EFFECT OF TEACHER QUALITY ON STUDENT
PERFORMANCE IN MATHEMATICS IN SECONDARY
SCHOOLS IN THARAKA NITHI COUNTY, KENYA

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REQUIREMENT FOR AWARD OF THE DEGREE MASTER OF
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DECLARATION

This project is my original work and has not been presented for award of a degree or any other award in any university.

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I dedicate this project to my family
ACKNOWLEDGEMENTS

I am indeed grateful to the almighty God for providing me with this opportunity and good health throughout this tedious undertaking of my studies. I sincerely acknowledge the dedicated intellectual guidance, supervision and academic support I received from my supervisors; Dr. Mukirae Njihia, and Dr. Michael Murage throughout the entire study period. It is this guidance and support that has enabled me produces this intellectual work. Collectively, your efforts and expertise have given me a new look into the world. I appreciate the Kenyatta University teaching and non-teaching staff for making it possible for me to acquire new knowledge.
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ABBREVIATIONS AND ACRONYMS

EFA  Education for All
MOE  Ministry of Education
RoK  Republic of Kenya
KCSE Kenya Certificate of Secondary Education
ABSTRACT

The Kenyan education system is evaluation oriented. Excellent acquisition of numeracy and literacy skills are the majors indicators of quality education. The purpose of this study was to assess the teacher based factors affecting the student’s performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County. The study was guided by the following objectives: to establish how the teacher job satisfaction affects the students performance in mathematics in the public secondary schools, to find out how the teacher motivation affects the student performance in mathematics in the public secondary schools, to establish the effects of teacher training and experience on the performance in mathematics in the public secondary schools and to establish the strategies that can be employed to improve on the performance in mathematics in the public secondary schools in Maara sub-county. The target population for this study was all the 1140 form three students, 128 mathematics teachers and 49 headteachers in the 49 secondary schools in Maara sub-county, Tharaka Nithi County. A sample of 12 schools was proportionately sampled to participate in the study. From the sampled schools, the head teacher was purposively sampled, 10 students from form 3 were randomly sampled, to participate in the study. The study instruments were questionnaires and interview schedule. Piloting was done in two schools. This study employed descriptive and inferential statistics to analyze the data obtained. For descriptive statistics, this specifically included percentages and frequency counts, while for inferential statistics was used to find the effects. The data obtained was presented through tables, bar graphs and pie charts. The study established that the mathematics teachers in Tharaka Nithi County were satisfied with their jobs, and this had a positive influence on the student’s performance in mathematics, as was revealed by the correlational analysis. This implies that the increase in the variables of teacher job satisfaction, led to a direct increase in performance in mathematics. The mathematics teachers in secondary schools in Tharaka Nithi County were well motivated by the school management. Motivation was found to have a significant positive relationship with the student’s performance. This means that with the increase in motivation, there was a significant positive increase in student’s performance in mathematics. The teachers training and experience was also found to have a considerable significance in determining the student’s performance. This implies that with the increase in the variables related to teacher training, there was a positive significant increase in student’s performance in mathematics. Based on the study findings, the researcher recommends that: The ministry of education should fund the schools in order to provide more incentives to the mathematics teachers, in order to make them more satisfied in their jobs. The headteachers should consider team building for the workers and motivation for the workers and the students, as a means of improving the performance. The government should review the current teacher training curriculum and include in it the emerging trends and issues in the field of education. The government through the ministry of education should increase the funding in the secondary schools, so as to enable them buy enough teaching and learning materials, and revision materials, so as to improve on the academic performance.
CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

The quality of education Concept is defined in part, in article in the Worlds declaration for Education for All, adopted in 1990 that states: According to UNESCO, "(1999), all children have the right to reap from an education system that helps them meet their basic learning needs. The kind of education that contains; learning to do, to know, to be and to live together." Education plays a vital role in enhancing economic growth, promoting democracy and advocating for good governance. Education improves peoples' lives by reducing poverty as it makes people become more and more productive (World Bank, 1999). Enhancing accessibility of education to all children calls for re-examination of practices that exist within the national educational policies context, nutritional, curriculum development and implementation procedures, teacher training, the teaching and learning process and the quality assurance in education.

Despite conventional knowledge that teaching makes a significant difference in learners learning, studies suggested that educational inputs can make a distinction and much of that difference is brought about by the teachers (Odden & Kelley, 2002). Sanders and Rivers (1996) argued that students who may be assigned to a number of ineffective teachers continuously may have a significantly lower academic performance than those who are assigned to teachers who were more effective. The teacher’s inputs to the students are cumulative and additive, and generally not compensatory.
Filak and Sheldon, (2003) stated that professional knowledge, competencies and skills can be observed when a person is doing a challenging tasks directed at educational performance. Professional knowledge, competencies and skills are closely similar to efficacy. Dweck (1999) argued that many teachers often fail to build up self-efficacy within the learning settings. Further, satisfactions of their basic needs and continued motivation are very crucial to the teachers as they are the major basis for working in life. Most of the teachers toil in order to suit their needs in their living; they continuously agitate for the satisfaction of their needs. Teacher Job contentment in this situation is the capability of the instruction career to cater for teachers' needs and advance their instruction.

One of the ways of raising learner achievement in mathematics is to advance the eminence of teaching, and learning. Rivkin, Hanushek, and Kain, (2005) have argued that learners who receive a higher quality teaching experience are greater and more determined in performance gains than those other students who obtain poorer quality of teaching. Rivkin et al. (2005) further established that students educated by a highly effective educators achieved a higher score of 1.5 grades during the evaluation period, whereas the students in classrooms that was taught by ineffective teachers gained only 0.5 grade for the same period. The effects of excellent teaching on the achievement of underprivileged learners are high enough to thwart the host of family and social settings frequently found to affect learner performance. This implies that, teachers are vital factors that affect student education process and progress and thus if they are well trained, they become effective in teaching practice.

There is an extensive attention and concern on content matter awareness for instruction and generally how they relate to student academic performance has
remained insufficiently captured in precedent research. In reviewing the education production purpose researches, established that researchers focusing on this practice have typically considered teachers' familiarity with using variables, such as courses taught, attained degrees, or findings from essential skills tests. There is dissimilarity to another collection of education researchers who have conceptualized teachers' understanding for instruction differently. Ball (1990) argued that teacher affects student academic performance are motivated by teachers' capability to comprehend and use topic content knowledge to perform the tasks of instruction.

Earlier researches on mathematics instruction suggests most of the teachers do not have the required knowledge on the mathematics teaching (Ball and Bass, 2000, Hill, Schilling & Ball, 2004). Ball and Bass, (2000) further stated that there is a dire need for instructors to be familiar with mathematics content for instruction in order to train the students effectively. Mathematics instructors should have in fine points and from a more highly developed point of view of the mathematical content since they are accountable for teaching. The relations of the mathematical content to other important mathematics concepts, both earlier to and away from the required altitude they are assigned to instruct is crucial. The sense here is that mathematics teachers who have strong mathematical understanding the content at a greater depth are most likely to enhance students' ability to think, reason, conjecture, and solve problems. These teachers are further able to more precisely tackle students' mathematical misconceptions and computational influences (Kilpatrick, Swafford, & Findell, 2001).

The connection between instructors familiarity with mathematics and student academic achievement has presented some proof of the effects of mathematical
understanding on teacher efficiency and learners learning. Majority of research in this quarter have paying attention to mathematics instruction and suggested a general affirmative influence of teachers' learning mathematics on student performance (Goldhaber & Brewer, 2000; Hawkins, Stancavage, & Dossey, 1998). The positive effects, vary by skill intensity and number of undergraduate of student in mathematics units that were taken by the mathematics teacher (Monk, 1994). However, although the results in studies of teachers' knowledge and student performance are mixed, the extant evidence suggests that teachers' knowledge the content is an ingredient to instructional superiority and student performance (Wilson, Floden, & Ferrini-Mundy, 2001).

Motivation has been viewed to influence academic achievement during study effort as an arbitrator (Vansteenkiste 2005). Researchers argue that teachers who feel like they are not supported in their work are less likely to be motivated to try and try performing optimally in the classes (Ashton & Webb, 1986: Ostroff, 1992). Additionally, contented instructors are less likely to shift from school to school or to quit the teaching occupation altogether than those who feel discontented with their job environment (Bobbitt, Choy, Henke, Medrich, & Lieberman 1993). These tend to disturb the school atmosphere resulting in shifting educational resources away and costly staff replacement efforts. Howie (1999) established that learners from Japan tend to perform better in the international comparison studies because of the extensive supplementary tuition.

The Kenyan education system is assessment oriented. The education quality is usually evaluated in terms of the grades and the number of students excelling nationalized examinations (Eshiwani, 1993). The general public and educators have
on several occasions expressed worry over the several factors that affect student achievements in mathematics. A lot of focus has been directed to the organizational management of schools. Most of our schools aim at completing the syllabus because of the students. Drilling students is commonly practiced in schools so that students can increase their chances of passing. This in effect has narrowed the concept of education and the kind of information imparted to the students who have turned out to be shallow, ill-informed and unable to make concrete decisions.

Poor performances in school not only lead to the student having a low self-esteem, but also cause noteworthy anxiety to the parents and the caregivers (Karande and Kulkarni, 2005). Urgent identification of causes of poor mathematics achievements and execution of corrective plan so that the students can achieve up to their full potential is welcomed. To achieve good performance in mathematics, many factors come into interplay. They include availability of qualified human resource, teaching and learning materials, facilities, infrastructure, finances, social-cultural factors, political factors, and many others. The provision of these requirements has remained a big challenge in most of the developing countries, Kenya included. In Kenya, for example, the national mean score of mathematics in Kenya Certificate of Secondary Education (KCSE) is quite low as indicated in the Table 1.1 below.
### Table 1.1: National Mean score of mathematics (KCSE results: 2009-2013).

<table>
<thead>
<tr>
<th>Year</th>
<th>Mean Score (by percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>21.13</td>
</tr>
<tr>
<td>2010</td>
<td>23.04</td>
</tr>
<tr>
<td>2011</td>
<td>24.78</td>
</tr>
<tr>
<td>2012</td>
<td>28.65</td>
</tr>
<tr>
<td>2013</td>
<td>26.38</td>
</tr>
</tbody>
</table>

(Source: KNEC report -KCSE 2013)

School achievement in mathematics in Kenya has been poor as seen in students' performance in KCSE.

The Kenya Vision 2030, new blueprint that covers from 2008 to 2030 aimed at transforming Kenya into a lately developed nation, by offering high quality life to all of its populace by the year 2030 (Kenya Vision 2030: The Government of Kenya, 2007). To achieve the stated industrialization, the government emphasizes on mathematics to be an essential subject at both secondary and primary education levels because of its role in industrial development.

In Maara district (Tharaka-Nithi County), performance of mathematics has also been observed to be poor and has been declining in the past several years. This is evidenced in the results of the various common assessments of students in the district such as: Maara District Secondary Schools Joint Evaluation Examination and KCSE results as recorded in Table 1.2 below.
Table 1.2: Maara District Mean score of mathematics (KCSE results: 2009-2013).

<table>
<thead>
<tr>
<th>Year</th>
<th>Mean Score (out of 12 points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>2.6064</td>
</tr>
<tr>
<td>2010</td>
<td>3.9794</td>
</tr>
<tr>
<td>2011</td>
<td>3.0889</td>
</tr>
<tr>
<td>2012</td>
<td>3.4122</td>
</tr>
<tr>
<td>2013</td>
<td>3.1419</td>
</tr>
</tbody>
</table>

(Source: Maara District Quality and Standards Office).

This was highlighted in a mathematics teachers workshop held at Chogoria Girls High School on Friday April 4th, 2013. The analysis showed that the performance of mathematics was relatively low compared to the other curriculum subjects such as English, History, Religious Education among others.

There has been a growing concern in the performance of Mathematics in secondary schools in Kenya. The poor performance of students is a concern for all stakeholders. It is vividly evident that teachers are a crucial element in the learning process. Therefore, teacher quality has a direct impact on the quality of learning, and consequently the academic performance of a particular subject. Poor mathematics performance in most secondary schools has been attributed to a number of factors which range from school factors, student related factors and government related factors, status of teaching force; availability and adequacy of physical resources; efficiency in utilization of the specified teaching period; student performance in key subjects; instructional materials crucial to students’ learning (RoK, 2007). This study
focused on the teacher based factors affecting the student’s performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County.

1.2 Statement of the Problem

Mathematics is inevitably utilized in daily activities yet it is still the most poorly performed subjects at KCSE level. In Kenya, examinations are normally acceptable as applicable measures of the level of achievement (Maiyo, 2009). The government of Kenya lays emphasis on the performance of mathematics by learners in the Kenyan secondary schools. Mathematics performance in the public secondary schools in Tharaka Nithi County is on the downward trend, and action needs to be taken, to save the situation. Teachers play a vital role in the performance of the students. The variables affecting the teachers in the performance of their duties affect the performance of the students. This study therefore aimed at assessing the teacher based factors affecting the students’ performance in mathematics in the public secondary schools Maara sub-county, Tharaka Nithi County.

1.3 Purpose of the Study

The purpose of this study was to establish if and how teacher job satisfaction, teacher training and teacher motivation factors are affecting the student’s performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County. This study also sought to find out the strategies that can be employed to improve performance in mathematics in public secondary schools, in effort to improve the students performance in mathematics and the overall performance at large.
1.4 Objectives of the Study

The study was guided by the following objectives

i. To analyze the extent to which teacher job satisfaction influences the students performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County

ii. To find out how teacher motivation influences the students performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County.

iii. To establish the influence of teacher experience and performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County.

iv. To establish the strategies that can be employed to improve performance in mathematics in public secondary schools in Maara sub-county, Tharaka Nithi County.

1.5 Research Questions

The study was guided by the following research questions

i. To what extent does teacher job satisfaction influence the performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County?

ii. How does teacher motivation influence the students' performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County?

iii. How does teacher experience influence performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County?
What are the strategies that can be employed to improve performance in mathematics in public secondary schools in Maara sub-county, Tharaka Nithi County.

1.6 Significance of the study

The findings will enlighten the headteachers and other stakeholders of schools in Maara sub-county, Tharaka Nithi County on staff management skills that would lead to improvement of students' mathematics performance in national examinations. This is because the teacher factors will be reviewed in relevance to their effect on the mathematics performance, and their effects will be brought to light.

The ministry of education (MOE) will also benefit from the findings of this study in that the results to be obtained will reveal the situation on the ground on the matters pertaining teachers, and their effect on the mathematics performance. This information may be useful in the formulation of policies concerning the teacher recruitment, placement and transfers and the improvement of the already set policies, towards the improvement of the mathematics performance and the betterment of the Kenyan education system at large.

Besides, the findings would also enlighten school headteachers on matters pertaining mathematics performance of students in order to address the problem of how to improve students' mathematics achievement in national examinations. This is an important step towards the improvement of the general academic performance and the overall educational outcome.
The findings of this study will also contribute to the body of knowledge by revealing the current state of affairs in secondary schools in Tharaka Nithi County, with specific focus on the effects of teacher quality on student's performance in mathematics. The findings of this study can further be of significance in forming the educational theories as well as forming the basis literature review and reference for other research.

1.7 Scope of the Study

This study was carried out in public secondary schools in Maara sub-county, Tharaka Nithi County. The study only focused on the teacher based factors affecting the mathematics performance of learners in the secondary schools. The factors considered included the teacher job satisfaction, the motivation and the training and experience of the teachers. The study involved the teachers, headteachers and the students in the secondary schools.

1.8 Limitations and Delimitations of the Study

1.8.1 Limitations of the Study

In the current study, the researcher experienced the following limitations. There was the challenge of taking a broad view the findings: This research was limitation in terms of external validity and scope. The conclusions of this study are principally significant to the public secondary schools in Tharaka Nithi county. The results may not be generalized to all secondary schools in Kenya. This sampling criteria was adopted to make the research feasible and due to the constraints of resources.

The other limitation was the use of self reporting to measure variables. This limitation was overcome by the researcher being as objective as possible. The
questionnaires used were as valid as possible in terms of content, face and construct. The researcher also avoided leading questions to mitigate this limitation.

1.8.2 Delimitation of the Study

The following will be delimitations of the study

i. The study was carried out in public secondary schools and the intensity of factors varies from one school to the other. Therefore, generalization to other schools should be made with caution.

ii. Data was collected from multiple respondents and this enabled the researcher to gauge and weigh on the accuracy of the information given.

1.9 Assumptions of the Study

The following were the assumptions of the study

i. That all the schools had enough teachers and other staff.

ii. The respondents were truthful and gave accurate and honest information free of any bias.

1.10 Theoretical Framework

This study was guided by Affective events theory formulated by psychologists Howard Weiss and Russell Cropanzano in (1996). The theory explains how sentiments and feelings can affect job performance and at times satisfaction in workers. This theory explains the links between employees' internal influences and how they react to incidents occurring in their workplace that affects their overall performance, job dedication, and satisfaction. This theory posits that the affective job behaviors are best outlined by employee's emotions and moods, while cognitive-based reactions are the most excellent indicators of satisfaction at the workplace.
The theory recommends that constructive uplifts as well as negative hassles emotional incidents at the job can be distinguished and have noteworthy psychosomatic effects on employee’s fulfillment. This brings long lasting internal and external affective reactions that are exhibited through workers performance, contentment, and organizational commitment. When workers experience uplifting motivations (through successfully completing a task, receiving an award) or hassles (through reacting to an updated client closing date), the workers willingness to carry on or quit depends upon their emotions, thoughts, and moods that are linked with the level of satisfaction they derive from their workplaces. Previous researches have established that the affiliation between workers occupation satisfaction and their turnover is completely mediated by willingness to quit their jobs. The staff who report low fulfillment are most likely to quit. However, the explained affiliation does not give an account for those employees who report higher levels of satisfaction at the job, but quit without prior notice. Extrinsic motivation, like better offers outside of the current institution may sway the workers decisions. The employees' personal issues may also have an impact the resolution to quit early from the good jobs under good job conditions. This theory is relevant to our study in that the teacher factors such as motivation, job satisfaction, knowledge, experience, training and teacher efficacy, which do affect the productivity of the teachers. These variables are modeled as the sentiments and feelings can affect job performance and at times satisfaction in workers. This study focused on the teacher based factors affecting the student’s performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County.
1.11 Conceptual Framework

A conceptual framework showing the relationship of the variables for the study is shown below.

Figure 1.1: Conceptual Framework

A conceptual framework showing the relationship of the variables for the study is shown on the figure 1. In the framework, the independent variables teacher factors that include; motivation, job satisfaction/dissatisfaction, teachers efficacy, teacher training and teacher experience. The intervening variables include; type of school, government policy and students cognitive ability, while the dependent variable is the Performance of students in mathematics.
1.12 Definition of Operational Terms

**Motivation:** is a continuous process whereby the teachers are induced and incentivized so as to improve their activity in teaching and improve their performance.

**Performance:** Means academic achievement a school as measured by the mean mark of mathematics grade attained in KCSE, which is a national

**Teacher efficacy:** Secondary schools teachers' beliefs in their abilities to organize and execute courses of action necessary to bring about desired results in mathematics

**Teacher experience:** is any experience that a teacher gains while working in teachings mathematics, to get a feel for professional working environments.

**Teacher training:** Organized activity aimed at imparting information and/or instructions to improve the teacher's performance and ability to teach mathematics
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of related literature, under the following themes: perception of performance in mathematics, effects of teacher satisfaction/dissatisfaction on performance, teacher motivation factors affecting performance of learners, teacher efficacy, experience and training factors affecting performance of learners, identification of the research gap, theoretical framework and conceptual framework.

2.2 Perception of Mathematics

The negative perception on mathematics is extensive amongst the public, especially in most of the developed countries (Ernest (1996). Ernest further argues that, the most of people end up being anxious of mathematics as some feel powerless when presented with a mathematical idea. Most of the people negatively perceive mathematics, such that it is seems to be difficult, intangible, and in many cultures, it is viewed to be largely masculine. A study by Sewell (1982) on the public perceptions on Mathematics reported that more than half of the people she had stopped to interrogate on the street fled immediately as soon as Mathematics was mentioned to them and this indicates that a negative reaction towards mathematics. A number of years later, similar findings were still evident in global surveys by the Agency of Basic Skills on the numeracy and literacy skills of residents in several countries. These findings indirectly imply that there is a poor attention in mathematics or a comparatively higher inclination of mathematics evasion.
Many adults accept the lack of achievement in arithmetic’s is an eternal condition which they have very minimal or no control (McLeod 1992). He further argued that some learners in particular learners with arithmetic are learning problems and some instructors embrace some myths about mathematics. These myths contain the notion that mathematics is difficult ‘mathematics is cold’; and mathematics is a masculine subject. However, even though the myths are not particularly false beliefs, in most cases they are negative and could bring a bad the image of mathematics to the learners. McLeod established three widely claimed myths about Mathematics that included: mathematics is a tough subject, mathematics is subject meant for the bright ones only, and mathematics is a masculine realm subject.

Professional development of teachers can be done at several diverse learning institutions, in school and out of school, and/or on leave or on job. During these events, the teachers bring up to date their awareness, instruction skills and content matter to amend to the new curriculum, new evaluation results on learning and teaching process, new adjustments in the desires of the students, etc. criticism has been directed to the nature of these activities and the fact that very little information is known about the events really consist of. Mixed evidence exists on the impact of participation of teachers in professional development activities and on student outcomes. Further, some studies done on on-job teacher development, have established that there is no consequence (Angrist & Lavy, 2001, Jacob & Lefgren, 2004), while other researches established that the advanced levels of learner performance are associated to mathematics teacher involvement in specific content pedagogy activities related to the instruction (Wiley & Yoon, 1995).
In developing arithmetic confidence with procedure and calculations, it is significantly vital for students’ mastery of mathematics content (Hill, Rowan, & Ball, 2005) and tasks should ensure that all the students are able to understand typical algorithms and measures. However, at the same time the teachers should also understand the how, when, and in where to use those arithmetic procedures to work out mathematics problems of diverse kinds. The teachers should know how to formulate significant teaching tasks associated to the students’ previous knowledge and that seize the ability to intensify the students’ understanding of the concepts of mathematics.

2.3 Effects of Teacher Satisfaction/Dissatisfaction on Performance

Baron, (1986) stated that teachers fulfillment at workplace may control a range of aspects of their workplace such as effectiveness, absenteeism, production, turnover rates, and plan to quit their jobs, and lastly employees’ comfort. Educators’ well-being is viewed to have a serious implications for the superiority of the service they offer (Fenech, 2006). Maslach and Leiter, (1999) further argued that contented teachers are probable to be holding their post for longer, to be capable of engaging in more positive, approachable and reliable relations with learners, and to certainly influence achievement of the students.

With the virtues of job satisfaction, exceptional consideration in research ought to be geared towards determining why some of the instructors regularly convey their frustration in their jobs. Ashton and Webb, (1986) further argued that teachers who feel less supported in their job are not motivated to perform their best. Choy (1993) further argued that contented teachers are not likely to transfer from schools or try to quit the profession of teaching altogether than the teachers who feel displeased with
their job life. These events oftenly upset the school learning setting and may often result in the shift of resources away from teaching and instruction, into replacement of staff.

Most of the studies on job satisfaction suggest that the teachers are mostly satisfied with teaching job itself as well as their supervision. However, they feel dissatisfied with their salaries and remunerations (Dinham & Scott, 2000) and promotional opportunities. These research findings are robust across diverse countries and cultural contexts. As far as the teachers are concerned, poor working conditions, poor salaries, huge workloads, as well as higher expectations from school, poor professional status, conflict within the organization, and reduced job autonomy as the main factors that contribute to teacher dissatisfaction (Fenech, 2006). Teacher's satisfaction within their careers may have strong repercussions for student education. The expected results of job contentment comprise of the application of new teaching methods in classrooms for improved performance which, may be favorable to students' success.

While the study of job satisfaction is immense among organizational behavior researchers, it is interesting to note that factors influencing job satisfaction similarly influence job performance, which in turn creates the context for the job. Reio and Kidd, (2007) argued that the behaviors exhibited by employees that contribute to organizational effectiveness are said to be variables that have effects on "the psychological, social, and organizational context" of an employee's work. Reio and Kidd, further stated that this kind of contextual performance includes employee's doing such things as volunteering for additional assignments, persisting in completing difficult tasks, assisting colleagues in the completion of their tasks, and
supporting organizational policies and goals despite disagreement with them. In relation to school organizations, studies on effective schools indicate no single variable accounts for school effectiveness; instead, schools with higher student achievement exhibit climates wherein teachers reflect a strong commitment to student achievement (Ashton and Webb, 1986).

2.4 Teacher Motivation factors Affecting Performance of Learners

The issues of student’s motivation by teachers in learning and the effects on educational achievements are well thought-out as a crucial feature of successful learning. However, a student’s response to education is what determines the level to which he or she will do well in education. Hall (1989) stated that motivation brings about the inquiry on why the students behave the way they behave. A person could therefore be seen as academically, socially, and politically motivated depending on the motivation behind his or her deeds.

Several studies have been carried out to investigate on learner motivation particularly among different strains of students. Tucker, Zayco and Herman (2002) established that teacher’s involvement is one of the strongest signs of student motivation. Other researchers have showed that students, alongside other culturally different and poor-income learners, felt that they received considerably a smaller amount of support from their instructors than students. Students’ perceived relatedness and independence also had a direct influence on academic commitment, while proficiency and teacher structure had an effect on perceived relatedness and autonomy of teachers support.
Ajayi (1998) carried out a study in Nigeria on achievement motivation and discovered that there was an conformity linking academic achievement and motivation. In another study, victorious students were found to be having superior motivation for achievement than ineffective students (Bank and Finlapson 1980). Skaalvik and Skaalvik, (2006), revealed that there was a relationship between academic accomplishment and motivation.

A study by Maehr and Midgley (1991) suggested that school-wide level changes needed to be made to increase the motivation of students. They believe that schools should pressure task goals rather than simply gratifying performance goals. Anderman and Midgley, (1997) suggested that teachers needed to be encouraged to show concern for and for the dissatisfied teachers; the administration should try and inquire why. There should also be a just and reliable system for allowing students independence, as this should help students understand the significance of class work to other feature of their lives. Further, the teachers ought to be aware of the messages they are conveying to their students about their intellectual and academic abilities.

Teacher incentives, either collective or individual, may in a way help to advance student performance if they achieve in aligning their objectives with the objectives of the instructors (Camara, 1986). Kane and Staiger (2002) proposed a motivational advance in which reward can be based on performance can also be faced with particular complicatedness. This explains the popularity of straightforward input based rewards methods. Setting up specific quantifiable outputs and goals may lead to potentially dysfunctional workers behaviours such as teaching to prepare learners for assessment. Further, while individual incentives may disrupt the collaboration in
the job, combined incentives can also lead to free riding and, in the ending, slight or no effect on the overall work performance.

There are many factors that affect the students achievement in school, with one of the mainly significant being motivation. Tucker, Zayco, and Herman, (2002) refer to motivation as an educational commitment, with behavioral, emotional, and cognitive indicators of student speculation in regard to education. Obviously students who are less motivated to do well may not work hard. Several researchers have suggested that only student’s motivation has direct effects on academic attainment; all other factors affect academic success only through their effect on student’s motivation. However, it is not as simple to know what exactly motivates students. Many studies have been carried out on this issue, and have led to the improvement of numerous theories of motivation.

Anderman and Midgley (1997) argued that students who have an ability or performance goal orientation may be troubled with proving their might by getting excellent grades or achieving highly well in comparison to those other students. Students with a task orientation may be motivated to aspire to increase their skills and understanding on a particular subject or by enjoying from learning the material. Ames, (1992) states that those learners with a task-goal orientation are most likely to engage themselves in challenging tasks, to look for help as needed, and to take on useful cognitive strategies, as well as probably and most significantly, tend to be happy both with school and with the learners themselves. In addition, research has also recommended that task and achievement goals are never mutually exclusive. With many experimental studies forcing research participants to chose one target orientation or the another (Kaplan & Maehr, 2002), co-relational researchers have
found out that persons approval of a task-goal orientation is often weakly associated or uncorrelated with performance goal orientation.

Achievement-based motivation can be viewed as autonomy to succeed in whichever activities one embarks in. This may be in academic work, sporting events, specialized work among others. Gesinde, (2000) argued that the experimental researches have immensely enhanced the peoples understanding about the motive to achieve. He further argued that the urge to achieve in a particular task vary from one person to the other. Some of the individuals thirst for success may be extremely high while for others it may be particularly low. This explains why there are high and low achievers. The reasons accountable for the difference may be the fact that motivation is believed to be learnt during the processes of socialization and the education experience. Gesinde (2000) further argued that, for those who have higher achievers as their role models in their early life experience, would develop the high need to achieve, while for those who have low achievers as their role models hardly develop the need to achieve.

2.5 Teacher Efficacy, Experience and Training Factors Affecting Performance of learners

A study by Hanushek (1989) study analyzed 113 studies and found out that instructors who have advanced degrees didn’t foretell advanced level of student performance in 100 out of 113 research studies. From the 13 researches where teacher qualifications were significant predictors, the findings were divided between negative and positive associations. The teachers with a degree were found to have a unenthusiastic effect on academic performance in 6 of the 13 studies. Greenwald (1996) found that in 15 out of the 60 studies they reviewed, for the teachers who had
a master’s degree, they were found to produce students who had achieved higher than teachers who did not have a master’s degree, but in 13 of the studies teachers who had a master’s degrees did have a negative impact on achievement of the student. Another study by Ferguson and Ladd (1996) established that there exists no student success gain in understanding or math for students who had been taught by teachers who had master’s degrees. These results demonstrated that teachers who had advanced degrees do not particularly produce superior performing students.

Teacher’s self-efficacy and beliefs may influence a learner’s performance in numerous ways. The teachers who have high self-efficacy beliefs are most likely to implement improvement in the classroom and to regularly use classroom management styles as well as sufficient instruction methods that encourage learners autonomy and reduce students control (Chacon, 2005), to take care of the needs for students with special learning difficulties, to enable management of classroom problems, and to keep up students on task.

Several researchers have found out that inexpert teachers were characteristically ineffective than the experienced teachers. However, the advantage of the familiarity seem to level off after a few years (Darling, 1999). Hanushek’s (1999) reviewed 140 studies and established that it’s only in only 30 percent of the studies in which teacher experience was correlated with student performance. Hanushek, further claims that a positive correlation between the two may result from the senior teachers being allowed to select schools and classrooms with high achieving learners and with less discipline problems. Out of 60 studies that Greenwald, Hedges and Laine (1996) reviewed, only 30% revealed a positive and considerable affiliation between the teacher’s experiences and student achievement.
Rubenstein (2000) analyzed the effects teachers' years occurrence in Massachusetts, Texas and Georgia established that teachers with more than 25 years of experience produced learners with significantly low on National Examination Scores than instructors with between 6–10 years experience. The benefits for student achievement were absent for teachers teaching between 11–24 years. With almost similar training levels amongst the teachers in Kenyan secondary schools, their efficacy levels are expected to be similar. However, there exists a huge variation in the performance of teachers, especially in dispensation of knowledge to the students. Studies have also established that instructor's sense of effectiveness is connected to their contentment with their selection of profession and their capability as rated by school heads (Sila, 2004). Research findings have revealed that teachers' self-efficacy attitude has a vital role in affecting and supporting their obligation to school and their work contentment (Caprara, Barbaranelli, Borgogni, & Steca, 2003). It is likely that occupation satisfaction accompanies teachers' sense of efficiency and contributes to maintain their efforts towards pursuing learner's best educational achievement.

Guyton and Farokhi (1987) established that there exists a dependable, positive, and strong relationship between the teacher's instruction coursework completed and achievement in the class. Goldhaber and Brewer (1999) also noted that teachers who had a typical documentation in the subject they trained had a statistically significant affirmative effect on student examination scores in relation to teachers who were not certified or were certified in other subject. Although these findings are demonstrating that regularly qualified teachers go one better than non-certified or temporarily certified teachers in terms of student achievement and observations by
administrators and others. However, only a few of the studies carried out relates to a number of studies have meaningful to the influence of teacher's self-efficacy thoughts on children's cognitive achievement and success at school (Muijs & Rejnold, 2001).

2.6 Identification of the Research Gap

The above reviewed literature presents studies conducted in different parts of the globe, on matters pertaining to the teacher issues affecting the academic achievement of learners. These studies have been carried out in other countries, but only a few studies have been carried out in Kenya. In Maara sub-county for instance, no study has been carried out on the same issue. With majority of the studies focusing on the student and school related factors, there exists a knowledge gap on the issue pertaining to the teacher factors. This study aimed to fill the missing knowledge gap on the teacher factors affecting the performance in Kenya, with the information and data obtained from secondary schools in Maara Sub-county.
CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter discusses step by step account of how the research was carried out to obtain information necessary to cover specific objectives. This chapter is organized into eight sections covering; research design, the study location, target population, the sampling procedure and sample size, instruments, data collection and analysis.

3.2 Research Design

The design for this study was descriptive survey design. This type of design sought to unearth answers to the questions formulated from the statement of the problem. Gay (1992) maintains that descriptive design is used on prelude and investigative research to allow the researcher to gather the information, review, present and interpret data. Using this design the researcher attempts to find answers to questions by analyzing the variables that relate to the teacher based factors affecting the student's Achievement in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County.

3.3 Study Location

The study was conducted in public secondary schools in Maara sub-county, Tharaka Nithi County, Kenya. Singleton (1993) points that an ideal reason for the setting for any study should be the existence of a problem that the study hopes to generate solutions for. The study location was chosen because it was established that there exists low level of mathematics achievement of students in the national
examinations in the division for the past few years. Also, no known similar study to
the best knowledge of the researcher has been undertaken in the county.

3.4 Target Population

The target population for this study was all the 1140 students, 128 mathematics
teachers and 49 headteachers in the public secondary schools in Maara sub-county,
Tharaka Nithi County.

3.5 Sampling Procedure and Sample Size

Mugenda and Mugenda (1999) recommend a representative sample of 10-30% for
descriptive survey research. A sample of 12 forming 25% of the targeted schools
was sampled using stratified method. The schools were divided into three strata, as
per their characteristics (Boys, girls and mixed). Proportionate samples of 10% were
randomly picked from each stratum. From the sampled schools, the head teacher
was purposively sampled, 10 students from form 3 were randomly sampled, to
participate in the study. This is because the form threes had been in school for three
years and may have experienced the differences in mathematics teachers changes.
Form fours were not considered because in their final year, they are usually busy
preparing for the exams and may not adequately answer the questionnaires. All the
Mathematics teachers teaching form 3 were sampled purposively.
Table 3.1: Sample Matrix

<table>
<thead>
<tr>
<th>Category of population</th>
<th>Total population</th>
<th>Sampling procedure</th>
<th>Sample</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headteachers</td>
<td>49</td>
<td>Purposive</td>
<td>12</td>
<td>25%</td>
</tr>
<tr>
<td>Teachers</td>
<td>128</td>
<td>Purposive</td>
<td>36</td>
<td>28.1%</td>
</tr>
<tr>
<td>Students</td>
<td>1140</td>
<td>Random</td>
<td>120</td>
<td>10.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1317</strong></td>
<td></td>
<td><strong>168</strong></td>
<td></td>
</tr>
</tbody>
</table>

3.6 Research Instruments

The study utilized two data collection instruments which are questionnaires and interview guide. The questionnaires were utilized for collection of data because as Gay (1992) argues that questionnaires provide respondents freedom to convey their opinions and also have a provision to make any suggestions.

3.6.1 Questionnaires

The researcher developed teacher’s questionnaire and the students’ questionnaire. Borg and Gall (1983) highlight that the open-ended type of question gives respondents liberty of reply, the closed-ended questions makes it possible for uniformity of particular information from the respondents. The questionnaires contained five sections. Section A of the questionnaire contained demographic characteristics, section B contained information on the extent to which teacher job satisfaction affects the performance in mathematics, section C sought information on how teacher motivation affects the performance in mathematics in the public secondary schools, section D sought information on the relationship between teacher experience and performance in mathematics while section E sought to establish the strategies that can be employed to improve performance in mathematics in public
secondary schools. The teachers' and students' questionnaires contained both open and closed ended items. For the students questionnaires, Section A of the questionnaire contained demographic characteristics, section B sought information on Perceived Supportiveness of the learning environment.

3.6.2 Interview Schedule

Data from the head teachers was collected using an interview. An interview created a situation where the respondents spoke unreservedly and candidly by use of techniques such as summarizing, clarification, paraphrasing, probing and minimal verbal as well as non-verbal responses. The interviews were thoroughly conducted until data was saturated as determined by the interview schedule.

3.7 Piloting

Borg and Gall (1983) recommends that researchers should pilot 5-10% of the final sample. A pilot study is important as it allows the researcher to collect information that helps in improving dependability and validity of a research instrument. Piloting facilitates the investigator to test the dependability of the tools and to discover any sections in the instrument that are imprecise or vague to the respondents and alter them efficiently. This was carried out in two schools that were not be incorporated in the final research using twenty students four teachers and two headteachers sampled by the same criteria described in the section of sampling procedure.

3.7.1 Validity of the Instrument

Validity is the degree to which a test measures what it purports to measure. To validate the research instrument the questionnaire were tested in two pilot schools from the neighboring Embu County. Content validity is the amount to which
information collected using a particular instrument represents a specific domain or content of a particular consent. To assess content validity my supervisor who is an expert in the profession and the field gave his instruction. The pilot study assisted in discovering the difficulties that respondents might come across in the answering the questionnaires. Ambiguous items from the questionnaires were modified as per the supervisors advise.

3.7.2 Reliability of the Research Instrument

The researcher tested the reliability of the instrument by use of Spearman Brown prophesy formula. The method was used in estimation of the level to which the similar findings can be achieved within a recurring evaluation of the same perception. It involves dividing the questionnaire from piloting fifty-fifty and establishing the degree of association or reliability amidst the halves. An Overall correlation of 0.86 for the teachers and 0.81 for the student's questionnaires were obtained and thus they were deemed reliable. Gay (1992) argues that at least 0.7 correlation coefficient and above for the two halves sufficient to prove the reliability of the instrument.

3.8 Ethical Considerations

The researcher focused on some ethical issues, which were considered during the data collection phase. The ethical issues considered in this study included confidentiality and privacy of the information collected and anonymity of the questionnaires. In the area of informed consent, the respondents were informed on the purpose of the study, and what data collected will be used for. The permission was also sought from the principal, before the administration of the research instruments.
3.9 Data Collection Procedures

The researcher got an introduction letter from Kenyatta University after which he sought and obtained permission from the National Council for Science, Technology and Innovations, and County Commissioner to conduct the research within the Tharaka Nithi County. The researcher also sought permission to carry out the study from the principals of the schools. The researcher visited all the respondents to administer the questionnaires. The respondents were given one week to respond to all the items adequately. Raw data was collected using questionnaires distributed to respondents. For the interview guide, the researcher conducted an oral phenomenological interview to the respondents. The researcher collected the data for a period of 1 month.

3.10 Data Analysis and presentation

Kerlinger (1986) defines data analysis as categorizing, manipulating and summarizing of data in order to obtain answers to research questions. This study employed descriptive and inferential statistics to explore the information obtained. Gay (1992) asserts that descriptive survey data is commonly represented through use of frequency, graphs, pie-charts and frequency tables. Data from the field was collected, cleaned, coded and recorded. Data collected by use of the questionnaire, was coded, and analyzed, using Statistical Package for Social Scientists (SPSS 21). Descriptive statistics was used to analyze the quantitative data obtained and specifically included percentages and frequency counts. For Inferential statistics, Pearson product moment was used in this study to test the extent and the nature of the affiliation linking the independent and dependent variables. Qualitative data analysis involved analysis of responses from data collection, peoples’ familiarity
without prior selection of any prechosen aspect. The qualitative data obtained in this study was analyzed by organizing them into similar themes and tallying the number of similar responses. The findings obtained were presented by use of bar graphs, frequency distribution tables and charts.
CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction

This chapter covers the analysis of data and presentation of results for the study. The data presented covers respondent's demographic data that includes genders, age, academic qualifications and the number of years teachers have served. The chapter presents the results and discussion of the study objectives.

4.2 Data Analysis, Presentation and Interpretation

The study sought to answer the following research questions:

i. To what extent does teacher job satisfaction affect the performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County?

ii. How does teacher motivation affect the students' performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County?

iii. What is the relationship between teacher experience and performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County?

iv. What are the strategies that can be employed to improve performance in mathematics in public secondary schools in Maara sub-county, Tharaka Nithi County.

The findings have been presented thematically with the themes developed from the research questions.
4.2.1 Response Rate

The study administered the research instruments to the subjects and the response rate is shown by the data on Table 4.1.

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Response</th>
<th>None response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percentage</td>
</tr>
<tr>
<td>Questionnaires</td>
<td>140</td>
<td>89.7</td>
</tr>
<tr>
<td>Interviews</td>
<td>10</td>
<td>83.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>150</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

Data on Table 2 indicates that 89.3% of the questionnaires were returned. The information further shows that the majority (83.3%) of the targeted respondents were available for interviews. From the above information, the response rate was sufficient for the study.

4.3 Demographic Data of Respondents

The study sought to establish the demographic information of the respondents.

4.3.1 Gender

The study sought to establish how the sample population was distributed by gender, and enable cross tabulation of response in this light. Table 4.2 data reveals how the study subjects were distributed by gender.
### Table 4.2: Gender Distribution of Respondents

<table>
<thead>
<tr>
<th>Category</th>
<th>Male</th>
<th>Percentage</th>
<th>Female</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>21</td>
<td>58.3</td>
<td>15</td>
<td>41.7</td>
</tr>
<tr>
<td>Head teachers</td>
<td>7</td>
<td>70</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td></td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

The data shows that 58.3% teachers were male as compared to 41.7% females. The data also indicates that majority (70%) headteachers respondents were male as compared to 30% female. The overall gender of the population indicates that 51.9% of the respondents were male while 48.1% were female. It can be concluded from the findings that gender was fairly distributed in the sample population.

#### 4.3.2 Academic Qualification of the Teachers

The study sought to establish the academic qualifications of the teachers and the results are elicited in the figure 4.1:

![Figure 4.1: Academic Qualification of the Teachers](image-url)
The data in the figure 4.1 above shows that the majority (60.7%) of the teachers had a bachelors degree, (25%) had a masters degree while only 14.3% of the teachers had diploma in education. The study further established that the majority (55.6%) of Head teachers indicated that they had a master’s degree, while (44.4%) had a bachelor’s degree. These findings indicate that the teachers and head teachers met the qualification and training, to be teachers in secondary school.

4.3.3 Years of service

The study sought to establish the years the teachers and the headteachers had served.

The data in the figure 4.2 was elicited.

![Figure 4.2: Years of service](image-url)

The data in the figure shows that the majority (100%) of the headteachers had served as headteachers for over 10 years while the majority (50%) of the teachers had served as teachers for over 10 years. These findings therefore, not only reflect the effect of Teachers’ Experience but also may reflect the effect of Teacher efficiency on academic achievement.
4.3.4 An Assessment of Performance of Teachers

The education system in Kenya is largely examination oriented. The quality of education tends to be evaluated in terms of the number of students passing national examinations (Eshiwani, 1993). Educators and the general public have time and again expressed concern over factors that influence student performance in examinations. In order to assess the performance of teachers, the study further sought to establish the grades the teachers obtained in the end of term exams in form 3 and form 4. The results obtained are presented on the figure 4.3.

![Figure 4.3: Students average performance in mathematics subject](image)

The study established that the majority of the teachers attained a mean grade of C plain in the subjects taught in form 3. The study further established that 27% of the teachers attained a mean grade of B while 22% had a mean grade of D. this information reveals that the majority of the teachers had a performance of below average.
4.3.5 Student's responses on the teacher's support in learning mathematics

The study sought to establish from the students their opinions on the support they received from the teachers, in learning mathematics. The students were expected to give their responses on a five point likert scale with; Very true (VT) = 5 point, True (T) = 4 points, Somehow true (ST) = 3 points, Not true (NT) = 2 points Not true at all (NTA) = 1 point, and WM as the Weighted Mean. The findings obtained are presented on the table below.

Table 4.3: Student's opinions on the teacher's supportiveness in learning mathematics

<table>
<thead>
<tr>
<th>Statement</th>
<th>NTA</th>
<th>NT</th>
<th>ST</th>
<th>T</th>
<th>VT</th>
<th>WM</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel free to ask any questions to my teachers</td>
<td>10.6</td>
<td>13.6</td>
<td>6.8</td>
<td>52.9</td>
<td>13.0</td>
<td>3.34</td>
</tr>
<tr>
<td>My teachers are friendly</td>
<td>13.0</td>
<td>16.3</td>
<td>2.4</td>
<td>58.3</td>
<td>6.8</td>
<td>3.20</td>
</tr>
<tr>
<td>My teachers teach very well</td>
<td>5.6</td>
<td>11.7</td>
<td>8.7</td>
<td>49.8</td>
<td>18.6</td>
<td>3.47</td>
</tr>
<tr>
<td>My teachers create extra time for remedial teaching</td>
<td>11.2</td>
<td>11.1</td>
<td>4.3</td>
<td>53.5</td>
<td>16.1</td>
<td>3.40</td>
</tr>
<tr>
<td>New teachers teach better than old teachers</td>
<td>10.6</td>
<td>13.6</td>
<td>6.8</td>
<td>52.9</td>
<td>13.0</td>
<td>3.34</td>
</tr>
<tr>
<td>I perform better in subjects taught by much new teachers than older ones</td>
<td>11.8</td>
<td>16.7</td>
<td>2.4</td>
<td>54.2</td>
<td>9.3</td>
<td>3.15</td>
</tr>
<tr>
<td>My teachers use varied teaching methods</td>
<td>11.2</td>
<td>11.7</td>
<td>4.9</td>
<td>54.8</td>
<td>10.6</td>
<td>3.21</td>
</tr>
<tr>
<td>My teachers are very committed to their work</td>
<td>13.0</td>
<td>17.3</td>
<td>2.4</td>
<td>57.3</td>
<td>6.8</td>
<td>3.18</td>
</tr>
<tr>
<td>Teachers rarely miss lesson</td>
<td>4.3</td>
<td>19.3</td>
<td>1.2</td>
<td>52.9</td>
<td>17.4</td>
<td>3.45</td>
</tr>
<tr>
<td>Missed lessons are usually recovered</td>
<td>9.3</td>
<td>5.5</td>
<td>6.8</td>
<td>54.2</td>
<td>19.3</td>
<td>3.54</td>
</tr>
<tr>
<td>Subject teachers give an opportunity to actively participate in class by answering questions</td>
<td>9.9</td>
<td>6.8</td>
<td>7.5</td>
<td>52.9</td>
<td>16.8</td>
<td>3.41</td>
</tr>
<tr>
<td>Remedial teaching is offered to me when I have problem in a given topic</td>
<td>6.8</td>
<td>9.3</td>
<td>2.4</td>
<td>49.1</td>
<td>25.5</td>
<td>3.56</td>
</tr>
<tr>
<td>I feel I can perform very well KSCE if</td>
<td>7.5</td>
<td>14.9</td>
<td>3.7</td>
<td>47.9</td>
<td>20.5</td>
<td>3.42</td>
</tr>
<tr>
<td>I continue getting the support of teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The study sought to establish from students, their opinions on the learning environment in their schools. The study established that the majority of the students agreed that they felt free to ask questions to their mathematics teachers, as was indicated by the weighted mean of 3.34. The study further established that the teachers were friendly to the students, as was revealed by 58.3% of the student respondents and the weighted mean of 3.20.

The study further established that the students agreed that their teachers taught well as was revealed by 49.8% of the respondents (WM = 3.47). The study further established that 53.5% of the students stated that the teachers created extra time for remedial teaching (WM = 3.40).

The study further established that the students were of the opinion that the new students were better than the old students, as was revealed by the majority (WM = 3.34) of the respondents. The study further established that the students performed better in subjects taught by new teachers than older ones (WM = 3.15). The study further established that the teachers used varied teaching methods, as was revealed by 54.8% of the respondents (WM = 3.21).

The study further established that teachers are very committed to their work, as was revealed by 57.3% of the students (WM = 3.18). The study further established that teachers rarely missed lessons, as was revealed by 52.9% of the students (WM = 3.45).

The study established that the teachers did make efforts to recover the time for the lessons they missed, as was revealed by 54.2% of the respondents (WM = 3.54).
study further established that the subject teachers give an opportunity to actively participate in class by answering questions, as was revealed by the majority (WM = 3.41) of the respondents.

The study established that remedial teaching is offered to the students when they have a problem in a given topic, as was revealed by 49.1% of the respondents (WM = 3.56). The study further established that the students felt they could perform better, if they were given support by the teachers, as was revealed by 47% of the respondents (WM = 3.42).

4.4 Effects of Teacher Job Satisfaction on Performance of Learners

Job satisfaction varies and researchers, for example Peretomode (1991) and Whawo (1993), have suggested that the higher the prestige of the job, the greater the job satisfaction. The study sought to establish the influence of Teacher job satisfaction affects the performance of learners in secondary schools. The teachers were asked to give their level of agreement which was then tabulated on a 5 point likert scale. The results obtained are presented on the Table 4.4.
<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>UN</th>
<th>D</th>
<th>SD</th>
<th>WM</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am happy with cooperation I receive from school management team</td>
<td>43.8</td>
<td>53</td>
<td>3.1</td>
<td>0</td>
<td>0</td>
<td>4.40</td>
</tr>
<tr>
<td>I am satisfied with the regulations and laws that protect me from</td>
<td>9.4</td>
<td>44</td>
<td>9.4</td>
<td>31</td>
<td>6.3</td>
<td>3.19</td>
</tr>
<tr>
<td>being fired or dismissed from my job e.g. employment contract.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel satisfied with my professional ability for doing my job</td>
<td>3.1</td>
<td>50</td>
<td>19</td>
<td>16</td>
<td>12.5</td>
<td>3.17</td>
</tr>
<tr>
<td>I am satisfied with autonomy I have in making decisions about my daily</td>
<td>19</td>
<td>38</td>
<td>9.4</td>
<td>31</td>
<td>3.1</td>
<td>3.40</td>
</tr>
<tr>
<td>tasks.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel comfortable with my present level of responsibility in my job.</td>
<td>28</td>
<td>34</td>
<td>6.3</td>
<td>25</td>
<td>6.3</td>
<td>3.51</td>
</tr>
<tr>
<td>I feel satisfied with the recognition I have in the community.</td>
<td>19</td>
<td>75</td>
<td>3.1</td>
<td>3.1</td>
<td>0</td>
<td>4.10</td>
</tr>
<tr>
<td>I am satisfied with the school’s physical working environment.</td>
<td>9.4</td>
<td>58</td>
<td>3.1</td>
<td>15.6</td>
<td>14.4</td>
<td>3.33</td>
</tr>
<tr>
<td>I enjoy collegial relationship with fellow teachers.</td>
<td>9.4</td>
<td>56.3</td>
<td>15.6</td>
<td>15.6</td>
<td>3.1</td>
<td>3.53</td>
</tr>
<tr>
<td>I am satisfied with support I get from school administrators</td>
<td>12.5</td>
<td>52</td>
<td>18.8</td>
<td>18.8</td>
<td>3.13</td>
<td>3.67</td>
</tr>
<tr>
<td>Teaching provides me with opportunity to use all my skills.</td>
<td>12.5</td>
<td>40.6</td>
<td>12.5</td>
<td>28</td>
<td>6.3</td>
<td>3.24</td>
</tr>
</tbody>
</table>
The information on the table reveals that the majority (WM = 4.40), of the teachers agreed that they were happy with cooperation they received from school management team. Some researchers argue that teachers who do not feel supported in their work may be less motivated to do their best in the classroom (Ostroff, 1992; and Ashton and Webb, 1986). In addition, highly satisfied teachers are less likely to change schools or to leave the teaching profession altogether than those who are dissatisfied with many areas of their work life (Choy 1993). These actions disrupt the school environment and result in the shift of valuable educational resources away from actual instruction towards costly staff replacement efforts.

The study further established that the majority (WM = 3.19) agreed that they were satisfied with the regulations and laws that protect them from being fired or dismissed from job. Dissatisfied teachers who want to transfer to another school may be poor performers both because of general motivational factors (Rockoff 2004, Hanushek, Kain and Rivkin 2005), and also because they are simply waiting to move on to a different location, putting low effort into their current work duties and disregarding any longer term plans for their students.

The study further established that the teachers felt satisfied with their professional ability for doing their job, as was revealed by the majority (WM = 3.17) of the respondents. It is believed that satisfaction at work may influence various aspects of work such as efficiency, productivity, absenteeism, turnovers rates, and intention to quit, and finally employees’ well-being (Baron, 1986). The study further established that satisfied with autonomy they had in making decisions about daily tasks, as was revealed by the majority (WM = 3.40) of the respondents.

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The majority (WM = 3.51) of the teachers indicated that they felt comfortable with their present level of responsibility in their jobs. Satisfied teachers are expected to hold their jobs longer, to be able to engage in more responsive, positive and consistent interaction with students, and to positively influence students' performance (Maslach and Leiter, 1999). The study further established that the teachers felt satisfied with the recognition they have in the community as was revealed by the majority (WM = 4.10) of the respondents.

The majority (WM = 3.33) of the teachers agreed that they were satisfied with the school's physical working environment. Research on teachers' job satisfaction suggests that educators are most satisfied with teaching itself and their supervision and dissatisfied with their salary and promotional opportunities (Dinham and Scott, 2000). The study further established that (WM = 3.53) of the teachers did enjoy collegial relationship with fellow teachers.

The teachers were satisfied with support they got from school administrators, as was revealed by the majority (WM = 3.67) of the respondents who agreed. The study further established that the teachers felt that teaching provided them with opportunity to use all their skills, as was revealed by the majority (WM = 3.24) of the respondents. As such, the behaviors exhibited by employees that contribute to organizational effectiveness are said to be variables that have effects on "the psychological, social, and organizational context" of an employee's work (Reio and Kidd, 2007).
4.4.1 Analysis of the effects of Teacher job satisfaction on performance of learners

In order to establish the effects of teacher job satisfaction, on performance in mathematics of students, co relational analysis was computed to establish the relationship of the two variables. The results obtained are presented on the table 4.5.

Table 4.5: Correlation Analysis between teacher job satisfactions, on performance in mathematics of students in secondary schools

<table>
<thead>
<tr>
<th>Teacher job satisfaction</th>
<th>Performance in mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher job satisfaction</td>
<td>Pearson Correlation 1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) .001</td>
</tr>
<tr>
<td></td>
<td>N 36</td>
</tr>
<tr>
<td></td>
<td>N 72</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.05 level (2-tailed).

Table 4.4 shows that there is positive correlation between teacher job satisfactions, on performance in mathematics of students as indicated by a Pearson correlation coefficient of $r = 0.807$. The relationship was tested at 0.05 significance level. The P-value is 0.001 and thus less than the alpha value of 0.05 hence establishing a high significant relationship between the variables. Therefore the teacher job satisfaction did have an influence on the students’ academic performance.

4.5 Effects of Teacher Motivation on Performance in mathematics

The study sought to establish the effects of Teacher motivation on performance in mathematics of the learners. The findings obtained are tabulated on the 5 point likert scale on table 4.6.
<table>
<thead>
<tr>
<th>Statements</th>
<th>SD</th>
<th>D</th>
<th>UN</th>
<th>A</th>
<th>SA</th>
<th>WM</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel comfortable with rewards I get for doing a good job in the school.</td>
<td>6.8</td>
<td>9.3</td>
<td>12.4</td>
<td>39.1</td>
<td>25.5</td>
<td>3.46</td>
</tr>
<tr>
<td>I am happy with the appreciations I get from employer for the contribution</td>
<td>7.5</td>
<td>14.9</td>
<td>13.7</td>
<td>37.9</td>
<td>20.5</td>
<td>3.32</td>
</tr>
<tr>
<td>I am satisfied with care I receive from my immediate supervisor(s)</td>
<td>5.0</td>
<td>13.7</td>
<td>14.9</td>
<td>41.0</td>
<td>19.9</td>
<td>3.40</td>
</tr>
<tr>
<td>I am comfortable with the promotion opportunities available to me as a</td>
<td>3.1</td>
<td>14.9</td>
<td>19.3</td>
<td>40.4</td>
<td>17.4</td>
<td>3.39</td>
</tr>
<tr>
<td>teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel I am adequately compensated for what I do as a teacher</td>
<td>8.1</td>
<td>24.2</td>
<td>11.2</td>
<td>30.4</td>
<td>21.1</td>
<td>3.17</td>
</tr>
<tr>
<td>I do as a teacher.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am being appreciated more for the work I do.</td>
<td>9.3</td>
<td>15.5</td>
<td>16.8</td>
<td>34.2</td>
<td>19.3</td>
<td>3.24</td>
</tr>
<tr>
<td>I feel my job is more rewarding. I am happier with my teaching experience.</td>
<td>11.2</td>
<td>21.1</td>
<td>13.7</td>
<td>31.7</td>
<td>12.4</td>
<td>2.83</td>
</tr>
<tr>
<td>I spend more time in professional development activities.</td>
<td>23.0</td>
<td>27.3</td>
<td>12.4</td>
<td>27.3</td>
<td>6.8</td>
<td>2.58</td>
</tr>
<tr>
<td>I spend more time providing supplemental services or tutoring to students.</td>
<td>16.8</td>
<td>23.6</td>
<td>18.0</td>
<td>25.5</td>
<td>13.0</td>
<td>2.85</td>
</tr>
<tr>
<td>I am more self-reflective about my teaching practices.</td>
<td>11.2</td>
<td>21.1</td>
<td>14.3</td>
<td>33.5</td>
<td>16.1</td>
<td>3.10</td>
</tr>
</tbody>
</table>


The majority (WM =3.46) of the teachers agreed that they felt comfortable with rewards they get for doing a good job in the school. Motivation has been reported in primary, secondary and college education to influence performance in mathematics through study effort as a mediator (Vansteenkiste 2005). Some researchers argue that teachers who do not feel supported in their work may be less motivated to do their best in the classroom (Ostroff, 1992; and Ashton & Webb, 1986). The study further established that the majority of the teachers were happy with the appreciations they got from employer for the contribution they made in the school, as was revealed by the majority (WM =3.32) of the respondents.

The teachers were satisfied with care they received from their immediate supervisor, as was revealed by the majority (WM =3.40) of the respondents. In Nigeria, a study carried out by Ajayi(1998) on achievement motivation using 276 students revealed that there is an agreement between performance in mathematics and motivation. Majority (WM =3.39) of the teachers further indicated that they were comfortable with the promotion opportunities available to them as teachers.

The majority (WM =3.17) of the teachers indicated that they feel adequately compensated for what they do as teachers. Tucker et al. (2002) think teachers need to be encouraged to show concern for and take an active interest in disaffected students. They should also be fair and consistent while allowing students autonomy, and should help students understand the relevance of classroom work to other aspects of their lives. The study further established that they felt appreciated more for the work they did in the schools, as was revealed by (WM =3.24) of the respondents.
The teachers indicated that they felt that their job was more rewarding and that they were happier with their teaching experience, as was revealed by the majority (WM =2.83) of the respondents. As (Skaalvik and Skaalvik, 2006; Sandra, 2002), revealed that there was a significant relationship between performance in mathematics and motivation. The study further established that the teachers spent more time in professional development activities, as was indicated by the majority (WM =2.58) of the respondents, who agreed.

The majority (WM =2.85) of the respondents agreed that they spent more time providing supplemental services or tutoring to students. Teacher incentives, either individual or collective, may improve student achievement if they succeed in aligning the public or social goals with the goals of the teacher. In this case, a combination of incentive and composition effects will increase student performance (Lazear 2003). The teachers further agreed that they were more self-reflective about their teaching practices, as was revealed by the majority (WM =3.10) of the respondents.

4.5.1 Correlation Analysis between teacher motivations, on performance in mathematics of students in secondary schools

To establish the effects of teacher motivation on academic performance, a correlation analysis between teacher motivation and performance in mathematics was computed and the results obtained are presented on the table 4.7.
Table 4.7: Correlation Analysis between teacher motivations and performance in mathematics of students in secondary schools

<table>
<thead>
<tr>
<th>Teacher motivation</th>
<th>Pearson Correlation</th>
<th>Performance in mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Pearson Correlation</td>
<td>1</td>
<td>.900**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>36</td>
<td>72</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.05 level (2-tailed).

This study established that the strength of association between the teacher motivation on performance in mathematics is very high (r=0.900) and the correlation coefficient significantly very high (P<0.05). This indicates that variations in teacher motivation affected the students performance in mathematics by 81% (r²=0.9²). Therefore teacher motivation did have an influence on student’s academic performance.

4.6 Effects of Teacher’s professional training and experience on the performance in mathematics of learners

The study sought to establish the Teacher’s professional training and experience on the performance in mathematics of learners. The teachers were asked to indicate their views on a 5 point likert scale and the results obtained are presented on the table 4.8.
Table 4.8 Correlation between Teacher’s Opinions on how Motivation affects Students Performance in Mathematics

<table>
<thead>
<tr>
<th>Statements</th>
<th>SD 1</th>
<th>D 2</th>
<th>UN 3</th>
<th>A 4</th>
<th>SA 5</th>
<th>WM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers with academic qualification interact with their students respectfuly.</td>
<td>23.0</td>
<td>26.3</td>
<td>12.4</td>
<td>28.3</td>
<td>6.8</td>
<td>2.60</td>
</tr>
<tr>
<td>Teachers with professional qualification use problem-solving methods effectively.</td>
<td>5.6</td>
<td>21.7</td>
<td>8.7</td>
<td>39.8</td>
<td>18.6</td>
<td>3.27</td>
</tr>
<tr>
<td>Teachers with academic qualification adopt the use of individual teaching method effectively.</td>
<td>11.2</td>
<td>21.1</td>
<td>14.3</td>
<td>33.5</td>
<td>16.1</td>
<td>3.10</td>
</tr>
<tr>
<td>Teachers with academic qualification dramatize (Demonstrates) teaching situation effectively</td>
<td>10.6</td>
<td>23.6</td>
<td>16.8</td>
<td>32.9</td>
<td>13.0</td>
<td>3.04</td>
</tr>
<tr>
<td>Teachers with academic qualification demonstrate familiarity with co-teachers effectively. (Exchange ideas)</td>
<td>11.8</td>
<td>26.7</td>
<td>12.4</td>
<td>34.2</td>
<td>9.3</td>
<td>2.85</td>
</tr>
<tr>
<td>Teachers with professional qualification encourage co-teachers to work effectively.</td>
<td>11.2</td>
<td>21.7</td>
<td>14.9</td>
<td>34.8</td>
<td>10.6</td>
<td>2.91</td>
</tr>
<tr>
<td>Teachers with academic qualification use reward and punishment wisely.</td>
<td>13.0</td>
<td>27.3</td>
<td>12.4</td>
<td>37.3</td>
<td>6.8</td>
<td>2.88</td>
</tr>
<tr>
<td>Teachers with academic qualification select appropriate teaching materials.</td>
<td>4.3</td>
<td>19.3</td>
<td>11.2</td>
<td>42.9</td>
<td>17.4</td>
<td>3.35</td>
</tr>
<tr>
<td>Teachers with academic qualification construct various evaluation instruments effectively.</td>
<td>9.3</td>
<td>15.5</td>
<td>16.8</td>
<td>34.2</td>
<td>19.3</td>
<td>3.24</td>
</tr>
<tr>
<td>Teachers with academic qualification ensure effective time management.</td>
<td>9.9</td>
<td>16.8</td>
<td>7.5</td>
<td>42.9</td>
<td>16.8</td>
<td>3.21</td>
</tr>
<tr>
<td>Teachers with academic qualification show sufficient mastery of subject matters.</td>
<td>6.8</td>
<td>9.3</td>
<td>12.4</td>
<td>39.1</td>
<td>25.5</td>
<td>3.46</td>
</tr>
<tr>
<td>Teachers with academic qualification assess students’ behavior effectively.</td>
<td>7.5</td>
<td>14.9</td>
<td>13.7</td>
<td>37.9</td>
<td>20.5</td>
<td>3.32</td>
</tr>
<tr>
<td>Teachers with academic qualification keep records of individual students accurately.</td>
<td>5.0</td>
<td>13.7</td>
<td>14.9</td>
<td>41.0</td>
<td>19.9</td>
<td>3.40</td>
</tr>
</tbody>
</table>
The study established that teachers with academic qualification interact with their students respectfully, as was revealed by the majority (WM=2.6) of the respondents. The study further established that teachers with professional qualification used problem-solving methods effectively, as was revealed by the majority (WM= 3.27) of the respondents.

The study further established that teachers with academic qualification adopted the use of individual teaching method effectively, as was revealed by the majority (WM= 3.10) of the respondents who agreed. The study further established that teachers with academic qualification dramatized (Demonstrated) teaching situation effectively, as was indicated by (WM= 3.04) of the respondents.

The majority (WM= 2.85) of the respondents indicated that teachers with academic qualification demonstrated familiarity with co-teachers effectively. The majority (WM= 2.91) of the teachers with professional qualification encouraged co-teachers to work effectively.

The majority (WM= 2.88) of the teachers with academic qualification used reward and punishment wisely. The study further established that teachers with academic qualification select appropriate teaching materials, as was revealed by the majority (WM= 3.35) of the respondents.

The study established that teachers with academic qualification construct various evaluation instruments effectively, as was revealed by the majority (WM= 3.24) of the respondents. The study further established that teachers with academic
qualification ensure effective time management, as was revealed by the majority (WM= 3.21) of the respondents.

Teachers with academic qualification show sufficient mastery of subject matters, as was revealed by the majority (WM= 3.46) of the respondents. The study further established that the majority (WM= 3.32) of the teachers indicated that teachers with academic qualification assess students’ behavior effectively. The majority (WM= 3.40) of the teachers indicated that teachers with academic qualification keep records of individual students accurately.

4.6.1 Correlation Analysis between Teacher’s professional training and experience on the performance in mathematics of learners

In order to establish the correlation between teachers’ professional training and experience on the performance in mathematics of learners, a correlation was computed between the two variables. The results obtained are shown on the table 4.9.

Table 4.9: A Correlation Analysis between Teacher’s professional training and experience on the performance in mathematics

<table>
<thead>
<tr>
<th>Teacher professional training and experience</th>
<th>Performance in mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Pearson Correlation Sig. (2-tailed)</td>
<td>Pearson Correlation Sig. (2-tailed)</td>
</tr>
<tr>
<td>professional training and experience N</td>
<td>36 72</td>
</tr>
<tr>
<td>**. Correlation is significant at the 0.05 level (2-tailed).</td>
<td>**. Correlation is significant at the 0.05 level (2-tailed).</td>
</tr>
</tbody>
</table>
The study clearly revealed that the strength of association between teacher’s professional training and experience on the performance in mathematics of learners was moderate as indicated by Person $r = 0.401$. This shows that variations in teacher professional training and experience, affected academic performance by 16% ($r^2 = 0.401^2$).

### 4.7 Strategies that can be employed to improve on the performance of teachers in secondary schools

The study sought to establish the strategies that can be applied to improve on teachers performance and the results are discussed below.

The head teachers highlighted shortage of teachers as one of the challenges to the learning in schools. As a strategy to reduce the teacher shortage, Head teachers should ensure that all departments have enough teachers to ensure that the teachers are not overloaded with the teaching burden. The teachers suggested that the school administration should try and acquire more teachers, to enable them reduce their burden of teaching.

Time management is essential in any institution. Head teachers advocating for good time management in the school was highlighted as a strategy towards improvement of performance in the schools. The teachers also suggested that the school time table should be well planned, in order to spread well the lessons and allow them to plan and prepare well for the adjacent lessons.

Extensive revision by students with the teachers was also highlighted as a strategy of improvement of academic performance, by the teachers. The teachers also suggested
that the school should device a reward system, to reward the best performing teachers in their subjects. The study further established that the teachers suggested that the school should organize for some extra tuition funds, for the teachers who perform extra tuition and remedial lessons, after the normal class hours.

provision of enough textbooks for all students and teachers was also suggested as a strategy. With enough textbooks, the teachers have the necessary resources to teach the students. This will even make the teachers work easier and improve the effectiveness and overall performance in mathematics of teachers.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the main findings for this study, the conclusions and the recommendations. The chapter also contains the suggestions for further studies.

5.2 Summary of the Main Findings

The purpose of this study was to assess the teacher based factors affecting the student's performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County. The target population for this study was all the 1140 form three students, 128 mathematics teachers and 49 headteachers in the 49 secondary schools in Maara sub-county, Tharaka Nithi County. A sample of 12 schools was proportionately sampled to participate in the study. From the sampled schools, the head teacher was purposively sampled, 10 students from form 3 were randomly sampled, to participate in the study. The study instruments were questionnaires and interview schedule. Piloting was done in two schools. This study employed descriptive and inferential statistics to analyze the data obtained. For descriptive statistics, this specifically included percentages and frequency counts, while for inferential statistics; Pearson product moment was used. The data obtained was presented through tables, bar graphs and pie charts.

The first objective of the study sought to analyze the extent to which teacher job satisfaction affects the student's performance in mathematics in the public secondary schools. The study established that; majority $(WM=4.4)$ of the teachers agreed that
they were happy with cooperation they received from school management team. The study further established that the majority (WM=3.19) agreed that they were satisfied with the regulations and laws that protect them from being fired or dismissed from job. The study further established that the teachers felt satisfied with my professional ability for doing their job, as was revealed by the majority (WM=3.17) of the respondents. The study further established that satisfied with autonomy they had in making decisions about daily tasks, as was revealed by the majority (WM=3.40) of the respondents. The majority (WM=3.51) of the teachers indicated that they felt comfortable with their present level of responsibility in their jobs. The study further established that the teachers felt satisfied with the recognition they have in the community as was revealed by the majority (WM=4.10) of the respondents. The majority (WM=3.33) of the teachers agreed that they were satisfied with the school’s physical working environment. The study further established that (WM=3.53) of the teachers did enjoy collegial relationship with fellow teachers. There was positive correlation between teacher job satisfactions, on performance in mathematics of students as indicated by a Pearson correlation coefficient of $r = 0.807$. The relationship was tested at 0.05 significance level. The P-value is 0.001 and thus less than the alpha value of 0.05 hence establishing a high significant relationship between the variables. Therefore the teacher job satisfaction did have an influence on the students’ academic performance.

The second objective of the study sought to establish how teacher motivation affects the student’s performance in mathematics in the public secondary schools. The study established that; the majority (WM=3.46) of the teachers agreed that they felt comfortable with rewards they get for doing a good job in the school. The study
further established that the majority of the teachers were happy with the appreciations they got from employer for the contribution they made in the school. The teachers were satisfied with care they received from their immediate supervisor. Majority (WM=3.40) of the teachers further indicated that they were comfortable with the promotion opportunities available to them as teachers. The majority (WM=3.17) of the teachers indicated that they feel adequately compensated for what they do as teachers. The study further established that they felt appreciated more for the work they did in the schools, as was revealed by (WM=3.24) of the respondents. The study further established that the teachers spent more time in professional development activities. The teachers indicated that they felt that their job was more rewarding and that they were happier with their teaching experience. The majority (WM=3.10) of the respondents agreed that they spent more time providing supplemental services or tutoring to students. This study established that the strength of association between the teacher motivation on performance in mathematics is very high (r=0.900) and the correlation coefficient significantly very high (P<0.05). This indicates that variations in teacher motivation affected the students performance in mathematics by 81% (r²=0.9²). Therefore teacher motivation did have an influence on student’s academic performance.

The third objective of the study sought to establish the relationship between teacher experience and performance in mathematics in the public secondary schools. The study established that; the teachers with academic qualification interact with their students respectfully, as was revealed by the majority (WM=2.60) of the respondents. The study further established that teachers with professional qualification used problem-solving methods effectively. The study further
established that teachers with academic qualification adopted the use of individual teaching method effectively. The majority (WM=2.91) of the respondents indicated that teachers with academic qualification demonstrated familiarity with co-teachers effectively. The majority (WM=2.88) of the teachers with academic qualification used reward and punishment wisely. The study established that teachers with academic qualification construct various evaluation instruments effectively.

Teachers with academic qualification show sufficient mastery of subject matters, as was revealed by the majority (WM=3.46) of the respondents. The study clearly revealed that the strength of association between teacher's professional training and experience on the performance in mathematics of learners was moderate as indicated by Person $r = 0.401$. This shows that variations in teacher professional training and experience, affected academic performance by 16% ($r^2 = 0.401^2$).

### 5.3 Conclusions of the Study

Based on the findings of this study, the researcher makes the following conclusions;

The mathematics teachers in Tharaka Nithi County were satisfied with their jobs, and this had a positive influence on the student's performance in mathematics, as was revealed by the co-relational analysis. This implies that the increase in the variables of teacher job satisfaction, led to a direct increase in performance in mathematics.

The mathematics teachers in secondary schools in Tharaka Nithi County were well motivated by the school management. Motivation was found to have a significant positive relationship with the student’s performance. This means that with the increase in motivation, there was a significant positive increase in student’s performance in mathematics.
The teachers training and experience was also found to have a considerable significance in determining the student’s performance. This implies that with the increase in the variables related to teacher training, there was a positive significant increase in student’s performance in mathematics.

5.4 Recommendations of the Study

Based on the study findings, the researcher recommends that:

i. The ministry of education should increase the amount of funds to the schools in order to provide more incentives to the mathematics teachers, in order to make them more satisfied in their jobs. These should include better allowances, and provision of compensations for remedial lessons, as this is aimed at increasing their efforts towards delivering better results.

ii. The headteachers should consider team building for the workers and motivation for the workers and the students, as a means of improving the performance. The good performing students should be motivated by rewarding them while the good performing workers should be rewarded by promotions.

iii. The government should review the current teacher training curriculum and include in it the emerging trends and issues in the field of education. This will help to equip the teachers with the current ways of teaching, and incorporation of technology in the classrooms. It is aimed to boost the confidence of the teachers, and better results in the end.

iv. Extra funding should be provided by the government and well wishers, to enable them buy enough teaching and learning materials, and revision materials, so as to improve on the academic performance. The government should also increase on the School infrastructure fund, and especially for the
schools in the arid and semi-arid regions, so as to enable them build and equip the schools with library, and enough laboratories.

5.5 **Suggestions for Further Research**

Further research is suggested in the areas of:

i. A study should be carried out to assess the school factors influencing students' performance in mathematics in the county.

ii. Another study should be carried out to find out the home-based factors influencing students' performance in mathematics in public day secondary schools in the county.

iii. Another study should be carried out to assess the emerging issues affecting students' performance in secondary schools in the county.
REFERENCES


(KCPE) in public schools in Chuka Division, Tharaka Nithi County.


Sila, M, P. (2014) *Factors influencing students’ performance in mathematics in Kenya certificate of secondary education (KCSE); a case of Kathonzweni*
District in Makueni County, Kenya unpublished Master of Education in Sociology of education, University of Nairobi


APPENDICES

APPENDIX A: LETTER OF INTRODUCTION

KENYATTA UNIVERSITY

SCHOOL OF EDUCATION

Dear Sir/ Madam,

RE: EFFECTS OF TEACHER QUALITY ON STUDENTS PERFORMANCE IN MATHEMATICS IN SECONDARY SCHOOLS IN MAARA SUBCOUNTY, THARAKA NITHI COUNTY, KENYA

I am a post graduate student wishing to carry out a research on the above mentioned topic. The questionnaire attached is meant to gather information for this study. All information given will be treated with utmost confidentiality and privacy. Name or any other form of identity shall not be required by any individual when filling out questionnaire. You are kindly requested to respond to all items in the questionnaire in open honesty. Your positive response will be highly appreciated.

Thank you in advance for your cooperation.

Yours sincerely,

MIRITI GERALD JULIUS
APPENDIX B: QUESTIONNAIRE FOR TEACHERS

The purpose of the questionnaire is to solicit information on the Effects of Teacher Quality on KCSE performance of students in public secondary schools in Maara sub County. You are asked to participate in this study by responding to this questionnaire. Be honest in giving your responses. Confidentiality will be also assured in your identities. Please respond to all the items

A: Background information

1. Gender
   - Male [ ]
   - Female [ ]

2. Age bracket
   - 22-30 years [ ]
   - 31-40 years [ ]
   - 41-49 years [ ]
   - 50 years and above [ ]

3. Highest education level
   - Doctorate [ ]
   - Masters [ ]
   - Bachelors [ ]
   - Diploma [ ]

4. How long have you been in this school?
   - 1-5 years [ ]
   - 6-10 years [ ]
   - Above 10 years [ ]
Section B Teachers job satisfaction on students' performance in KCSE

5. In the following statements indicate the extent to which you agree with the statements

**Key:** SA Strongly Agree = 5 points A Agree = 2 points U Undecided = 4 points D Disagree = 1 point SD Strongly Disagree = 3 points

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am given incentives for good academic performance</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>The purpose of teaching makes me work hard</td>
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<td>I know what results are expected from me</td>
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<td>I have a lot of work which is burdening</td>
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<td>I regularly receive recognition or praise for good work</td>
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<td>I feel very happy when my students perform better</td>
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<td>I am satisfied with the availability of teaching and learning resources</td>
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</table>

6. Your overall level of satisfaction with your work

Highly satisfied [ ] = 5 points
Moderately satisfied [ ] = 4 points
Slightly satisfied [ ] = 3 points
Moderately dissatisfied [ ] = 2 points
Highly dissatisfied [ ] = 1 point
Section C: Motivation on students’ performance in KCSE

7. Does teachers’ motivation influence students performance in KCSE?
   Yes [ ] No [ ]

8. In the following statements indicate the extent to which you agree with the statements
   
   Key: SA Strongly Agree = 5 points A Agree = 2 points U Undecided = 4 points D Disagree = 1 point SD Strongly Disagree = 3 points

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>My performance is discussed often to check on progress</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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<tr>
<td>The school provides meals for its teachers</td>
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<td>The school has housing facilities for teachers</td>
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<td>The principal is concerned about my social welfare</td>
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<tr>
<td>My fellow teachers attend my social functions</td>
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<tr>
<td>The teaching staff usually has motivation trips and retreats at least once annually.</td>
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</table>

Section D. Teacher professional experience on students’ performance in KCSE examinations

9. Does professional experience of the teachers affect academic performance?
   Yes [ ] No [ ]
10. In the following statements indicate the extent to which you agree with the statements

Key: SA Strongly Agree =5 points  A Agree =2 points U Undecided =4 points D Disagree=1 point  SD Strongly Disagree =3 points

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with experienced teachers perform well in KCSE</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Experienced teachers are effective</td>
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<tr>
<td>I have opportunity to utilize their skills and talents</td>
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<tr>
<td>Professional development help me to become empowered to work harder</td>
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<tr>
<td>Professional development is a form of teacher performance</td>
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<tr>
<td>Students with experienced teachers perform well in KCSE</td>
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</tbody>
</table>

Section E: strategies that can be employed to improve performance in mathematics in public secondary schools

What are the strategies that can be employed to improve performance in mathematics in public secondary schools?
APPENDIX C: QUESTIONNAIRE FOR STUDENTS

The purpose of the questionnaire is to solicit information on the Effects of teacher Quality on KCSE performance of students in public secondary schools in Maara sub County. You are asked to participate in this study by responding to this questionnaire. Be honest in giving your responses. Confidentiality will be also assured in your identities. Please respond to all the items

Please tick or fill in the blank spaces as appropriate.

Section A: Demographic information

1. State your age

2. State your gender
   Male [ ]   Female [ ]

Section B: Perceived Supportiveness of the learning environment

This questionnaire requires you to indicate your feeling on the learning environment in your school. You are advised to tick the answer that suites your judgment. There are no wrong or right answers.
Please choose from the choices indicated;

Very true (VT) = 5 point, True (T) = 4 points, Somehow true (ST) = 3 points, Not true (NT) = 2 points Not true at all (NTA) = 1 point

<table>
<thead>
<tr>
<th>Statement</th>
<th>NTA</th>
<th>NT</th>
<th>ST</th>
<th>T</th>
<th>VT</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel free to ask any questions to my teachers</td>
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<tr>
<td>My teachers are friendly</td>
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<tr>
<td>My teachers teach very well</td>
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<tr>
<td>My teachers create extra time for remedial teaching</td>
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<tr>
<td>New teachers teach better than old teaches</td>
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<tr>
<td>I perform better in subjects taught by much new teachers than older ones</td>
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<td>My teachers use varied teaching methods</td>
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<tr>
<td>My teachers are very committed to their work</td>
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<tr>
<td>Teachers rarely miss lesson</td>
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<tr>
<td>Missed lessons are usually recovered</td>
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<tr>
<td>Subject teachers give an opportunity to actively participate in class by answering questions</td>
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<tr>
<td>Remedial teaching is offered to me when I have problem in a given topic</td>
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<td>I feel I can perform very well KSCE if I continue getting the support of teachers</td>
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</tbody>
</table>
**APPENDIX D: INTERVIEW SCHEDULE FOR HEADTEACHERS**

<table>
<thead>
<tr>
<th>Objective</th>
<th>General Question</th>
<th>Probing questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>To analyze the extent to which teacher job satisfaction affects the students performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County</td>
<td>What would you say about satisfaction levels of your teachers?</td>
<td>How does teacher job satisfaction affects the performance of teachers in your school?</td>
</tr>
<tr>
<td>To find out how teacher motivation affects the students performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County</td>
<td>In what ways do you motivate teachers in public day Secondary schools?</td>
<td>Do the teachers in your school feel motivated in their work?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How teacher motivations affect the teacher's performance?</td>
</tr>
<tr>
<td>To establish the relationship between teacher experience and performance in mathematics in the public secondary schools in Maara sub-county, Tharaka Nithi County</td>
<td>In your opinion, are the mathematics teachers in your school experienced in mathematics teaching?</td>
<td>How does teacher experience affect student's performance?</td>
</tr>
<tr>
<td>To establish the strategies that can be employed to improve performance in mathematics in public secondary schools in Maara sub-county, Tharaka Nithi County</td>
<td>What are the strategies that can be employed to improve performance in mathematics in your school?</td>
<td>What are the strategies that can be employed to improve performance in mathematics in your school?</td>
</tr>
</tbody>
</table>
Our Ref: E55/CE/23767/2013

DATE: 21st September, 2015

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION MIRITI GERALD JULIUS – REG. NO. E55/CE/23767/2013

I write to introduce Mr. Miriti Gerald Julius who is a Postgraduate Student of this University. He is registered for M.Ed degree programme in the Department of Educational Management Policy and Curriculum Studies.

Mr. Miriti intends to conduct research for a M.Ed project proposal entitled, “Effects of Teacher Quality on Students Performance in Mathematics in Secondary Schools in Tharaka Nithi County, Kenya”.

Any assistance given will be highly appreciated.

Yours faithfully,

MRS. LUCY N. MBAABU
FOR: DEAN, GRADUATE SCHOOL
APPENDIXF: RESEARCH AUTHORIZATION

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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

Ref: No. NACOSTI/P/15/73750/8483

Date:
17th November, 2015

Dr. Gerald Miriti Julius
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "Effects of teacher quality on students performance in mathematics in secondary schools in Maara Sub County, Tharaka Nithi County, Kenya," I am pleased to inform you that you have been authorized to undertake research in Uasin Tharaka Nithi County for a period ending 15th November, 2016.

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

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

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

Copy to:

The County Commissioner
Tharaka Nithi County.

The County Director of Education
Tharaka Nithi County.
APPENDIX G: RESEARCH CLEARANCE

THIS IS TO CERTIFY THAT:
DR. GERALD MIRTI JULIUS of KENYATTA UNIVERSITY, 0-60401 Chogoria, has been permitted to conduct research in Tharaka-Nithi County

on the topic: EFFECTS OF TEACHER QUALITY ON STUDENTS PERFORMANCE IN MATHEMATICS IN SECONDARY SCHOOLS IN MAARA SUBCOUNTY, THARAKA NITHI COUNTY, KENYA

for the period ending: 15th November, 2016

Applicant's Signature

Permit No: NACOSTI/P/15/73750/8483
Date Of Issue: 17th November, 2015
Fee Received: Ksh 1,000

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 7240

CONDITIONS: see back page

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