6.5 Dominant Teaching Learning Approaches in Class

The researcher also investigated the broad dominant teaching learning approach used in class and data were gathered by the researcher using TAC Effectiveness Classroom Observation Schedule and the teachers filled in the TAC Effectiveness Questionnaire for Teachers. Teachers were asked to indicate the dominant teaching learning approach which they use in class. Responses are presented in Fig 4.6.
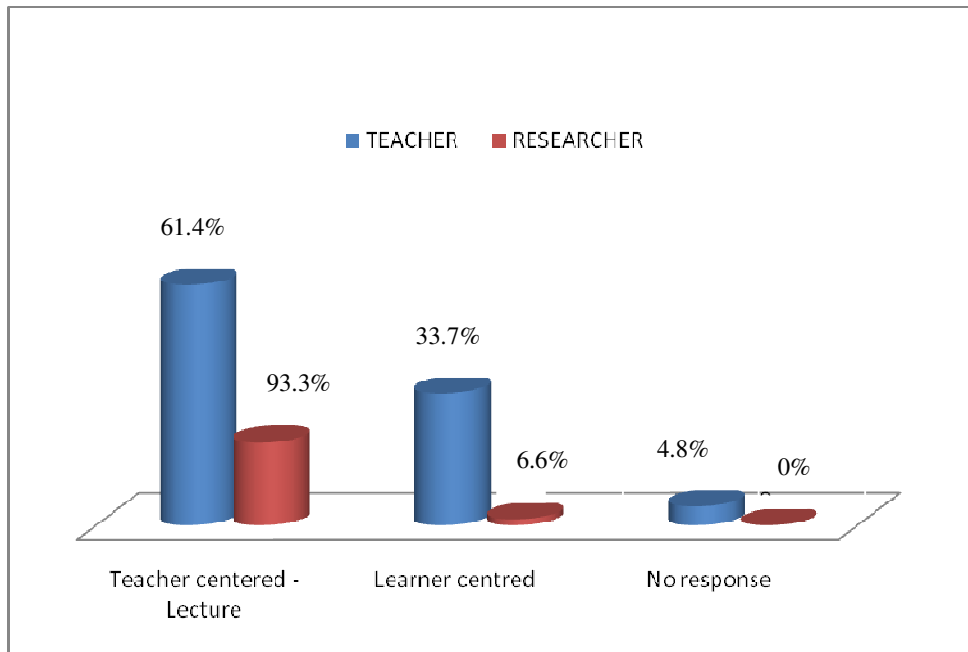
Figure 4.6: Teaching Learning Approaches

Figure 4.6 indicates that 93.3% of the teachers observed by the researcher used teacher centred teaching learning approaches characterized by teacher directed questions and answer when teaching and the majority (61.4%) other teachers indicated in the questionnaire that they used lecture method in their self report which is teacher centred. Therefore teacher centred teaching approaches were the most dominant approaches used in classroom instruction. This finding was in agreement with the investigated indicators of teacher centred teaching variables which indicated that teacher centred variables such as teacher learner interaction were the most dominant as already reported in this study.

The emphasis on learner centred approached was influenced by research findings such as by Scheerens (2008) as expounded in literature review, who

established that learner centred constructivist teaching approaches displayed the highest teaching effect and learning outcomes. Ingersoll (2001) also stressed that teacher professional development enhances teaching effectiveness and as long as there was use of traditional teacher centred teaching approaches such as lecture – teacher centred teaching approaches and rote learning, educational reforms in the country will continue to be ineffective.

The findings of this study concur with those of Hardman et al (2009) on classroom observation of sampled primary schools in Kenya. Hardman et al (2009) reported that the classroom practice encouraged mere memorization of facts and that about 95% of the teachers' questions tended to be closed, requiring recall of information. Such teaching inhibits creativity (Brumberg, 2008) and do not prepare learners for the skills required in the 21st century and the achievement of the Kenya Vision 2030. Teaching and learning in this technological global age should be based on constructivists approach where learners construct knowledge, develop innovativeness and creativity.

The findings of the study revealed that the extent to which teachers use learner centred teaching learning approaches in class was inadequate

4.7 Challenges Faced by TACs in Teacher Professional Development

The study investigated challenges faced by TACs in teacher professional development which might have impacted on the TAC effectiveness positively or negatively. The research question was, 'What are the issues and challenges

facing TACs in Kenya in relation to teacher professional development? All the three questionnaires required the respondents to list challenges faced by TACs in teacher professional development. The item was meant to shed light on what might be positively or negatively affecting TAC performance of their TPD duties and responsibilities from the point of view of the different respondents –teachers, TAC tutors and the DEOs. Such data would explain extent of TAC effectiveness in TPD. It was also intended to establish whether the challenges reported by earlier research reports discussed in literature review of this study were addressed.

Financial limitation was identified by all the respondents in the study as a challenge to TAC performance of their TPD activities. Other challenges were identified as TAC tutor incompetence in classroom observation revealed in their harassment of teachers. Lack of offices and office equipment for TAC tutors in some zones was also identified as a challenge. Other challenges included lack of support by schools and parents. Schools to be visited were reported to be far apart and it was difficult for TAC tutors to access them and TAC tutors lacked facilitation to visit the schools. The role of the TAC tutor was no longer clear despite being clearly defined at TAC inception of the office. Most of the TAC tutors claimed that they performed any duty assigned to them by the DEO and hence ended up not attending to their work objectives based on their specified duties and responsibilities.

In one county three of the TAC tutors performed the duty of the Area Education Officer (AEO) and also served the TAC office. In another county five of the TAC tutors were performing duties of the AEOs and also served two zones as TAC tutors. In another county all TAC tutors served two zones each. In yet another county all TAC tutors served as AEOs. Even in the county leading in KCPE three TAC tutors acted as AEOs and served two zones in addition to the already overload.

The study sought to confirm the report from teachers and TAC tutors with the DEOs who were asked to indicate the type of duties mostly performed by TAC tutors. The TAC Effectiveness Questionnaire for DEOs was used to gather the data. Table 4.20 presents the findings

Table 4.20: Type of Duties Performed by TAC Tutors

Type of Duties	f	%
Administrative duties for QASOs and AEOs	10	83.4
Curriculum implementation activities TPD	1	8.3
no response	1	8.3
Total	**12**	**100.0**

From Table 4.20, the majority 10(83.4%) of the DEOs confirmed that TAC tutors mainly performed duties meant to be performed by AEOs. Only 1(8.3%) DEO reported that TAC tutors performed curriculum implementation TPD activities for enhancement of instruction. It was found that TAC tutors mostly

performed duties outside their mandate which the researcher confirmed during data collection. A number of TAC tutors acted as AEOs and some AEOs acted as DEOs.

TAC tutors across the five counties reported similar challenges in their work conditions. Therefore the superior KCPE examination performance in Kirinyaga county and variations in other counties in KCPE examination performance between 2007 and 2010 which had been used to categorize counties as: above average, average, mediocre and poor could not be explained by performance of TACs in TPD activities.

It was clear that the type of challenges TAC tutors faced could impact negatively on TAC tutors' performance of their TPD duties. Past studies by Ayot (1982) Orwa (1986), Odini (1993) and SPRED 11 DFID (1997) as elaborated in literature review had identified similar challenges faced by TACs but they did not seem to have been addressed or changed over time by the time of this study and no explanation was forth coming in the course of this study. The challenges did not seem to have been addressed effectively if they were addressed at all.

From the discussed findings of this study, the effectiveness of TACs in teacher professional development in Kenya was found to be insufficient.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary, conclusions and recommendations of this study which investigated the effectiveness of Teacher Advisory Centres (TACs) in Teacher Professional Development (TPD) in Kenya. The objectives of the study were to:

i. Determine effectiveness of TACs in conducting in service courses and professional meetings for teachers with invited guest speakers to address identified teacher professional needs.

ii. Establish the extent to which TACs conduct classroom observation and lesson demonstrations to address identified teacher professional needs.

iii. Determine the extent to which TACs tutors facilitate teachers to select, develop and use teaching learning resources to enhance classroom instruction.

iv. Find out the extent to which teachers use learner centred teaching learning approaches for instruction.

5.2 Summary of the Findings

The summarized major findings of this study include Demographic and Background Information of the Respondents.

5.2.1 Demographic and Background Information of the Respondents

This study established that more male respondents than female were TAC tutors and DEOs and more female respondents than male were teachers. It also established that TAC tutors had not attended induction course or any other form of training to prepare them for the TAC responsibilities and duties. In addition majority of teachers were made to teach subjects they were not trained to teach. The education level of the TAC tutors and teachers tended to be equal yet the TAC tutors were expected to guide teachers in curriculum implementation and enhancement of classroom instruction. They were also meant to play the role of expert, role model, in lesson demonstration.

5.2.2 In service Courses and Meetings with Guest Speakers

The study found out that the TAC tutors did not identify teacher professional needs before conducting in service courses and other TPD activities and instead many of them used the national examination performance as criteria for conducting TPD activities. Without needs identification to establish the gaps and address them, the effectiveness of the TPD activities by TACs was very doubtful. Many TPD activities did not focus classroom instruction. Moreover a total of 88% of the TAC tutors did not initiate the TPD activities and there were many providers of TPD activities based on their own agenda and did not focus on classroom instruction. Book publishers were the most frequent guest speakers in professional development activities and were not experts in classroom instruction; they marketed their books and other products. However

70.4% of the teachers reported that they valued the in service courses and the meetings with guest speakers showing that teachers value opportunity to be brought together though their professional needs were not met or to them it is better whatever they got than nothing at all. Therefore the TAC tutors were not effective in conducting in service courses and professional meetings for teachers with guest speakers to address identified teacher professional needs.

5.2.3 **Classroom Observation and Lesson Demonstration**

The study establish the extent to which TAC tutors conducted classroom observation and demonstration lessons to address the teachers identified professional needs to be inadequate. Most of the TAC tutors 183(55.1%) conducted classroom observation but the activity did not benefit many teachers. Few TAC tutors 10(3%) reported that they conducted demonstration lesson after classroom observation and many others took no corrective action after classroom observation. Instead a total of 14% of TAC tutors wrote bad report after classroom observation, gave copies to the head teachers but did not make an attempt to correct the teachers. A good number 96(28.9%) of teachers were reprimanded in a staff meeting in front of all other teachers. Many teachers did not value classroom observation.

5.2.4 Teaching Learning Resources for Instruction

The study established that most TAC tutors did not facilitate teachers to select, develop and use teaching learning resources to aid instruction. Only one

teacher was rated 'good' in use of resources by the researcher and majority 26(34.6%) of the teachers were rated 'poor' in use of resources. Many teachers themselves reported that they rarely used resources and others never used them. A large number 17(63%) of the TAC tutors reported that they rarely trained teachers to develop and use teaching learning resources. Teachers claimed that they had never been trained by the TAC tutors to develop, select or use resources to enhance teaching and learning.

5.2.5 Learner Centred Teaching Learning Approaches

The study found that the most commonly practiced teaching approach by many teachers was teacher centred. Majority of the teachers reported that they used teacher centred teaching approach, mainly lecture method, when teaching and the researcher also found vast majority 68(93.3%) of the observed teachers using teacher centred approaches when teaching. Most teachers' mastery of content was found to be good rated against criteria of accurate content, detailed explanation and coherent presentation but it was not matched with effective teaching approaches and strategies enriched with teaching learning resources and teachers instead used teacher centred teaching learning approaches. Therefore the extent of teachers' use of learner centred teaching approaches was very limited; almost none.

TAC tutors across the five counties suffered challenges that affected their performance in teacher professional development and the variation in their

zones and counties in KCPE results could not be explained by TAC performance of their duties and responsibilities or the teachers, use of learner centred teaching approaches. The challenges faced by TACs reported by earlier studies of TACs appear never to have been addressed and despite difference in time and space they remained the same. The challenges hinder effectiveness of TACs in teacher professional development.

5.3 Conclusions

Based on the findings, this study makes the following conclusions:

i. The effectiveness of TACs in conducting in-service courses and professional meetings for teachers with guest speakers to address identified teacher professional needs was found to be inadequate. TACs did not base in service courses and meeting with invited guest speakers on identified teacher professional needs. They based TPD activities on national examinations performance even when not identified as a need. The stated research problem was centred on classroom instruction which TAC tutors did not address in their TPD activities. TAC tutors did not initiate TPD activities. Instead TPD was offered by many providers and the TAC tutors as a result had little control on the content and area covered in the TPD activities .

ii. The extent to which TACs conduct classroom observation and demonstration lessons to address identified teacher Professional needs was very limited. Classroom observation did not address the identified

teachers' needs. It appeared to take form of supervision. After classroom observation no corrective action was taken. Instead many teachers were harassed by TAC tutors, some received bad reports copied to the head teacher and others were reprimanded in the hearing of other teachers in staff meeting. Some teachers hid from TAC tutors. Demonstration lessons were rare; None took place in the course of data collection. Teachers did not value classroom observation.

iii.   Extent to which TAC tutors facilitate teachers to use teaching learning resources to enhance classroom instruction was also very limited. Teachers were not trained by the TAC tutors to develop, select or use resources when teaching. There was no evidence in the study that TAC tutors trained teachers in development and use of teaching learning resources. Teachers poorly used resources in class when they made attempt to use them. Resources were totally lacking and where available some teachers carried them to class and did not use them. In some cases the teachers just pointed to some charts on the wall when teaching. The TAC offices lacked facilities, equipments and resources for TPD. Some TAC tutors lacked even offices to facilitate their work to enhance their effectiveness.

iv.   The extent to which teachers used learner centred teaching learning approaches was inadequate. Learner centred teaching learning approaches that involve learners in learning were hardly used by the teachers in this study. The commonly used teaching learning

approaches by teachers was teacher centred and mainly the lecture and question and answer approaches and rote learning. Teacher learner interaction was the dominant mode of class interaction observed by the TAC tutors and the researcher where the teacher was the initiator of any question which the learner answered and even then not all learners were involved.

v.   TAC tutors from all counties faced similar challenges that they claimed hindered performance of their duties and responsibilities and the variations in the national examinations performance could not be explained by the TAC tutors' performance of their duties and responsibilities.

The study found TACs ineffective in teacher professional development in Kenya. This agrees with DFID (1999) study that found the effectiveness of TACs and TRC strategy impact in quality of teaching and learning doubtful.

5.4 Recommendations

Recommendations were made based on the findings of the study.

5.4.1 In service Courses and Meetings with Teachers.

i.   Teachers should be provided continuous, sustainable, quality TPD activities that address their professional needs because teachers value TPDs activities.

ii.   TAC tutors require empowerment to be equipped with requisite skills to enable them to effectively perform the specified and emerging TAC tutor duties and responsibilities. They need training in their TAC roles, facilitation to work as TACs and induction for all those joining the field. They need skills in areas such as teacher professional needs identification, classroom observation and lesson demonstration, development and use of teaching learning resources. TAC tutors should be thoroughly trained as teacher trainers and instructional advisers and they should be trained to sustain teacher professional development in collaboration with schools. They should be trained in use of technology as teaching learning resource. TPD activities need to focus on enhancement of classroom instruction and not examinations performance.

iii. School based teacher professional development would be the most appropriate to ensure that classes are not left unattended and so that the teachers could practice the knowledge and skills they acquire immediately. The classroom could be used for practical teaching.

iv.   The several challenges facing TACs require to be categorized, prioritized and addressed to enable TAC tutors perform their duties and responsibilities and the TAC tutors need to be enabled to stick to their specified mandate.

5.4.2 Classroom Observation and Demonstration Lessons

i. TAC tutors ought to only conduct classroom observation to improve classroom instruction. Any action taken after classroom observation should be corrective and for purpose of enhancing teaching and learning. The TAC tutor will need to point out to the teacher the positive and negative aspects of their instruction observed and together with the teacher come up with suggestions for improvement. Demonstration lesson could be one of the many corrective actions following a classroom observation to provide a model lesson. There should be no harassment or reprimand to the teachers by a TAC tutor. Learning is most effective in a friendly environment. Proper management of class observation to meet teachers' needs without harassment and respecting teachers' dignity might make teachers value classroom observation and they will benefit teachers professionally.

5.4.3 Teaching Learning Resources for Instruction

i. Teachers need capacity building to enable them to develop, select and use resources for use in class. They require understanding of the learning gains of use of resources in learning which could change their attitudes towards use of teaching learning resources. Teachers need empowerment to be able to develop their own no cost and low cost resources and ability to use them to enhance teaching and learning.

ii.   Teachers need to only teach subjects they were trained to teach or if they have to teach other subjects they should undergo a short course for content and skills upgrading. Without subject content mastery one may not be able to select learning resources and teaching strategies. One may also find it difficult to present the lesson in an interesting, motivating manner using teaching aids. One also may not be able to prepare assessment tests.

5.4.4 Learner Centred Teaching Learning Approaches

i.   Teachers need to be sensitized on learning gains and learning outcomes resulting from learner centred teaching approaches as compared to teacher centred teaching learning approaches. Teachers will then need to be trained to develop skills of using learner centred strategies and supported to implement the skills in classroom instruction. They need training in working effectively with the class size they may be assigned. They also require resources to facilitate them to use constructivists approach.

ii.   The country may have to change from glorifying examination results to valuing holistic learner development that encourages problem solving skills and creativity.

5.4.5 Recommendations for Further Research

Based on findings of this study, further research is recommended to:

i. Conduct a study to investigate why clear recommendations regarding structuring and revitalizing the TACs such as the ones made by Republic of Kenya (1988) that TACs should be properly established and allocated funds were never implemented. Suggestions for the implementation of the policies will need to be made. The study should also find out why challenges faced by TACs have been identified severally since 1982 but do not seem to have been addressed to date and then make workable recommendations to address the challenges.

ii. Conduct research on Issues and Challenges Influencing TACs Effectiveness in Teacher Professional Development in Kenya

iii. Establish the reasons for sterling performance of Kirinyaga county in Kenya Certificate of Primary Education despite the fact that all TAC tutors face similar challenges and come out with areas that could be emulated by other counties.

iv. Conduct a study on possibility of providing sustainable school based teacher professional development with TACs facilitation. The study could establish why teachers do not use teaching learning resources in class and do not develop their own assessment tests and then make recommendations on what could be done to make positive changes.

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APPENDIX ONE: BUDGET

Item	Quantity	Unit Cost KES	Total Price KES
a) Cost of Stationery			
Notebooks	8	300	2,400
Notepads	20	100	2,000
Flash disks	2	2000	4,000
Airtime			6,000
Total			19, 400
b) Travel and subsistence	30days	6000	180, 000
Grand Total			**200, 400**

APPENDIX TWO: TIME FRAME

Month and year	Activity
March, 2012	Finalize proposal with assistance of supervisors
April, 2012	Present work to graduate school and secure letter of introduction for research permit
April, 2012	Secure research permit, pilot instruments and revise them
May, June- July 2012	Data collection
August- December 2012	Data Analysis and Report writing
January 2013	Thesis submission
February to April 2013	Working on thesis corrections
May to September 2013	Thesis corrections
December, 2014	Graduation

APPENDIX THREE: RESEARCH INSTRUMENTS

TAC Effectiveness, Questionnaire for TAC Tutors

INTRODUCTION

This is an educational activity for academic purpose. Please provide assistance by responding to all the items truthfully. The information you give will be held in confidence and used for academic purpose only.

Background Information

Please indicate:

i.County: --

ii.Your gender: Male----- Female--

iiiLevel of your education (Please tick the appropriate): a) PI b) ATS1 c) Diploma d) 1st degree------- e) 2nd degree-------f) Any other (Please specify) **--**

iv) Age (Please tick the appropriate): a) 25–30 years…. b) 31 – 35 years……………………………………………………………………………..

  36 – 40years**--------** d) 41 – 45years……..e) 46 – 50years…….f) Above 50years..

  v. Previous position before your current TAC tutor post (please tick one) Primary school teacher b) Secondary school teacher c) School administrator

 vi) Work experience as a TAC tutor (Please tick the appropriate) a(0- 3 years b) 3 – 5years, c)5-10years d) 10 – 20years, e) 20 – 30 years and above

Effectiveness of TACs in conducting, in-service courses and professional meetings

1.Please state any types of training you received to prepare you work as a TAC tutor----

2.Please indicate whether you identified   teacher professional needs before conducting a TPD activity**----------------------------------**

3.Please any state other basis for the in service courses that you hold------------

4.Tick one as appropriate to indicate the initiator of in service courses a) TAC office…, b) KIE…., c) MOE…,Publisher----------- None

5. List topics commonly covered during in service courses---- -----

6. Indicate frequency of in service courses which you organize in response to identified teacher professional needs. a) Always……. b) Sometimes…………..
c) Rarely………. ……d) None……………

7. Indicate the average number of teachers who attended the in service courses

Indicate the main rating the teachers gave to the importance of the in service courses

very important, b(important c) moderately important c) unimportant

8.Show the frequency in which you usually invite specialists, in a year, to discuss content areas with teachers in your zone annually a) always b (often b) rarely c) never

9.State topics commonly facilitated by resource persons**----------------------------**

10. Name the institutions where the resource persons come from**------------------**

 How did teachers rate meetings with the resource persons a) Very important

b) Important c) Fair important d) Not important

Level of effectiveness of TACs tutors' in observation of teachers' teaching
techniques and in conduction demonstration lessons

13) How do teachers value TAC classroom observation (please tick one)

    a) very important b) moderately important d(fairly important e)
unimportant

14) State whether teaching approach observed was

        i) Teacher- centred--

         ii) Learner centred--

15) Tick one to indicate the kind of interaction observed in class

    Teacher learner--

    Learner- learner--

    Learner teacher--

    All--

16 State the action/s you took after class observation-------------------------------

17) Tick in the appropriate space to indicate how frequently you conduct the
activities shown in the following table.

Area of Training	Frequency			
	1.None annually	2.Less than twice annually	3. 3 to5 times annually	4. More than 5 annually
Assessment, use, development and selection of resources				

18) Please tick the frequency in which the teachers used the following teaching methods when you observed them teaching

	Frequency			
Teaching method	1. Always	2. Frequently	3. Rarely	4. Not at all
Teacher- centred such as Lecture				
Learner centred -such as Group work Role play, Discovery				

19) Rate the general level of learner enthusiasm in class a) very high b) high c) average d) low e) very low

20) Rate the general level of learner creativity in class a) very high b) high c) average d) low e) very low

21) In your view teaching and learning in most classes is a) learner centred b) teacher centred c) mixture (Please tick as appropriate one)

22) Tick the approximate amount of time you spend conducting teacher professional development activities a) 40% **-----**b)50% **----**c) 60% **---**d) 70% **----**e) 80%**--**90-100%-

23) Tick words, from the following box, that express dominant teachers' manner when you observed them teaching

1. **Positive:** businesslike, friendly confident, enthusiastic, reflective, knowledgeable in the subject, kind, mindful of students' total welfare, purposeful', self assured, assesses pupils as lesson progresses, has self efficacy, systematic, f, creative, accommodating, democratic, authoritative.

2.**Negative:** unfriendly, harsh, unaccommodating, not knowledgeable in the subject, not creative, undemocratic, not confident boring, moody.

Extent to which TACs set up Resources for Classroom use

24) Tick one to indicate how learning resources are acquired in your centre

a) Bought**---**

b) Developed by TAC tutor at the centre with teachers………..

c) Borrowed……………..

d) No resources (please

specify)………………………………………………………….

25) Indicate how often you train teachers to develop and use resources.

a) Rarely…………… b) Frequently………

26 List the resources found in your centre--

Challenges, Issues and Intervention Measures

27) State the challenges you face in conducting TAC teacher professional

activities --

28) Suggest means of facilitating TACs to be effective in teacher professional

development--

THANK YOU

TAC Effectiveness Questionnaire for the DEOs

Introduction

The information you give will only be used for academic purpose and will be held in confidence. Kindly give your honest opinion in each item

Background information

    i.   Gender: Male ….. Female……. (Please tick one)

iiDistrictCounty………………………………………………………………….

    ii.   No. of zones……………………………………………………………

Iii Number of TAC tutors per zone in the district……………………………

iv Does each zone have a TAC tutor? Yes --   No – (Please tick one)

Efficacy of TACs in conducting induction courses, in-service courses and professional meetings to address identified teacher professional development needs

Tick the duties a TAC tutor performs in the zone from the following table

1. TAC tutors duties as perceived by DEO

Administrative for AEOs and QASO: Monitor feeding programmes; monitor school discipline; check school textbooks; perform duties of QASO

Others (Please specify)--

TPD: attend in service courses: conduct in service courses; organize meetings of teachers with experts; conduct classroom observation; conduct lesson demonstration; train teachers to develop select and use teaching learning resources; disseminate educational information; train teachers in assessment and examination of learning effectiveness; create a repertoire of resources for teaching and manage resources for use in teaching and learning; set examinations

---

2. Please tick from the following table, as appropriate, to indicate the frequency you have observed TAC tutors conduct the activities indicated in a year

	Frequency				
Activity	None annually	Once Annually	Twice Annually	Thrice Annually	More than thrice annually
Hold in service courses for teachers on identified needs in curriculum					
Invite resource persons to speak to teachers on academics					
Conduct classroom observation on teachers' teaching					
Conduct administrative duties assigned from DEOs office					

3. Rate TAC tutors' performance in teacher professional development a) very good……c) Good…..d) Fair….. e) Poor ….. f) very poor…

4. Rate TAC tutors' performance in administrative duties such as performance of QASO duties a) Very good b) Good c) Fair d) Poor e) very poor

5. In your opinion state which of the two, curriculum work or administrative duties, do TACs spend most of their time doing

Challenges Faced by TACs in Teacher Professional Development and Intervention Measures

6. Please state the challenges faced by TAC tutors in performance of duty…………………………………………………………………………

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7. Suggest the intervention measures that should be taken to address challenges faced by TACs while conducting teacher professional development…………………………………………

THANK YOU

TAC Effectiveness, Classroom Observation Schedule

Introduction

    i. County------------------------District------------------------

Teachers' Details

Ii Gender: Male-------------Female--------- (tick the appropriate one)

Age: a) 25– 30years,----b) 31 – 40years---- c) 41– 50years……… d) Over 50years…..

Iii Education Level: P1…… ATSI……. Diploma...….. Graduate……. Master…......Others

(please specify)……………………………………………………

Iv Lesson detail

Subject-----------------No of pupils in class---

Effectiveness of TACs in conducting in-service courses and other Professional Meetings

    1. Tick words from the given table which best describe the teacher's manner in lesson presentation:

Teachers' manner in class

1.Positive: businesslike, confident, friendly, enthusiastic, reflective, knowledgeable in the subject, kind, mindful of students' total welfare, purposeful', self assured, assesses pupils as lesson progresses, has self efficacy, systematic, friendly, creative, accommodating, democratic

2. Negative: authoritative, unfriendly, harsh, unaccommodating, not knowledgeable in the subject, not creative, undemocratic, not confident, boring, not enthusiastic

3) Rate observed teacher's performance in the areas indicated in the following table by ticking on the appropriate rating space.

	Rating			
Area of Performance	**1.** **Very Good**	**2.** **Good**	**3.** **Fair**	**4.** **Poor**
Teacher mastery of content				
Use of teaching- learning resources				
Teaching learning strategies				
Learner enthusiasm				
Learner creativity				
Teacher-learner interaction				
Learner-teacher interaction				
Learner –learner interaction				

4. Tick method used to assess pupils' learning in the course of teaching

a) oral questions--------- b) written questions………… c) observation……..

   d) none……………. e) others (please specify)………………………

5 Select one to indicate the source of assessment tests at end term and end of the year

 a) teacher made tests…….. b) tests purchased from booksellers…… c) tests from other schools d) test from other districts… e) set at district/ zonal level…………………………………………………………………………...

 f) Other tests (specify)………………………………………………………

Extent to which TACs set up Resources for Classroom use

6. Rate the teachers' use of resources during the lesson a) good b) fair c) poor

7. Indicate whether the resources were a) teacher made…b) purchased or from TAC.

8 Indicate the dominant observed method of teaching:

    Learner centre------

    Teacher centred----

<div align="center">THANK YOU</div>

TAC Effectiveness Questionnaire for Teachers

Introduction

The information you will give will only be used for academic purposes and

will be held in confidence. Please respond truthfully.

Background Information

Your gender: Male------- Female-------- (Please tick as applicable)

Please tick one to indicate your age bracket in years a) less than 30, b)31– 35,

c) 36 – 40, d) 41 – 45, d) 46 –50, e) over 50

Indicate name of county…………………………………………………..

Your teaching subjects…………………………………………………….

Please tick one to indicate your teaching experience: a) Below 3 years, b) 4-

10yrs, c) 11-15yrs, d) 16-20yrs, e) 21-25 yrs. E) above 25 yrs

Please tick one to indicate your education level: a) 2nd ……. b)1st degree,

d)Diploma……e)PI………f)ATS1…….., (others please) …………….

Efficacy of TACs in conducting in-service courses and other professional

meetings

1.Have you attended any teacher professional development activity facilitated

by TAC tutor? Yes….No……

2.If yes, state whether the teacher professional course you attended it

responded to your specific teaching identified needs ….

3. State the activities conducted…………………………………………

4.State topics the covered…………………………………………………

5. Tick the appropriate box to show how often the TAC tutor has trained or observed teachers in the areas indicated on the following table:

	Frequency			
Areas of Training and classroom observation	1. None in a year	2. 1-2 times in a year	3. 3-5 in a year	4. More than 5 in a year
Selection, Development and use of teaching learning resources				
Assessment and evaluation of teaching learning resources				
Content mastery enrichment & Pedagogy- training by a professional				
Classroom observation and lesson Demonstration				

6. Tick one to rate the over all professional assistance you feel you get from in service courses a) very much… b) much…. c) little.… d) none…..

7. Please tick one to show the frequency in which TAC tutors invite specialist to discuss content of your subject area a) rarely….. b) often….. c) never…..

8. List topics facilitated by invited guest speakers----------------------------------

9. Name the institutions where the guest facilitators or speakers come from………….

10. Tick the frequently teaching method used in teacher professional development which you attended

Teaching Method	Frequency			
	1. None in a year	2. 1-2 times annually	3. 3-4 times annually	4. More than 6 times annually
Teacher centred-Lecture				
Learner centred such as dramatization group work role play Discovery				

Level of effectiveness of TACs tutors' in Observation of Teachers' Teaching Techniques and in Providing Demonstration Lessons

11. Rate the effectiveness of your interaction with the TAC tutors in classroom observation

   a) v. good…. b) good…….. c) fair…….. d) poor………e)v. poor…

12. State the action/s the TAC tutor normally takes after conducting classroom observation …………………………………………………………………..

13. List issues discussed between you and the TAC tutor after a classroom observation…………………………………………………………………………

14. State the method you commonly use when teaching and give reasons Method…………………………Reasons……………………………………

15. Rate the learners' enthusiasm in class a) very high--- b) high ----c) low…d) very low Please give reasons for your answer …………………………………

Extent to which TACs set up resources for classroom use and manage them

16. Rate TAC resources: a) adequate b) inadequate

17 Rate appropriateness of TAC resources: a) appropriate: b) inappropriate.

Please give reasons for your choice……………………………………………

18. Explain how you use TAC resources……………………………………….

19. Rate your frequency of use of resources at the TAC a) rarely…… b) frequently……, c) occasionally………….d) Never………………………

Challenges Faced by TACs

20. List the challenges faced by TACs in teacher professional development……………..

21. What measures should be taken to enable TAC tutors serve you better in teacher professional development? ……………………………………………

THANK YOU

APPENDIX FIVE: THE FORTY SEVEN COUNTIES OF KENYA
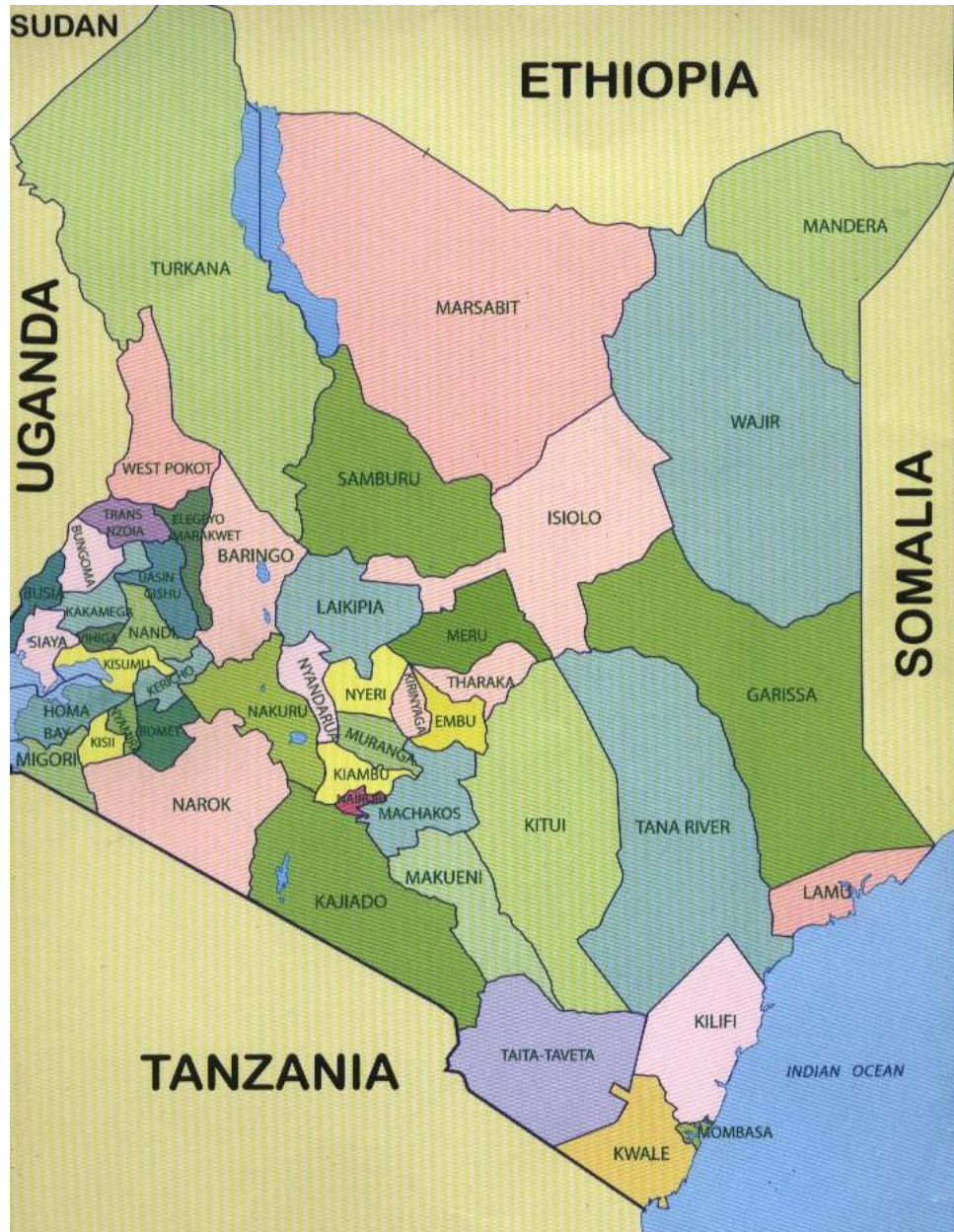
APPENDIX SIX: THE STUDY LOCATION- FIVE COUNTIES

Bomet county: **Nakuru county:**
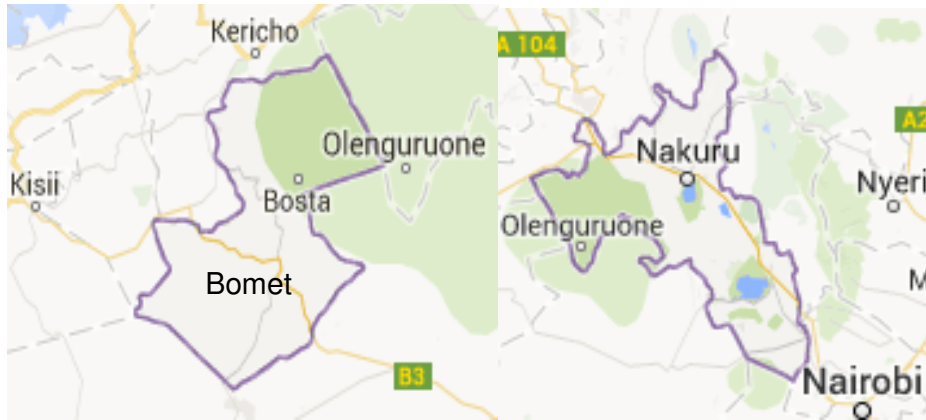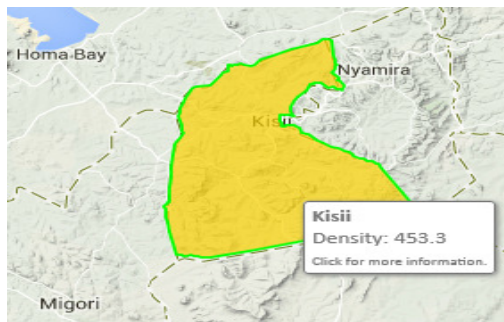

Nyeri county: **Kirinyaga county**

Kisii County:

197
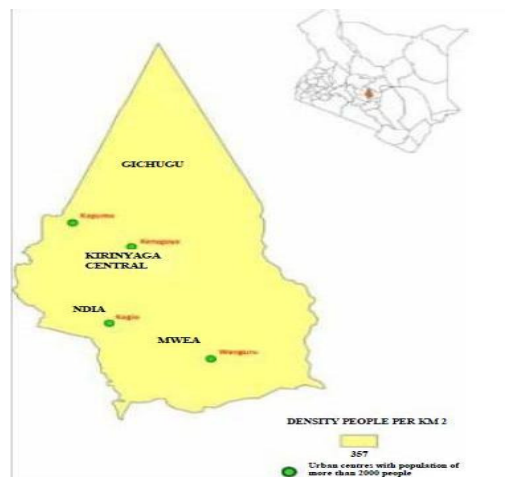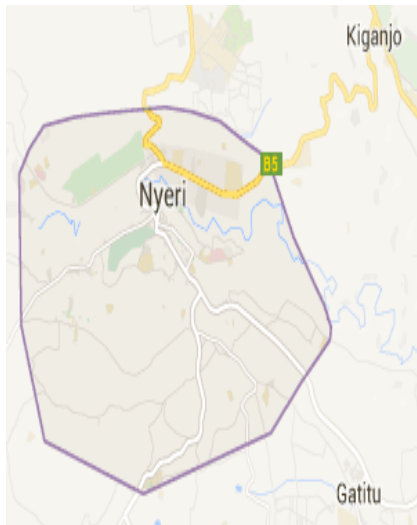
APPENDIX SEVEN : RESEARCH PERMIT

PAGE 2

THIS IS TO CERTIFY THAT:
Prof./Dr./Mr./Mrs./Miss/Institution
Florence Kanorio Kisirkoi
of (Address) Kenyatta University
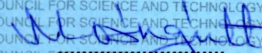P.O.Box 43844-00100, Nairobi.
has been permitted to conduct research in

Location
District
Nyanza, Central &   Provinces
Rift Valley

on the topic: Effectiveness of teacher advisory
centres (TACs) in teacher professional
development in Kenya.

for a period ending: 31st October, 2012.

PAGE 3

Research Permit No. NCST/RCD/14/012/1120
Date of issue   17th August, 2012
Fee received   KSH. 2,000

Applicant's   Secretary
Signature   National Council for
          Science &Technology

APPENDIX EIGHT: RESEARCH AUTHORIZATION - NCST

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 2241349
254-020-310571, 2213123, 2219420
Fax: 254-020-318245, 318249
When replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

NCST/RCD/14/012/1120
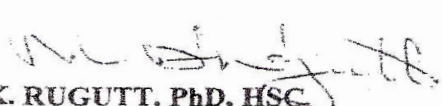Our Ref:

17th August 2012
Date:

Florence Kanorio Kisirkoi
Kenyatta University
P.O.Box 43844-00100
Nairobi.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Effectiveness of teacher advisory centres (TACs) in teacher professional Development in Kenya,"* I am pleased to inform you that you have been authorized to undertake research in **Nyanza, Central and Rift Valley Provinces** for a period ending 31st October, *2012*.

You are advised to report to **the Provincial Commissioners and the Provincial Directors of Education, Nyanza Central and Rift Valley Provinces** 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. M. K. RUGUTT, PhD, HSC
DEPUTY COUNCIL SECRETARY

Copy to:

The Provincial Commissioners
The Provincial Directors of Education
Nyanza Province
Central Province
Rift Valley Province.

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APPENDIX NINE: RESEARCH AUTHORIZATION - COUNTY

MINISTRY OF EDUCATION

Telephone: 0202352776

Fax No: 254 0202352776

DISTRICT EDUCATION OFFICE,
NAIVASHA DISTRICT,
P. O. BOX 2053 – 20117.
NAIVASHA
Date: 5TH JUNE, 2012

Ref: MOE/NVS/GEN/112/59

KISIRKOI FLORENCE KANORIO
KENYATTA UNIVERSITY
P.O BOX 43844- 00100, NAIROBI.

RE: RESEARCH AUTHORIZATION.

Following your request to conduct a research on **"Effectiveness of TAC Tutors in Teachers Professional Development in Kenya,"** authority is hereby granted to visit schools in Naivasha District and interact with the TAC Tutors

You will however be required to give a copy of your findings to this office on completion of your studies.

LEONARD KABAKI
FOR DISTRICT EDUCATION OFFICER
NAIVASHA.