DETERMINANTS OF STUDENTS' ACADEMIC PERFORMANCE IN MATHEMATICS IN SELECTED SECONDARY SCHOOLS IN NYAMIRA SOUTH DISTRICT OF KENYA

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A   Thesis

Presented to the School of

Postgraduate Studies and Research

Kampala International University

Kampala, Uganda

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In Partial Fulfillment of the Requirements for the Degree of

Masters in Educational Management
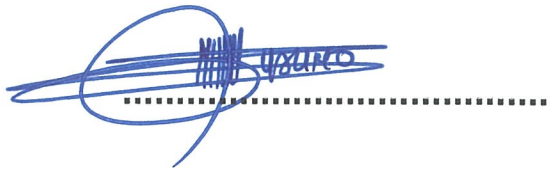And Administration

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MED/20277/81/DF

August, 2010

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DECLARATION

"This thesis is my original work and has not been presented for a Degree or any other academic ward in any University or Institution of Learning"

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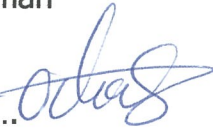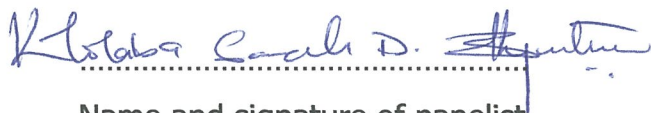**THOMAS NYAUMA SURUMO**

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APPROVAL SHEET

This thesis entitled "Determinants of Students' Academic Performance in Mathematics in Selected Secondary Schools in Nyamira South District of Kenya" prepared and submitted by Thomas Nyauma Surumo in partial fulfillment of the requirements for the degree of Masters in Educational Administration and Management has been examined and approved by the panel on oral examination with a grade of passed.

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APPROVAL

I hereby present my report for approval.

By Supervisor:

Signature...

<div align="center">MR. JOSEPH OCHAN</div>

Remarks...

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Date...

DEDICATION

This work is dedicated to my wife Esther for her support during this period of study not forgetting all those who constantly wished me success.

ACKNOWLEDGEMENT

I owe a lot of appreciation to all those who assisted me in carrying out this research. I am grateful to Dr. Joseph Ochan who inspired me to dig deeper into the core of the matter. His kind criticism, patience and understanding, assisted me a great deal.

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Finally, I would like to thank all my respondents and those who cooperated with me within this work would not have been possible.

ABSTRACT

The purpose of this study was to establish the Determinants of Students' Academic Performance in Mathematics in Selected Secondary Schools in Nyamira South District of Kenya. The specific objectives of the study were to determine if discipline affects the students' academic performance in Mathematics in selected secondary schools of Nyamira South District, to determine if teachers' qualification and experience affect students' academic performance in mathematics in selected secondary schools in Nyamira South District; and to determine if school facilities affect the students' academic performance in mathematics in selected secondary schools in Nyamira South District. The methods used for data collection were questionnaires and interview guides to students, teachers and head teachers of the secondary schools involved in the study. In chapter four, presentation analysis and interpretation of data was done in relation to the study objectives and research questions. This study found out that 36.4% of the mathematics teachers were graduates, 59.7% were diploma holders and 3.9% were untrained. 34.6% of the teachers and students responded that facilities were adequate and 65.4% commented that facilities were inadequate. Based on these findings it was observed that teachers' qualifications and experience, discipline of students; and school facilities have a direct impact on the students' academic performance in Mathematics. In chapter five, findings, conclusions and recommendations were attempted. The researcher suggested recommendations that the Government should provide more teaching - learning facilities in schools to make the learning-teaching environment more attractive to students and teachers and that some of the schools should be made partly day and partly boarding to cater for students who come from far and can afford boarding fees. This could reduce on late coming, dodging lessons and escaping from school among other recommendations.

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CHAPTER ONE

THE PROBLEM AND ITS SCOPE

Background to the study

Even though Mathematics and its applications are so important in everyday life and in medical profession, its performance in Kenya Certificate of Secondary Education (K.C.S.E.) continues to be poor. It is a matter of concern to both the government and the general public that students continue to perform very poorly in mathematics at KCSE level.

Table 1: Break down of KCSE performance in mathematics in Nyamira South District (2005-2009)

YEAR	ENTRY	A to B+	B to C+	C to D+	D to E	MSS
2005	6667	240	607	978	4842	1.24
2006	7172	283	442	884	5563	2.738
2007	7454	281	480	763	5930	2.62
2008	8208	318	599	954	6336	2.756
2009	9297	215	394	1060	7556	2.44
TOTAL	38798	1337	2522	4639	30227	2.68

Source: Nyamira South DEO's Office.

The current education system in Kenya is designed to achieve specific national goals. The recommendations of September 1981 of Professor Mackay's commission, saw the introduction of the 8-4-4 System. Kenya is aiming to become a middle income and a fully industrialized by the year 2030. If this goal is to be achieved, it means better performance in sciences, of which Mathematics is part and parcel.

Many people have done research in students' performance in mathematics and have come up with different possibilities that could be leading to poor performance in mathematics. They have come up with suggestions on

how to overcome this problem and it is not clear why up to now the situation has not changed. Most suggestions given by researchers appear not to be effective. Ways and means must be found to ensure that the parties concerned know where the problem lies.

The government of Kenya attaches great importance to the development of the education sector, for it recognizes that education is a powerful tool for transformation of society (Education White Paper, 1992). Education plays a key role in achieving moral, intellectual, ideological, cultural and social development of the people in society, as well as the national goals of unity, democracy, economic progress and security of all its citizens. Emphasis is put on the role of education in liberating people from the vicious cycle of poverty, dependence, ignorance, disease and indignity, and in the process of building a self reliant nation with a sustained independent economy.

The government notes with concern the problems it faces in its effort to cause rapid development of education. The quality of education has been seriously eroded at all levels due to civil strife and economic decline. Schools are ill-equipped, instructional materials are in short supply, teachers are poorly remunerated and many of them are unqualified or incompetent. (Education White Paper, 1992).

Although the government has undisputed need for bringing about the desired changes and improvement in the system of education, it is at this stage it is having severe resource constraints. It's therefore quite a challenging task to cater for the development needs of education. The Kenyan Human Rights Commission Report (KHRCR, 1999) notes that there are not enough secondary schools to absorb all children who qualify for secondary education. Many school administrators, overwhelmed with pressure from parents, admit large numbers of students which do not match with the available facilities and teachers. A lot of discipline problems have been reported in schools due to unmanageable numbers.

In the UNESCO Magazine (2001), it's argued that education has become a powerful catalyst for change at all levels of society but its characteristics and form present new challenges and policies. The challenges are manifested in form of educational accessibility, relevance, equity, quality and its governance.

Chaube (2000), explained that it's a right of the individual to receive at least primary and secondary education which is important in democratization of any society. Secondary education is designed to provide children with the academic knowledge and skills they need to function successfully in society, to prepare them to pursue further education, to enter the work force and to be responsible active citizens.

If students do not receive the knowledge and skills they need to be productive, then the schools have not succeeded in their mission (US Department of Education, 1991). It's upon this background that the study will be undertaken to investigate the influence of the qualification of teachers, discipline of students and school facilities on students' academic performance in Mathematics.

Statement of the problem

Table 1: Break down of KCSE performance in mathematics in Nyamira South District (2005-2009)

YEAR	ENTRY	A to B+	B to C+	C to D+	D to E	MSS
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TOTAL	38798	1337	2522	4639	30227	2.68

Source: Nyamira South DEO's Office.

The table above reveals a sad reality as 77.9% of the total number of students who have sat for KCSE in the last 5 years in Nyamira South District

failed in mathematics. They obtained moderate or low grades of between D and E. According to data obtained from Nyamira South District Education Office (table 1 above), the performance of mathematics is wanting as reflected in the poor performance of students in KCSE results of all the previous years. This therefore necessitates the need to carry out the study into the factors responsible for the poor academic performance of students in mathematics.

To be admitted to any of the glamorous careers such as engineering, medicine, pharmacy, architecture and computer science offered in the Kenyan public universities, a student must obtain grade B+ and above. Table one above reveals that only 2.04% of the total number of students who sat for KCSE for the years 2005-2009 managed to be admitted to the glamorous careers in the Kenyan public universities.

Purpose of the Study

The purpose of the study was to investigate the causes of poor performance in Mathematics in selected secondary schools of Nyamira South District.

Research Objectives

1. To determine the effect of students' discipline on their academic performance in Mathematics in selected secondary schools in Nyamira South District.
2. To determine the effect of teachers' qualification and experience on the students' academic performance in Mathematics in selected secondary schools in Nyamira South District.
3. To determine the effect of school facilities on the students' academic performance in Mathematics in selected secondary schools in Nyamira South District.

Research questions

1. What is the relationship between student discipline and the students' academic performance in Mathematics in selected secondary schools in Nyamira South District?

2. What is the relationship between teacher qualification and experience and the students' academic performance in Mathematics in selected secondary schools in Nyamira South District?

3. What is the relationship between school facilities and the students' academic performance in Mathematics in selected secondary schools in Nyamira South District?

Scope of the study

The study investigated the factors affecting students' academic performance in Mathematics in selected secondary schools of Nyamira South District. Nyamira South district was split from the larger Nyamira District. The district has a population of 159673 (2009 census). Its capital town is Nyamira, with an urban population of around 6000 (2009 census). The study was limited to the objectives of the study and took place for a period of four months starting on April to August 2010.

Significance of the study

This research was useful in the following ways:

The researcher will benefit by presenting the report of the study findings to the school of postgraduate studies in partial fulfilment of the award of a degree of masters in educational administration and management.

Provide information that can be used by Ministry of Education Science and Technology (MOEST) policy makers to identify teacher factors that can be associated more with high performance in mathematics among students.

Enable policy makers make provision for improving teacher qualification with increased knowledge on the relationship between teacher qualification and academic performance in mathematics among students in KCSE. Provide an objective evaluation of the teacher qualification necessary for high achievement and provide a meaningful basis for training, retraining and or in servicing of the teachers for improvement in achievement so as to reduce wastage through repetition and to increase enrolment in the science courses which will increase efficiencies, promote industrialization and increase productivity of the country.

Increase awareness of the Head teachers, Board of Governors (BOG), Parents Teachers Association (PTA) and Teachers on teacher factors associated with high performance in mathematics among students.

Operational Definitions of Key Terms

Academic Performance: Refers to the marks obtained by the student in a continuous assessment test or in any timed exam.

Research Instruments: Refers to means that are used to gather data from the field by the researcher for example questionnaires and interview schedules.

Respondents: People from whom the data is to be gathered by the researcher.

Transmittal Letter: A letter sent to the teacher in charge of a school to allow the researcher conduct a research.

Questionnaire: Is a document that contains a list of questions which will be given to the respondents to fill in for the researchers' information.

Introduction Letter: Refers to a letter given to the researcher from the director of the institute of Open and Distance Learning to allow him conduct a research.

Discipline: The ability control your own behavior

Mathematics: The study or use of numbers and shapes to calculate, represent or describe things.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This chapter reviews literature related to this study. The study is about the causes of poor performance in mathematics.

Conceptual framework

Relationship among variables of the study.

STUDENTS DISCIPLINE
- Late coming
- Dodging classes
- Escaping from school
- Disrespect for teachers
- Noise making
- Drug abuse
- Vandalism
- Immorality

DETERMINANTS

TEACHER QUALIFICATION AND EXPERIENCE
- Degree holders
- Diploma holders
- Certificate holders
- Untrained teachers
- Others

STUDENTS ACADEMIC PERFORMANCE IN MATHEMATICS

SCHOOL FACILITIES
- Text books
- School laboratories
- Library
- Lab equipments
- Play grounds

Discipline of Students and Academic Performance in Mathematics

In recent years, policy makers, educators, parents and students increasingly have expressed concern about the incidence of school related criminal/behaviour. Although concern has grown, several researchers show that violent behaviours, smoking, and theft have increased especially in secondary schools (Kasozi, 1997). School discipline has a diversity of connotations, as may people perceive it to mean many different things. According to Kasozi (1997) discipline refers to a situation of remaining inside legal bounds of law as laid down by the school administration.

Scheviakore (1955) and Musaazi (1982), emphasize the need for orderliness in the school. They emphasize that students, teachers, school employees and administrators should all be orderly as school discipline and good academic performance is a collective responsibility and a prerequisite for school success. The Kenya Education Policy Review Commission Report (KEPRCR, 1992) clearly spells out discipline as one of the aims and objectives of education at all levels of the education system.

According to Mafabi (1995), discipline is the underlying factor in all school activities; they cannot be pursued without it. In the absence of discipline, there is anarchy; a situation which makes it impossible for a school's goals to be achieved. Most of these writers emphasize the need for discipline as a prerequisite for school success; however, they do not explicitly illustrate how discipline can be enforced in the school setting. School authorities should not only stress the importance of discipline, they also need to put mechanisms of enforcing it.

Okumbe (1998), describes discipline as the action by management to enforce organizational standards. He stresses that all members of educational organization are required to strictly adhere to the various behavioral patterns necessary for maximum performance. In support of this, Chaube (2000) contends that an opinion may be formed about the school by observing the

discipline among students. It is necessary for every school to enforce certain rules of conduct to ensure discipline is essential if rules are to be implemented.

According to Musaazi (1982), student discipline means that students are provided with an opportunity to exercise self control to solve school problems, to learn and to promote the welfare of the school. Ssekamwa (2000), in agreement with Musaazi adds that discipline is the development of self worth, self control, respect for self and others and the adherence to the school routine set up in terms of schedules and school regulations. It is very important for school authorities to give freedom to the students to develop the self esteem and exercise self control. There are many school authorities who use this approach to enforce discipline in schools. The researcher however feels that this method could be effective for post secondary school students and may not be appropriate for secondary School students. Docking (1980), considers discipline as an important element in the process of socialization, formation of character, a system of controls, which enables teaching to take place as conceptually related to the process of education.

According to Mafabi et al (1995), symptoms of indiscipline include; habitual absenteeism from class and from school as a whole, late coming, telling lies, rudeness, vandalism, aggression, smoking and drinking while at school; evading school activities, bullying of new students, indecent forms of dressing. These, however, do not explain how these behaviours affect academic performance because there are many students involved in these kinds of bahaviour but perform well.

Many students attending public schools exhibit discipline problems such as disruptive classroom behaviour, vandalism, bullying, and violence. Establishing effective discipline practices is critical to ensure academic success and to provide a safe learning environment. In this article, we describe the effects of whole-school positive behaviour support on discipline problems and academic outcomes of students enrolled in an urban elementary school. The whole-school model was designed through technical assistance consultation with teachers that

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emphasized: (1) improving instructional methods; (2) formulating behavioural expectations; (3) increasing classroom activity engagement; (4) reinforcing positive performance; and (5) monitoring efficacy through data-based evaluation. As compared to a pre-intervention phase, the whole-school intervention was associated with decreased discipline problems (office referrals and school suspensions) over the course of several academic years. Student academic performance, as measured by standardized tests of reading and mathematics skills, improved contemporaneously with intervention. Issues related to whole-school approaches to student discipline and the contributions of positive behaviour support

Antisocial behaviour, academic underachievement, and poor development of pro-social skills among students attending our nation's public schools remain a concern for educators, parents, and the lay public (Durlak, 1995; National Center for Education Statistics, 2002; Rose & Gallup, 1998; Stage & Quiroz, 1997). Problems such as violence, vandalism, bullying, and similar behaviours create an unsafe learning environment, undermine instruction, and pose a threat to the school population.

Furthermore, early onset of discipline problems in school children predicts later maladjustment (Hawkins, Catalano, & Miller, 1992). Thus, children who engage in antisocial behaviours at a young age are more likely than their non-aggressive peers to respond similarly when older and as adults (Huesmann, Eron, Lefkowitz, & Wälder, 1984; Loeber & Hay, 1997; Moffit, Caspi, Dickson, Silva, & Stanton, 1996; Olweus, 1979). Accordingly, longitudinal research points to large-scale primary and secondary prevention models as the logical intervention foci to influence positive school climate and youth behaviour (Dishion, Patterson, Stodmiller, & Skinner, 1991; Dryfoos, 1990; Kellam, Mayer, Rebok, & Hawkins, 1998; O'Donnell, Hawkins, Catalano, Abbot, & Day, 1995; Sugar, Horner et al., 2000).

The concern about student discipline has produced many intervention and prevention-focused programs to improve character and moral development,

promote exemplary social skills, reduce antisocial behaviours, and strengthen academic competencies (Leff, Power, Manz, Costigan, & Nabors, 2001). Unfortunately, many of these programs have conceptual limitations, were publicized without supporting empirical data, or had minimal to no positive effects when evaluated objectively through randomized controlled trials (Furlong & Morrison, 1994; Tolan & Guerra, 1996; Weisz & Hawley, 1998).

More recently, "second generation" research has identified several evidence-based strategies that have proven effective in school intervention. For example, metaanalyses of more than 800 studies concerned with school discipline problems and challenging behaviours revealed the largest effect sizes for: (1) social skills training; (2) system-wide behavioural intervention; and (3) academic curricula modifications (Gottfredson, 1997; Lipsey, 1991). The first of these approaches, social skills training, promotes social competence by teaching students how to interact more effectively with peers and adults through enhanced conflict resolution, problem solving, negotiation, and friendship building abilities. At the core of this training is reinforcing students positively when they demonstrate these skills in vivo and express improved attitudes and standards of behaviour (Reid, Eddy, Fetrow, & Stoolmiller, 1999; Weissberg & Greenberg, 1997). Importantly, establishing positive social relationships among students and school personnel has been shown to mediate risk factors and facilitate the impact of preventive interventions on youth prosocial development (Dishion et al, 1991; Dryfoos, 1990; Kellam et al., 1998; O'Donnell et al.,1995).

Systems-based behavioural intervention in schools incorporates contemporary principles of positive behaviour support (PBS). Defined broadly, PBS is "the application of positive behavioural intervention and systems to achieve socially important behaviour change" (Sugar, Horner et al., 2000, p. 133). PBS models include the design of individual student behaviour support plans but have, as a primary goal, the implementation of prevention practices that target the entire school population.

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Although this large-scale application of behaviour-change technology encompasses many procedures, the critical components include: (1) setting consensus-driven behaviour expectations; (2) teaching critical interpersonal skills; (3) providing systematic positive reinforcement for meeting and exceeding performance criteria; (4) monitoring intervention efficacy continuously through data collection and analysis; (5) involving all stakeholders in the formulation of discipline practices (students, teachers, administrators, and parents); and (6) reducing and eliminating reactive, punitive, and exclusionary strategies in favour of a proactive, preventive, and skill building orientation (Horner & Sugai, 2000; Nelson, 1996; Taylor-Greene, et al, 1997; Walker, étal., 1996).

Qualification of Teachers and Academic Performance in Mathematics

Various authors have come up with views about the characteristics of competent teachers and benefits of having such teachers as follows:

Craig et al (1998), holds the view that the qualification of the teachers' performance determines the students' achievement. Factors such as the years taken to train teacher, the teachers verbal fluency, subject matter knowledge, having books and materials, knowing how to use them, teacher expectation of pupil performance, time spent on classroom preparation and frequent monitoring of student progress determine the Qualification of performance of a teacher. Regardless of the training, the experience and the preparation undergone, a teacher should have adequate motivation to teach. Lack of incentives in schools and small salaries offered to teachers compel them to work in many places to make ends meet. This renders many teachers ineffective at their work.

The Common Wealth Report (1974), explains teacher competence as having knowledge of child development; of the material to be taught and suitable methods; his skills must enable him to teach; advice and guide his pupils, community and culture with which he is involved; his attitudes should be positive without being aggressive, so that his examples are likely to be followed as he transmits explicitly, and implicitly the national aims and moral and social

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values. In support of this, Konchhar (2000), contends that discipline problems cannot be prevented yet most of them will not arise in the classroom of intelligent, hardworking, teachers who plan their work effectively, motivate their students skillfully and provide a friendly environment.

Rayns (1969), holds the view that, "Teaching is complex and many sided, demanding a variety of human traits and abilities. These may be grouped into two, first those involving the teacher's mental abilities and skills, his understandings of psychological and educational principles and his knowledge of general and specific subject matter to be taught and second; those qualities stemming from the teacher's personality, his interest attitudes and beliefs, his behaviour in working relationships with pupils and other individuals and the like". In line with these views, Brinkerhott and white (1988), argued that teachers have the authority to control what goes on in classrooms and that authority must be established with each separate class. Some teachers are unable to do this; their classes run wild and their students terrorize them.

Anderson, et al (1992), contends that nothing is more critical to the Qualification of school than its staff. Teachers contribute to the whole development of children both inside and outside the classroom and not simply through the transmission of information and skills. Teachers need to interact with children even outside class. This instills confidence among the children in dealing with the teacher and enhances free interaction even in class.

Hargreaves and Fullan (1992), hold the view that on top of having deeper knowledge of and confidence in teaching their subject(s), the teacher should know how to teach mixed ability classes and how to respond to different learning styles of their pupils. It's from the above that many writers give many characteristics and qualities which effective teachers should posses. There are many students who perform well without teachers in some subjects while others with well-qualified teachers perform poorly. The researcher therefore aims at establishing the effect of teacher competence on academic performance of students in secondary schools.

For this reason, researchers have undertaken the task of measuring the Qualification of the teachers leaving the classroom by developing other variables to answer this crucial question, such as examining the degree of change in student performance a particular teacher can create after a year a student spends in his or her classroom.

The good news is that these studies find that the lowest-qualification teachers, as measured by this standard, tend to have higher rates of turnover and the more effective teachers tend to stay. One study finds that teachers ranked at the bottom in terms of effectiveness turn over more than any other group. For example, a teacher ranked in the bottom 10 percent of a Qualification distribution is 13 percent less likely to remain in teaching in the same district the following year than teachers who rank higher (Aaronson, Barrow and Sander 2007).

Another study finds that, on average, teachers who have been shown to increase their students' academic performance stay in the teaching profession longer and are not necessarily more apt to leave lower-performing, poorer schools. Although challenging environments generally increase the likelihood of teacher attrition, those teachers who are deemed more effective are also more likely to stay in these lower-performing schools (Goldhaber, Gross and Player, 2007).

The bad news is that these findings do not hold true for the most-challenging schools. Although effective teachers generally tend to stay in challenging schools, as teachers become more effective, they are more likely to move away from the most-challenging schools to schools with relatively lower concentrations of poverty and higher performance levels (Goldhaber, Gross and Player, 2007). Teachers who work in poor schools, as determined by the proportion of students receiving free and reduced-price lunch, are significantly more likely to leave their school or profession than those who work in wealthier ones. Those teachers who work in high poverty schools have an annual turnover rate of 20 percent, while those in low poverty schools have a rate of 12.9

percent (NCTAF, 2003). Moreover, a MetLife survey finds that teachers "at-risk" of leaving the profession are also more likely to be teaching in urban, low-income schools with high concentrations of minority students (MetLife, 2005). Low funding levels in high-poverty districts generally do not allow schools to offer competitive wages and often contribute to ineffective, bureaucratic recruitment and hiring procedures; challenging work conditions; and inadequate teacher supports (Levin and Quinn, 2003).

The lower turnover rates of effective teachers among challenging schools is encouraging. But students being served by the most-disadvantaged schools should not be neglected; neither should the teachers who have the desire and knowledge to contribute to students' academic achievement, but lack the tools necessary to do so. Instead, systems should be designed to ensure that the best teachers are teaching the students with the highest challenges and that teachers receive the training and support they need to help students succeed.

Facilities in Schools and Academic Performance in Mathematics

The success or failure of secondary schools is measured against the presence or absence of structures and facility provision and management. Nsubuga, (1977), holds the view that an important element of a good school is that of facilities. He emphasizes that a good school should have adequate facilities which help with teachers and pupils to effectively teach and effectively learn in a convenient and comfortable environment.

According to Kochhar (2001), physical facilities contribute a lot to the general atmosphere of the school. He suggests that healthy surroundings, good sanitary arrangement leave little scope for irritation. Adequate library and reading room facilities, special room for different subjects, common room and so will keep the children busy and away from indiscipline.

Musaazi (1982), and Ssekamwa (2000), agree that most programmes of instruction and pupil services require some physical facilities such as school

buildings, school grounds, enough desks, chairs, teaching materials and laboratories needed. The possession of adequate facilities in the school for studying is a characteristic of an effective school. However, there are many students who perform well in schools with limited facilities and there are also many students who perform poorly in schools, which are well facilitated. The researcher therefore aims at carrying out a critical analysis of the connection between academic performance and the availability of facilities in secondary schools.

CHAPTER THREE

METHODOLOGY

Introduction

This chapter explains the research design that the researcher used, the research environment from which research was carried out and methods of selection of respondents. A research design is a plan, structure and strategy of investigation conceived so as to obtain answers to a research question. It sets up the framework for study and it is a blue print of the researcher. This chapter also explains the methods used to collect, process and analyze data.

Research Design

This study followed a descriptive survey design to investigate the determinants of student's academic performance in mathematics in selected secondary schools in Nyamira South District. This research design is an exploratory study that investigated determinants of student's academic performance in mathematics in selected secondary schools in Nyamira South District. The researcher used this research design to examine actions as they are or as they happen rather than manipulating the variables.

A descriptive survey design is broad based and enabled the researcher to gather systematically factual information from diverse categories of respondents for decision making. It entails collecting information by interviewing or administering a questionnaire to a sample of individuals. The researcher used this method for collecting information about respondents' attitudes, opinions and other issues regarding student's academic performance in mathematics in selected secondary schools in Nyamira South District of Kenya.

Research Population

Nyamira South District has a total student population of 27,000 of whom 11,400 students are fourth formers. There are 45 secondary schools composed of 3 single-sex boarding schools, 18 partly day and partly boarding secondary schools and mixed and 24 mixed day secondary schools. The research population included the 27,000 students in the 45 secondary schools.

Sample Size

Sampling is a procedure in which a fraction of a group (as sample) is selected carefully to represent the research population about which generalizations will be made. Generalizations to the sample can be applied to the research population. Dealing with the research population involves a tremendous amount of time and resources. The researcher therefore selected 110 fourth formers from 10 secondary schools to represent 27000 students spread out in 45 secondary schools in Nyamira South District of Kenya. A few of the fourth formers in the remaining secondary schools were used for pre-testing the research instruments. From each of the 10 selected secondary schools the head teacher, all mathematics teachers and one intact class (form four) were selected for the study.

Sample Procedure

The researcher used both stratified and purposive sampling techniques to select students for the study. The researcher used stratified sampling on the basis of 3 categories of schools in the district. The 45 secondary schools in Nyamira South District are composed of 3 single-sex secondary schools, 18 partly day and partly boarding secondary schools and 21 mixed secondary schools. The researcher selected 110 students from these 3 categories of schools for the study.

Using stratified random sampling, the researcher secured a representative group of students which enabled him to gain information about the determinants

of student's academic performance in mathematics in Nyamira South District of Kenya. The researcher used stratified sampling technique because he found it impossible to research on the entire student population.

The researcher also applied purposive sampling technique to select mathematics teachers from the selected secondary schools for the study. Purposive sampling technique is used to select students for the study by handpicking them on the basis of his own judgement. The selected secondary schools are a representative of the entire student population in the district. The technique allowed the researcher to use cases of that have the required information with respect to the objectives of the study.

3.4 Research Instruments

The research instruments used to obtain the data during the study were composed of the questionnaire for students, questionnaire for mathematics teachers, questionnaire for heads of departments and interview schedule for head teachers. The questionnaire is a document containing a list of questions related to the topic being researched on. The questionnaire enabled the researcher to obtain first hand information from the respondents. Using the questionnaire the researcher was able to seek clarification of unclear responses by asking supplementary questions. Further the questionnaires ensured anonymity of the respondents hence helped them to be free and were able to give honest answers. The questionnaire also allowed the respondents time to ponder on the questions that would require reflection before answering them.

The researcher also used the interview schedules to obtain data from the head teachers of the schools involved in the study. An interview schedule is a set of questions that the researcher uses when interviewing. This made it possible for the researcher to obtain data required to meet specific objectives of the study. Using interview schedules, the researcher was able to standardize the interview situation by asking the same questions in the same manner.

Document Analysis

Government policy documents on performance in mathematics and academic results in mathematics from the respective secondary schools.

Validity and Reliability of the Instruments

Validity is the degree to which results from the analysis of the data actually represents the phenomenon under study. The researcher consulted the supervisor to review the contents of the instrument to determine whether they can solicit for the anticipated data as per the objectives of the study. The researcher constructed the instruments and took them to the supervisor for review. He then revised the instruments based on the recommendations of the supervisor. Finally, piloting was done to identify items in the research instruments that were ambiguous in eliciting the relevant information which were then modified in tuning up the questionnaire in readiness for data collection.

On the other hand reliability was achieved by pre-testing of the questionnaire technique. The researcher did this by going to the field and administering the questionnaires to 6 potential respondents who did not participate in the final study. This tested the content, language and response format of the questionnaire. The researcher also adapted the questionnaire and modified it from the one used in previous similar studies.

Data Gathering Procedures

The researcher started with writing the proposal. After the proposal was approved, he went on to pre-test the research instruments. The researcher presented an introductory letter from Kampala International University outlining the objectives of the study to the Nyamira South District Education Officer for endorsement. The researcher proceeded to the head teachers of the selected secondary schools with copies of the endorsed introductory letter seeking permission to carry out the research in their individual schools. After which the researcher went on to collect data using the instruments from the respondents

by himself moving from one school to another. He did the data analysis and interpretation when the work of collecting data was done. Finally the researcher submitted the report of the study findings to the School of Post Graduate Studies for the fulfillment of the award of Degree of Masters in Educational Administration and Management (MED), for oral examination.

Data Analysis

A t - test data analysis was used for comparing the relationship between the variables of the study. t-test data analysis is a special case of anova. The researcher used t-test analysis to test whether there are significant differences between the variables of the study. The researcher used this method to compare the difference between variables of the study.

Ethical Considerations

The researcher received an introductory letter from the School of Postgraduate Studies, Distance Learning programme, Kampala International University, stipulating the purpose of research. The researcher received a letter from the DEO Nyamira South District to the head teachers of the schools involved in the study requesting them to allow the researcher conduct a research in their respective schools. The researcher also wrote a letter to the head teachers of the selected secondary schools seeking permission to conduct a reasearch in their schools. There was concern taken about the welfare of respondents including their mental, physical health and safety, avoiding embarrassments, guilt, discomfort and risks to them, in addition their names and any other personal identification of the respondents were kept confidential and made known to them in the beginning of the exercise.

Limitations of the Study

Public transport to various parts of the district was very inefficient and the researcher took a long time to reach the respondents. The researcher had to

walk long distances from one school to the next. There was lack of cooperation in providing necessary information to the researcher as some questionnaires were returned unfilled. April and May was a rainy season in Kenya. The researcher found it difficult to collect data in such conditions. Some respondents appeared hostile because many people in Kenya are not used to researchers interviewing them.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Discipline in Schools and Academic Performance in Mathematics.

When the students and teachers were requested to respond to the question on what they considered to be the level of discipline in their schools, the following were the results.

Table 1: The level of discipline in the schools

Response	Number of respondents	Percentage (%)
Very high	24	16.1
High	30	20.1
Moderate	78	52.3
Low	17	11.4
Total	**149**	**100**

Source: Field data 2010

Table 1 above reveals that Students and teachers had different views about the level of discipline in their schools. However, quite a small number responded that the level of discipline was very high or high which represented 36.2% of the total number of respondents. Majority were of the opinion that discipline was moderate or low 63.8%.

The responses about the level of academic performance in schools judged at national level were as follows:

Table 2: Level of Academic Performance in Mathematics in the Schools

Response	Number of respondents	Percentage (%)
Very high	16	10.7
High	41	27.5
Moderate	77	51.6
Low	15	10.0
Total	149	100

Source: Field data 2010

The results were statistically significant. The students and teachers had different views on the level of academic performance of their schools judged at national level. Those who stated that performance was very high or high were 38.3% while those who were of the view that performance was moderate or low were 61.7%. These meant that the majority of students and teachers recognize the importance of discipline visa avis academic performance.

Table 3: Combining table 1 and 2 the results are as follows.

Response	Level of Discipline in School	Academic Performance at National Level
Very high	24	16
High	30	41
Moderate	78	77
Low	17	15
Total	149	149

Source: Field data 2010

From table 3 above, the researcher established that responses on the level of discipline and academic performance at the national level moved in the same direction. A big number of respondents whose responses on moderate and

low discipline tallies with an equally big number of responses on academic performance. This implies that when discipline is moderate or low (63.8%), academic performance is equally moderate or low (61.7%). Conversely when discipline is very high or high (36.2%) academic performance is equally very high or high (38.3%).

Students were asked to state the most common types of indiscipline in their schools and the responses were as follows;

Table 4: Types of indiscipline in schools

Response	frequency	Percentage(%)
Late coming	62	40.1
Dodging classes	46	30.0
Escaping from school	39	25.3
Disrespect for teachers	6	3.6
Others e.g. Vandalism, Immorality, Bullying, Drug Abuse, Noise Making.	2	1.0
Total	**155**	**100**

Source: Field data 2010

The researcher established that late coming, escaping from schools, dodging classes are indiscipline cases common in the schools. From Table 4, it can be observed that most types of indiscipline are associated with deviance from school routine which is represented by 95.4%. This includes late coming (40.1%), dodging classes (30%), and escaping from school (25.3%). Only 4.6% are other types of indiscipline. Students miss a lot of teaching-learning activities going on in schools and this directly affects their academic performances.

Table 5: t-test on the effects of the discipline on students' academic performance

Parameters	Mean	SD	SE	t-ratio	P
Performance	34	1.87	.134		
Discipline	24	1.71	.121	-5.820	.000

Source: Field data 2010

Table 5 above reveals that the mean is 34 and 24 while the standard deviation is 1.87 and 1.71 for performance of students and discipline respectively. It means that the better the students' discipline, the better the students' academic performance and vice-versa. Thus, students' academic performance is greatly influenced by their discipline at school.

Qualification of Teachers and Academic Performance in Mathematics

To establish the effect of qualification of teachers on the students' academic performance in the schools, a number of items were included in the questionnaire that required head teachers to state the teachers in each school and their qualification.

Table 6: Qualification of Mathematics Teachers

School	Graduate Teachers	Diploma Teachers	Untrained Teachers	Total
A	10(40%)	15(60%)	-	25(32.5%)
B	10(52.6%)	9(47.4%)	-	19(24.7%)
C	1(8.3%)	9(75%)	2(16.7%)	12(15.6%)
D	8(38.1%)	13(61.9%)	1(4.8%)	21(27.3%)
Total	28(36.4%)	46(59.7%)	3(3.9%)	77(100%)

Source: Field data 2010

According to EPRCR (1992), both graduate and diploma teachers are qualified to teach secondary schools. Table 6 above reveals that only 3.9% of mathematics teachers do not have the teaching qualification (untrained teachers) 91.6% of the teachers have the right qualifications to teach mathematics in selected secondary schools in Nyamira south district. However, all the four head teachers pointed out that although the available teachers are qualified they are not enough to effectively handle the large numbers of students.

Responses about the experience of teachers were as follows;

Table 7: Experience of Mathematics Teachers

Response	Frequency	Percentage (%)
Less than 2 yrs	43	55.8
3-5yrs	10	13.0
6-8yrs	9	11.7
Above 8yrs	15	19.5
Total	**77**	**100**

Source: Field data 2010

Table 7 above reveals that 55.8% of the teachers had less than 2 years of experience, 19.5% had above 8 years of experience, 13% had between 3 and 5 years of experience while 11.7% had between 6 and 8 years of experience.

The questionnaires for heads of departments required them to assess their teachers in as far as quality of teaching is concerned. The responses were in table 8 below;

Table 8: Rating of Heads of Departments about Mathematics Teachers

Item	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
Preparation of schemes of work	11	30	2	1	44
Giving exercises	12	28	2	2	44
Marking exercises	9	14	21	0	44
Making corrections with students	9	33	2	0	44
Completion of the syllabus	5	32	5	2	44
Total	**46**	**137**	**32**	**5**	**120**

Source: Field data 2010

Table 8 above reveals that the responses of Heads of Departments about the performance of teachers in the four schools. 93.2% of the Heads of Department were of the view that teachers make preparations for teaching while 6.8% commented that teachers don't make adequate preparations for teaching.

Students were also asked to assess the quality of teaching in their schools. The results are shown in table 9 below;

Table 9: Students' Rating of Mathematics Teachers' Performance

Response	Strongly Agree	Agree	Disagree	Strongly Disagree	Total	Percentage
Explanation of subject matter concepts	41	54	9	1	105	20
Giving exercises	25	53	25	2	105	20
Marking exercises	40	46	17	2	105	20
Making corrections	20	56	22	7	105	20
Free interaction with students	31	41	20	13	105	20
Total	**157**	**250**	**93**	**25**	**525**	**100**

Source: Field data 2010

Table 9 above reveals that 90.48% of the students were of the view that teachers explain the subject matter concepts thoroughly on the other hand 9.52% responded that the explanations of subject concepts were not clear. 74.29% indicate that teachers give exercises in class while 25.71% were of the view that teachers don't give exercises in class. Also, students revealed that 81.9% of the teachers mark exercises while 18.1% do not mark exercises. 72.4% of the students further held the view that teacher make corrections after marking the exercises while only 27.6% did not. 68.6% of the students held the view that teachers have a free interaction with students while 31.4% did not

have a free interaction with students. This therefore means that students were satisfied with the quality of teaching.

Table 10: t-test on the Effects of the Qualification of Teaching Personnel on Students' Academic Performance

Parameters	Mean	SD	SE	t-ratio	P
Performance	32	1.85	.131		
Qualification of teaching personnel	26	1.74	.123	-5.819	.000

Source: Field data 2010

Table 10 above reveals that the mean is 32 and 26 while the standard deviation is 1.85 and 1.74 for performance of students and qualification of teaching personnel in both private and public secondary schools respectively. It means that the higher the qualification of the teaching personnel, the better the students' academic performance and vice-versa. Thus, students' academic performance is greatly influenced by the qualification of teaching personnel in secondary schools

Facilities in Schools and Academic Performance in Mathematics

The students, head teachers and heads of department were requested to rate the adequacy of facilities in that schools for teaching and learning. The results were summarized and presented in the table 11 below.

Table 12: t-test on the Effects of Facilities in School on Students' Academic Performance

Parameters	Mean	SD	SE	t-ratio	P
Performance	34	1.87	.134		
Facilities in school	24	1.71	.121	-5.820	.000

Source: Field data 2010

Table 12 above reveals that the mean is 34 and 24 while the standard deviation is 1.87 and 1.71 for performance of students and facilities in school respectively. It means that the better the facilities in school, the better the students' academic performance and vice-versa. Thus, students' academic performance is greatly influenced by the school facilities at school. From the questionnaire responses, interviews and observations, there are limited facilities in schools. Lack of facilities for teaching and learning is negatively affecting the academic performance of these schools.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter deals with the summary of the findings, conclusions and recommendations. These are presented according to each of the objectives for purposes of being systematic.

Summary of findings

Discipline of students and academic performance in Mathematics

Students and teachers were asked about the level of discipline of students in their schools. The respondents had different views about this issue. 36.2% were of the view that discipline was high while 36.8% were of the opinion that discipline was low. The respondents also had varying views about the level of academic performance in their schools. 38.8% were of the view that the level of academic performance was high or very high while 61.7% were of the view that academic performance was moderate or low.

Quality of teachers and Academic performance in Mathematics

The teachers were found to be 36.4% graduate, 59.7% diploma a holders. Only 3.9% were untrained teachers. Therefore 96.1% of the teachers have the required qualifications to teach. 83.18% of the teachers commented that the teaching is done satisfactorily while 16.82% were of the view that the teaching is poorly done. 77.5% of the students had the view that the teachers perform well in class while 22.5% commented that the quality of teaching was not good. The results were therefore statistically significant that teachers perform their work well.

Facilities in schools and Academic performance in Mathematics

Students, teachers and head teachers were asked to rate the adequacy of facilities in their schools. 34.6% responded that facilities were adequate and 68.4% commented that facilities were inadequate.

Conclusions

The following conclusions were generated from the findings of the study. The results obtained indicate that when the students are indiscipline the time for the study is disrupted and wasted. This greatly affects academic performance.

Secondary school teachers in Nyamira South district are qualified and perform their work well. Therefore the poor academic performance is not attributed to the teachers.

The schools in Nyamira South district were found to have limited facilities and this contributes to the poor academic performance. The schools with more facilities obtain better quality results than those with fewer facilities.

Recommendations

As a result of the above conclusions, the researcher finally makes the following recommendations to the various stakeholders.

1. School children should be encouraged to work hard by providing scholarships to the best students in class. This will encourage competition among the students.

2. Some of the schools can be made partly day and partly boarding to cater for students who come from far and can afford boarding fees. This could reduce on late coming and escaping from school.

3. More meetings between school administrators, teachers, students and parents should be organized to sensitize the parents about their roles in disciplining their children.

4. To retain teachers in upcountry schools, government should consider introducing upcountry allowance in the remuneration scheme of teachers.
5. Government should provide more teaching learning facilities in schools to make the learning environment more attractive to students and teachers.
6. Computer facilities with internet should also be provided in schools so that students can access information relevant to their studies and to expose them to what is happening in the world like their counter parts in other schools.

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5. How long have you taught in this school?

a) 1-3yrs ☐   b) 4-6yrs ☐   c) 7-9yrs ☐

d) 10yrs and above ☐

Please indicate the number that is appropriate to you or your situation on the right side boxes using the rates given below;

Strongly agree	Agree	Disagree	Strongly disagree
4	3	2	1

5	Teachers in this school make schemes of work and lesson plans before going to teach.					
6	Teachers in this school give exercises while teaching.					
7	Teachers make corrections in class with students after marking exercises.					
8	Teachers in the school interact freely with students in class.					
9	Students in this school are committed to studies.					
10	Teachers in this school cover the designed syllabus adequately and in time to allow for revision by students.					
11	This school has adequate facilities for teaching and learning.					
12	Teachers in this school make schemes of work and lesson plans before going to teach.					

13. What types of indiscipline commonly occur in this school?

....

....

14. What do you consider to be the cause of indiscipline in this school?

....

....

15. In your view how can the academic performance in your school be improved?

....

APPENDIX II: QUESTIONNAIRE FOR STUDENTS

Dear respondent,

I am a student of Kampala International University carrying out an academic research on the topic "factors affecting academic performance in mathematics in the selected schools of Nyamira South District, Kenya." You have been randomly selected to participate in the study and are therefore kindly requested to provide an appropriate answer by either ticking the best option or give explanation where applicable. The answers provided will only be used for academic purposes and will be treated with utmost confidentiality.

NB: do not write your name anywhere on this paper

Background information

1. Age

   a) 13-15 ☐   b) 16-18   ☐   c) 19-21   ☐

2. Sex

   a) Male ☐   b) Female ☐

3. Class

F.1 ☐   F.2 ☐   F.3   ☐   F. 4 ☐

Please indicate the number that is appropriate to you or your situation on the right side boxes, using the rates given below.

Strongly agree	agree	disagree	Strongly disagree
4	3	2	1

41

(a)   Discipline of students and academic performance

1	Students regard towards school regulations					
2	The level of discipline in our school is low					
3	Teachers concern towards discipline is low					

(b) Facilities in school and academic performance

1	We have adequate furniture in classrooms					
2	We have a library with relevant books we use for academic purposes					
3	The available facilities are adequate for studies					

APPENDIX III: QUESTIONNAIRE FOR TEACHERS

Dear respondent,

Please kindly spare time and respond to the following questions. The information is solely for academic purposes. You are assured that the information given shall be treated with utmost confidentiality therefore do not disclose or write your name on the questionnaire.

1. Age

a) 20 – 25 ⬜   b) 26 – 31 ⬜

c) 32 – 37 ⬜   d) 38 – 43 ⬜

Above 43 ⬜

2. sex

a) Male ⬜   b) Female ⬜

3. Highest qualification attained

    a) Certificate ⬜   b) Diploma ⬜

    c) Degree ⬜   d) Others ⬜

4. State whether you are a trained or untrained teacher

    a) Trained teacher ⬜

    b) Untrained teacher ⬜

Please indicate the number that is appropriate to you or your situation on the right side boxes using the rates given below;

Strongly agree	agree	disagree	Strongly disagree
4	3	2	1

Quality of teachers and academic performance

1	Teachers in this school make schemes of work and lessons plans before going to teach					
2	Teachers in this school give exercises while teaching					
3	Teacher make corrections in class with students after marking exercises					
4	Teachers vary methods of teaching					

APPENDIX IV: INTERVIEW GUIDE FOR HEAD TEACHERS

1. How long have you been a Head teacher in this school?

2. How do you rate the academic performance of your school nationally?

3. How many teachers do you have in your school? Please state the number of each group based on their academic qualifications.

    Graduate ------------

    Diploma teachers--------------

    Untrained teacher --------------

4. How is the relationship between students and teachers in your school?

5. Do you give guidance to students about their academics?

6. Could you account for the fact that some few students perform better than others under the same learning conditions?

7. What type of indiscipline commonly occurs in your school?

8. What do you consider to be the cause of indiscipline in your school?

9. Does indiscipline affect students' academic performance?

10. Could you suggest ways of minimizing indiscipline in your School?

11. Does your school have adequate facilities for teaching and learning?

12. If not what facilities are missing?

INSTITUTE OF OPEN AND DISTANCE LEARNING

## OFFICE OF THE DIRECTOR

23rd April 2010

The District Education Officer,
Nyamira South
P.O. Box 4, Nyamira District

Dear Sir/Madam,

INTRODUCTION LETTER FOR RESEARCH

I have the pleasure to introduce **Thomas Nyauma Surumo Reg.No. MED/20277/81/DF** to you. He is a student of Masters Degree of Educational Management and Administration at Kampala International University. He is carrying out his research on **"Causes of Poor Performance in Mathematics in the Seleced Secondary School in Nyamira South District of Kenya"**. He is at the data collection stage and your Institution / Organization has been identified as his area of study. It will therefore be appreciated if you can give the best assistance to him for a dependable research work.

The university will be counting on your kind cooperation.

Thank you.

J.S. ....
Director-IODL
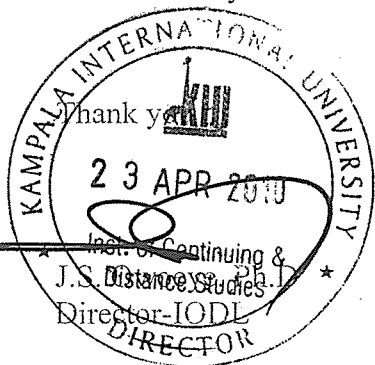
MINISTRY OF EDUCATION

Telegram: "EDUCATION ", Nyamira
Telephone: (058) 6144224

When replying please quote

Ref. NO .TSC /376210/103

DISTRICT EDUCATION OFFICE
NYAMIRA DISTRICT
P.O.BOX 4
NYAMIRA.

Date: 21ˢᵗ May, 2010

TO PRINCIPAL ....

SECONDARY SCHOOL

RE: PERMISSION TO COLLECT DATA

The bearer of the letter Thomas Nyauma Surumo TSC No. 376210 has permission from this office to collect data for his study. Please accord him all the necessary assistance.

HASSAN DUALE
DISTRICT EDUCATION OFFICER
NYAMIRA

CURICULUM VITAE

NAME:	THOMAS NYAUMA SURUMO
ADDRESS:	PO BOX 1246, NYAMIRA.
MOBILE PHONE NUMBER:	+254716030872
PROFFESION:	TEACHER
TEACHING EXPERIENCE:	13 YEARS
PERSONAL INFORMATION:	
DATE OF BIRTH:	1966
CITIZENSHIP:	KENYAN
MARITAL STATUS:	MARRIED
RELIGION:	CHRISTIAN
IDENTIFICATION CARD NUMBER:	9968911
PLACE OF BIRTH:	NYAMIRA
AGE:	44 YEARS
TSC NUMBER:	376210

EDUCATIONAL BACKGROUND:

UNIVERSITY ATTENDED	YEAR	COURSE DONE
KAMPALA INTERNATIONAL UNIVERSITY	2008-2010	MED
KENYATTA UNIVERSITY	1995-1996	PGDE
EGERTON UNIVERSITY	1988-1991	B.A

COLLEGE ATTENDED		
COMPUTER PROFFESSIONALS INSTITUTE	1993-1994	PROGRAMMING

SECONDARY SCHOOL EDUCATION		EXAM DONE
MATONGO HIGH SCHOOL	1986-1987	K.A.C.E
NYANSABAKWA HIGH SCHOOL	1982-1985	K.C.E

PRIMARY EDUCATION:

OTANYORE PRIMARY SCHOOL	1976-1981	C.P.E

TEACHING SUBJECTS

- ECONOMICS
- BUSINESS STUDIES
- COMMERCE

WORKING EXPERIENCE

INSTITUTION	QUALIFICATION	YEARS
GISAGE SECONDARY SCH.	TEACHING PRACTICE	1995-1996
MACHURURIATI SEC. SCH.	PGDE	1997-2001
NYAMERU SEC. SCH.	PGDE	2001-2010
NYAMERU SEC. SCH.	MED	2010

DUTIES/RESPONSIBILITIES

	RESPONSIBILITY	
NYAMERU SEC. SCH.	HEAD TEACHER	2002-2010

REFEREFREES:

	PHONE NUMBER
1. PETER ONSARIGO	+254723515821
2. CHARLES ONKANGI	+254725289621

NYAMIRA SOUTH DISTRICT

LOCATION	POPULATION (1999 Census)	AR
WEST MUGIRANGO	28819	
KEERA	19126	
BOSAMARO CHACHE	12028	
BAGICHORA	16197	
BONYAMATUTA MASABA	18424	
BONYAMATUTA CHACHE	22076	
BOSAMARO MASABA	15850	
TOTALS	133920	

LEGEND

District/Constituency Boundary	
Division Boundary	
Division Name	NY
Location Boundary	
Location Name	
Sub-Location Boundary	
Sub-Location Name	ENCHO
Municipality/Town Boundary	
Polling Station	
Roads	
Trading Centres	
Rivers	