

**SOCIO-ECONOMIC DETERMINANTS OF LEARNING ACHIEVEMENTS IN
PRIMARY SCHOOLS IN UGANDA: THE CASE OF PRIMARY SIX PUPILS'
PERFORMANCE**

BY

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Declaration:

I, Evans Jjemba, declare that this is my original piece of work and has never been submitted elsewhere for any award in any University.

Signature:.....

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Approval

This Dissertation has been done under my supervision and is submitted for examination with my approval.

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Dedication

To my beloved Parents, Mr. Jim Jones Senti Jjemba and the Late Mrs. Senti Berna Kahangire, without their dedication towards my education it would have been hard for me to study up to masters' level.

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Abstract

This study investigated the socio-economic determinants of learning achievements in primary schools in Uganda focusing on the primary six pupils. The objectives of the study were; to find out how pupils' home and family background determine their learning achievements, to investigate the effect of pupils' characteristics on learning, to study the effect of teacher characteristics on pupils' learning achievement and to examine the effect of school characteristics on pupils' learning achievements.

Southern African Consortium for Monitoring Education Quality III 2007 data set was utilized in this study. The data was collected using a stratified two-stage cluster sample design. The levels of data analysis included univariate were frequency tables and descriptive statistics were used to explain background information. At Bivariate level, statistical significance of the association between the dependent variable and the independent variables were established using Pearson chi-square test with the significance level fixed at 5%. Exploratory factor analysis was used to come up with latent variables that were finally fitted in the linear regression model, with pupil performance as the dependent variable.

Empirical results reveal that grade repetition ($p= 0.002$), place of stay ($p= 0.020$), use of information communication technology ($p= 0.048$), parents' education level ($p= 0.000$), experience of the Headteachers ($p= 0.036$), distance to social service centres ($p= 0.017$) and access to instructional and learning materials ($p= 0.000$) are each important in determining learner performance in primary schools in Uganda. On the other hand, pupils' characteristics, socio-economic status, availability of meals at home, home work help and teachers' characteristics are not significant in determining pupils' learning achievements in Uganda.

The government of Uganda through the education sector should procure enough learning and instructional materials for all primary schools, and also allocate resources towards the development of boarding sections in primary schools which is currently under developed. It is also recommended that the Ministry of Gender and Social Development develops strategies for strengthening adult literacy campaigns.

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Abbreviations and Acronyms

EMIS	Education Management Information System
EPD	Education Planning Department
ESA	Education Standards Agency
ESC	Education Service Commission
ESIP	Education Strategic Investment Plan
GWPE	Government White Paper on Education
IEQ	Improving Educational Quality
IIEP	International Institute for Educational Planning
MoES	Ministry of Education and Sports
NAPE	National Assessment in Progress in Education
NCDC	National Curriculum Development Centre
PLE	Primary Leaving Examination
SACMEQ	Southern African Consortium for Monitoring Education Quality
SAPS	Structural Adjustment Programmes
TDMS	Teacher Development Management System
UNEB	Uganda National Examinations Board
UPE	Universal Primary Education

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The condition or quality of being literate, especially the ability to read and write is a key indicator when evaluating the quality of learner performance (UNESO, 2005). Other factors remaining constant, a primary pupil is expected to be able to read and write on completion of P.6. On the other hand mastery of the basic symbols and processes of arithmetic cannot be avoided for pupils to become numerate. For learners to be considered numerate they must be in position to use numbers to make simple; additions, subtraction, multiplication, division, weights and measures, money counting and telling time among others.

Countries seeking to increase the level and pace of economic growth, and to raise the productivity and earnings of their citizens, have increasingly focused on increasing the quantity and quality of their people's educational attainment. One standard deviation increase in student scores on international assessments of literacy and numeracy competencies is associated with a two percent increase in annual growth rates of GDP per capita (Hanushek and Woessmann, 2007). Growth in school enrollment has been phenomenal across the world in the last four to five decades. However, even as the number of primary school going children has increased over time, the quality of learner's outcomes, especially at primary level of education remains a cause for serious concern in Uganda. A number of children in many developing countries Uganda inclusive fail to master basic literacy and numeracy even after six years of schooling (Nannyonjo, 2007). School access is necessary but not a sufficient condition for ensuring the development of cognitive competencies. There is need to ensure that effective teaching and learning takes place in schools.

Primary education is, in many ways the core of the schooling system. It serves the greatest number of learners, absorbs the largest share of spending on education, and builds the bedrock of human capital development. Indeed, in Uganda, the extent to which learners master the basic skills of reading, writing and arithmetic may well be a more relevant benchmark for evaluating a school system's performance than the sheer volume of enrolments (MoFPED, 2005).

Although in the last ten years, Uganda through the Ministry of Education and Sports has made enormous investment in the primary sub-sector to improve quality in terms of curricula, learning environment, teaching/learning process, learning achievement, the sector continues to register low learning outcomes (NAPE, 2010; UWEZO, 2010).

Therefore, understanding what socio-economic factors most efficiently improve learner performance is of crucial importance. In this study, a representative dataset that includes not only learner performance data but also data on the pupils, teachers, schools and families was used. Data from National examinations are often undermined by the practice of adjusting scores to meet pass rates and by concerns over cheating. International comparative tests are more reliable but cost limits them to small sample studies.

With relatively low numbers of students progressing to higher levels of education, partner countries need to ensure that each level of schooling is valuable in its own right, in addition to providing a stepping stone to further studies or the workforce. One way of determining the Quality of education in schools is by looking at the intermediate outcome of student performance (Sanders, 1994). In order to establish how much value is added, we need data on student performance prior to entering a particular school or grade, but in this study, we lacked baseline

pre-enrolment test scores. The primary focus of the study was to establish correlations to assist in understanding socio-economic determinants of learner performance in Uganda.

The major impediment to rational decision making in the education sector is lack of sufficient knowledge on what socio-economic interventions work best and under what circumstances. Short of this, the Government of Uganda will continue misallocating scarce resources on inputs that may not directly contribute to pupil's learning achievement. The challenge facing policy makers is therefore enormous: how to maintain (or indeed, improve) learning outcomes while making efforts to ensure that all children reach, the end of the primary cycle.

1.2 Problem Statement

The question of which socio-economic determinants influence pupils' achievement has stimulated lively debate between researchers and policy makers in the education sector for many years. Despite initial studies by Nanyonjo (2007), UNEB (2010) and IOB/ MoES (2008), suggesting a limited role for school inputs in determining student outcomes there is today a growing body of research that suggests that schools make a difference and that teachers play a key role in that process. There is more controversy, however, over which teacher characteristics and practices make the difference (Heyneman, 1982; Loxley, 1983). Is it the length of teacher training that matters? Or is it a teacher's experience? Do what teachers know about the subject matter or is it more important to understand what a teacher does in their classroom (Hanushek, 2004)? The answers to these questions are critical at a time when the international community has committed itself to ensuring that all children have access to free and quality primary education by 2015. The assumptions are not completely implausible in the Ugandan context. First, the majority of pupils in public primary schools face the same inputs over time, especially in terms of school quality and accessible facilities (MoES, 2006). Moreover, it is not uncommon

to find multi-grade teachers in public primary schools, so that a child may be taught by the same teacher from the first grade to all the way to graduation from primary school. Furthermore, we use school averages for the teacher and school explanatory variables, which should help in removing the bias. As for the second required assumption, a child usually attends the nearest primary school, regardless of his or her parents' perception of the child's ability.

Therefore, this study was designed to reveal socio-economic determinants of learning achievement in primary six in Uganda which were previously not known. The study also provides important insights for the currently on-going debate on how to improve the quality of public primary education.

1.3 Objectives of the study

1.3.1 Main Objective

The main objective of this study was to find out the socio-economic determinants of learning achievements of the sixth grade pupils in primary schools in Uganda.

1.3.2 Specific objectives

1. To find out how pupils' home and family background determine their learning achievements.
2. To investigate the effect of pupils' characteristics on learning
3. To study the effect of teacher characteristics on the learning achievement of pupils.
4. To examine the effect of school characteristics on pupils' learning achievements

1.4 Hypotheses

The following hypotheses were tested;

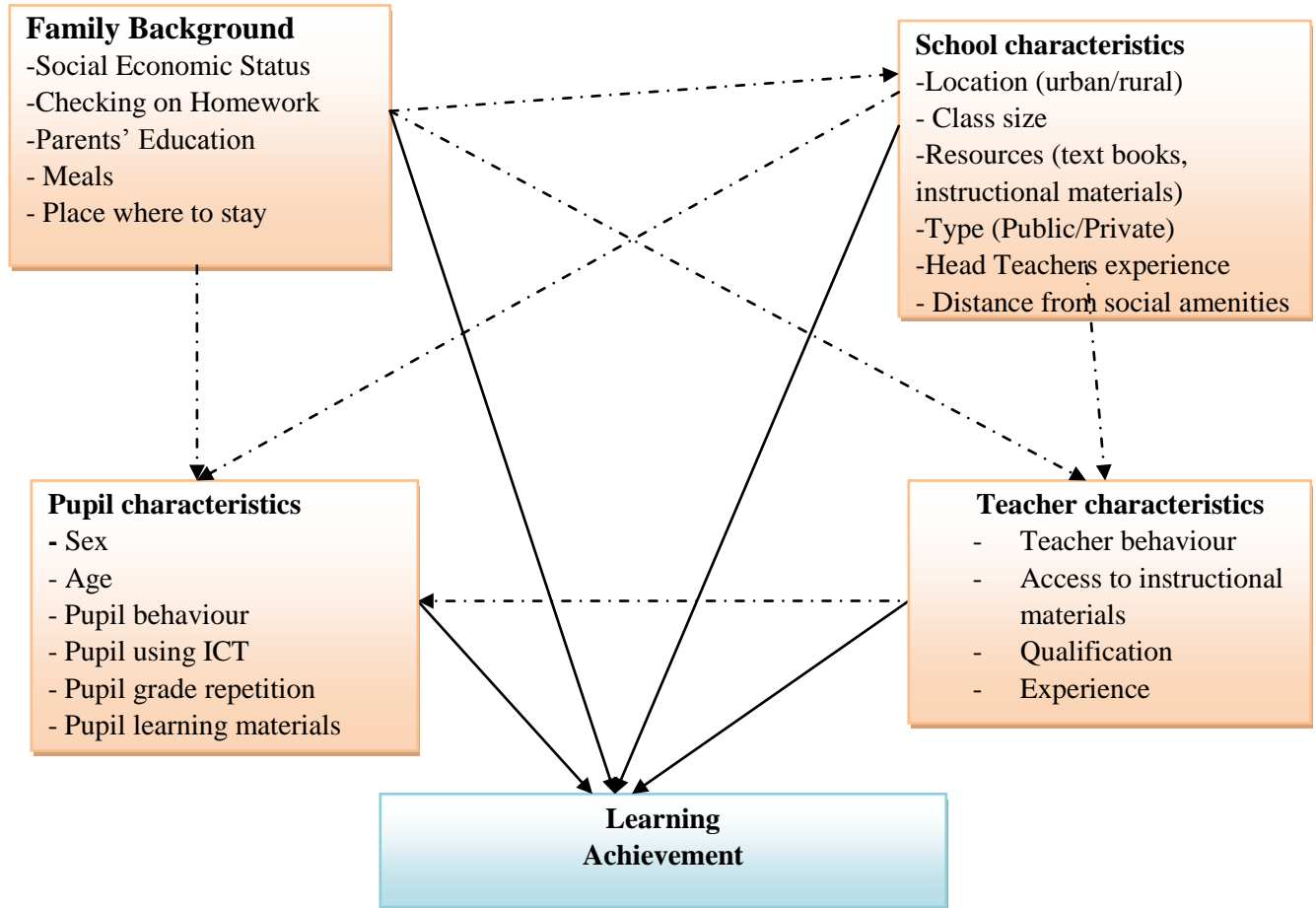
1. Children's family background (possessions at home, education level of the mother and father,) influences learning achievements.
2. Pupil's characteristics (sex, age, arriving late, absenteeism, skipping classes, drug abuse, bullying, taking alcohol, sexual harassments and fighting) influences learning achievements.
3. Teachers' characteristics (age, sex, qualification, meeting pupils' parents and experience, absenteeism, skipping classes, bullying pupils and arriving late to school) influences pupil's learning achievements.
4. School characteristics (location, type, distance from the main road and pupil teacher ratio) influences learners' achievements.
5. Home learning support (helping pupils to do homework, ensure that children do home work, giving pupils exercises to do at home, stock of textbooks at home and checking pupils' books) influences learners' achievements.

1.5 Conceptual Framework

A conceptual model (Figure 1) captures the various socio-economic factors influencing learner performance and their inter-relationships. The results from multivariate analysis are presented for average pupil's score in numeracy and literacy in Uganda. The analysis identified specific socio-economic factors and their inter-relationships in influencing learner performance. This was then followed by a cross-examination of the specific determinants of learner performance in order to

relate the findings and implications to the decision-making processes in Uganda. Figure 1 below shows the conceptual frame work for factors influencing learner performance

Figure 1: Conceptual Framework for Factors Influencing Learner Performance



Source: Adopted from 1999 MLA survey with modifications

The underlying theory for this study is premised on pupil, home background, teacher and school environment. The four dimensions have direct effect on pupil’s learning achievements. However, there are also inter dimensional relationships such as between family background and pupil characteristics, family back ground and school characteristics, teacher characteristics and pupil characteristics. The interrelationships also play a role in the final effect of the pupil’s learning achievements. Therefore theories which have to do with the characteristics of these entities as they affect learning would be applicable. Since the learning of any subject matter depends on the

way it is presented to the pupil by his or her teacher, the way the pupil interacts with the learning experience presented to him or her, the family background where the pupil stays and the school environment within which learning takes place, it is therefore expected that these entities will be affected by variables that have to do with them.

1.6 Significance of the Study

The origin of the study was based on the education sector in Sub-Saharan Africa which has suffered for long due to lack of attention and funding. The search was therefore towards reforms that work and that are politically, culturally and financially acceptable and feasible. This is to play a role in eliminating recommendations built on theory and speculative studies.

Uganda, like many other countries, has a substantial number of children that are not mastering basic literacy and numeracy skills by the end of primary education. Policy makers should have a fair idea on what drives learning achievements for effective allocation of scarce resources (Sangeeta, 2007).

Finally, the study supplemented on the on-going efforts by making a concrete analysis of the socio-economic determinants of learning outcomes that help to explain variations in educational quality pointing out critical areas where improvements can be made at a lower cost. Findings from the study provide direction for policy interventions for more evidence- based policy making and for future research.

1.7 Structure of the report

The report of this study is organized into five chapters. Chapter one deals with the introduction of the study, objectives, hypotheses, the conceptual framework and the significance of the study. Literature reviews on socio-economic determinants of learner performance is presented in chapter two. Chapter three illustrates the methodology used in the study, which includes source of data, geographical coverage, study variables, sample design and data analysis. The findings of the study are discussed in Chapters four. Chapter five gives the conclusions and recommendations based on the study findings.

CHAPTER TWO

LITERATURE REVIEW

3.1 Introduction

In this Chapter literature review is presented on; pupil performance in reading and numeracy. The aim of this study is to examine the effects of home and family background, school factors, pupils and teacher's characteristics and explore their influence on pupils learning achievement. Theoretical arguments, proposals and past study findings are presented in this Chapter. The Chapter is divided into four sections where in section 3.2 previous studies on home and background characteristics are given. Section 3.3 gives previous studies on school characteristics while section 3.4 and 3.5 provides previous studies on teacher and pupil characteristics. All the four sections are aligned in respect of studies conducted in Uganda, other African Regions and those outside Africa.

3.2 Family Background

Silvey (1978) in a small Ugandan study, reports a "marked tendency for sons of high socio-economic parents to perform well on a test of mental alertness," later asserted that parental education was not related to scholastic achievement performance in "any meaningful way. Heyneman (1979) in his study titled, why impoverished children do well in Uganda schools, finds that the social economic background of students in Uganda, particularly primary pupils do not matter in raising students' achievement at all. A study by Nanyonjo (2007) in Uganda found a positive relationship between Language spoken at home, pupil's regular attendance, presence of electricity or reliable lighting at home and parents education.

In the developing world initial results tended to be more optimistic, showing a stronger impact of schools in promoting student achievement in poorer countries (Heyneman and Loxley, 1983), but subsequent studies led to similar conclusions to the developed world and reaffirmed the dominance of home background in determining student achievement. Using multilevel modelling to analyse data from secondary students in Zimbabwe, Riddell (1989) challenged previous studies by showing that most of the variation in achievement in English and mathematics was attributed to home background characteristics. Other authors also argued that home factors had been underestimated in studies conducted in the developing world by using western indicators of socioeconomic status that did not really capture local class differences (Fuller and Clarke, 1994; Lockheed, Fuller and Nyrongo, 1989).

Stronger contribution of home factors to student achievement has also recently been confirmed by Hanushek (2006) in a study of primary students reading achievement in Colombia and Argentina and in East Asia (Hong Kong, Japan, South Korea, Singapore and Thailand) using TIMSS data to analyze achievements in maths and science. Another recent examination of this same issue on cross-national data from the 1994-1995 TIMSS in 36 countries, using both ordinary least squares and multilevel models, confirmed that the predominant role of family background on achievement was similar across nations, regardless of national income (Judy, 2000).

3.3 School Factors

The question of how to improve the quality of educational attainment in schools has become one of utmost importance to policy-makers. It is generating a large body of research, previously in developed, but now also in developing countries. Most empirical studies of determinants of

learning achievement relate measurable school characteristics and student and family background characteristics to learning outcomes. A number of studies show that school attended (school fixed effects) explains a large amount of the variation in learning outcomes. Das Gupta et al (2006) in their study of primary schools in Pakistan found that nearly 50 percent of all the variation in test scores in Pakistan can be attributed to school fixed effects. Part of a study similar to this one for Uganda using National Assessment of Progress in Education results also shows that between 50-60 percent of the variation in test scores is determined by school fixed effects (Nannyonjo, 2007).

The education quality literature on Uganda has concentrated on school expenditures and how they affect school organizations. Bjorkman (2004) evaluates the effects of providing per student capitation grants to schools on the average district test score performance in national primary leaving exams (PLE) and also examined school performance before and after the introduction of the UPE program whose key element was a per student capitation grant distributed directly to schools. Utilizing the difference in difference methodology, the author compares test scores during the pre- UPE and post-UPE periods (1995 and 2002). The results suggest that the per-student capitation grant had a positive effect on average total district test scores.

Furthermore, a baseline study conducted in Uganda showed that the best and worst performing schools had very little or no instructional materials including text books, teachers guides and charts. There was no correlation between examination results at the end of primary schooling to instructional materials. However a test of writing ability positively correlated with instructional materials. This means that in the case of literacy and numeracy it was likely that instructional materials had a significant part to play (Carasco et al, 1996).

In the same country a study conducted in a poor region where the population had been visited by many adverse elements such as drought, civil strife and continued insecurity, Oluka and Opolot-Okulut (2008) found that performance of students was adversely affected compared to other regions mainly attributed to, large classes, poor school facilities, lack of sound leadership in the school administration and inadequate amount of time allocated to teaching and learning.

The controversy as to which school factors contributed to school achievement was sparked in the United States of America in the late 1960's with the Coleman report (Coleman et al., 1966) that concluded that family background characteristics and community level variables accounted for more variance in student achievement than school resource variables like pupil-teacher ratios, per pupil expenditures or teacher characteristics. The Coleman study marked a turning point in educational research in the United States of America since the conclusions were based on the richest and most comprehensive dataset ever collected on American schools, surveying over half a million students and collecting information on more than 3,000 schools. The results, which were disappointing for researchers and society at large, have been challenged on methodological and interpretative ground over the years and hundreds of studies have been conducted in the world around these same questions since then.

School fixed effect plausibly captures (observable and unobservable) dimensions of school quality. Standard proxies for school quality used in the literature are school inputs such as pupil teacher ratio, the use of multi-grade classes, quantity and quality of school infrastructure, teacher numbers and characteristics, provision of mid-day-meals etc. The relation between observable schooling inputs and student outcomes however is not consistent and in general weak in most studies. Empirical evidence from developed countries generally does not find any effect of pupil-teacher ratio. Lavy and Angrist (1999) for Israel and Urqiola (2006) for rural Bolivia, however find that a smaller class-sizes benefits students

learning attainment. Regarding the use of multi-grade classrooms, the general belief is that they are detrimental to learning.

The type of school management, that is to say whether the school is a government, private aided or private school has also been found to be a significant predictor of educational outcomes in the Indian context. According to existing empirical evidence, private unaided schools in general outperform public schools (Kingdon, 1996; Smith et al, 2005; Tooley and Dixon, 2006). Few systematic studies compare private aided schools quality with other types. That individual student and family background characteristics influence school outcomes even after controlling for school related factors is undisputed, even though the research does not provide conclusive evidence regarding effects. Some studies find that boys and children belonging to the upper castes perform better (Dreze and Kingdon, 2001; Filmer et al, 1997). Household wealth and parents' education also have positive correlations with children's educational outcomes (Pritchett and Filmer, 1997).

Methods to examine the determinants of learner achievement have varied, but the production function, favoured by many economists, tends to dominate. Under this framework, the attention is placed on the relationship between student or school outcomes and measurable resources or inputs. Hanushek's (1979, 1997) reviews of over 400 studies in this tradition concluded that there was not a consistent relationship between student performance and school resources after variations in family background were taken into account. However, the fact that there were also several studies that found a negative effect of these same inputs and a large number that found no effect at all led Hanushek to conclude that "there is no strong or systematic relationship between school expenditure and student performance".

Somewhat similar findings were obtained from his review of about 100 studies from the developing world (Hanushek, 1995). He found the results inconclusive regarding the impact of class size and teacher experience, but found that teacher education appeared to have a stronger impact in the developing world. He also recognized that there was a larger share of studies in the developing world that reported a significant effect of school resources, suggesting that school resources are likely to play a more significant role in the developing world than in the U.S. Similar conclusions were reached by Velez, Schiefelbein and Valenzuela (1993) in their review of 18 studies and 88 regression models from Latin America. Teacher education, subject matter knowledge, active methodologies and teacher experience appeared significant in a large share of the studies, but they found no effect for in-service training and class size.

Hanushek's (1995) conclusions have been challenged on several grounds: (i) by more refined meta-analysis of the same education production functions he reviewed showing a stronger impact of school resources; and by (ii) new research that attempts to address the complexities of the education process using more sophisticated statistical analysis.

The "vote-counting" approach used by Hanushek in his initial review of the production function studies in the United States of America has been questioned by Hedges et al (1994). Using more sophisticated meta analysis techniques, the authors reanalyzed the studies reviewed by Hanushek and concluded that global resource variables such as per pupil expenditure are important, as are more specific categories of resources such as smaller schools and classes.

By contrast, other studies find that small class sizes are either not significant or even detrimental to student performance (Hanushek, 1995; Hoxby, 2000; Urqui-ola, 2006). In addition, Jones (2001) reviews 277 econometric studies on the effect of class size on achievement and finds that

28 percent of the studies report statistically significant estimates but 13 percent of those report a negative sign. A recent study of secondary schools in India (Kingdon, 1996) finds an insignificant positive sign on the class size variable in determining student achievements. The author concludes that a reduction in class size may not be useful in a developing country like Uganda.

School-effectiveness studies have gone a long way toward identifying the key dimensions of the educational production process that have potential implications on the development of cognitive competencies (Lockheed et al., 1991) and in measuring their statistical impact on performance in various types of standardized tests. Such studies, which necessarily must confine themselves to students who are enrolled in school, have mainly measured the direct effects of institutional effectiveness on student achievement. Largely neglected are the indirect effects that operate through institutional effectiveness on entry, retention, and ultimate grade attainment. These approaches are, therefore, better suited to measuring school effectiveness in settings where the age of school entry is uniform, where enrolment is near universal, and where attrition between grades is relatively minor.

The traditional list of material inputs includes facilities, instructional materials, and teaching staff. Under facilities, not only are infrastructure and equipment included but also amenities such as toilets, electricity, and water that, while not necessary for learning to take place, may have profound implications for the comfort of students and the attractiveness of the school parents and, therefore, potentially for the attendance and retention of students (Glewwe & Jacoby, 1999). Textbooks have been singled out in the literature as the most essential of instructional materials, but it is not always clear to what extent they are provided by the school or must be purchased by the family.

Criticisms of this early work suggested that the modeling procedures employed did not take into account of the hierarchical nature of the data, and was not able to separate out accurately school, student and classroom factors (Raudenbush and Williams, 1991). More recent school effectiveness research has used multi-level modeling techniques to account for the clustering effects of different types of data. The results of such studies show, according to the meta-analysis of school effectiveness research undertaken by Muralidharan (2006), that school effects account for approximately 8 to 10 per cent of the variation in student achievement, and that the effects are greater for mathematics than for language or other subjects.

3.4 Teacher Characteristics

Nanyonjo (2007) found out that results for pupil performance and teacher qualification appeared to be mixed, in particular for mathematics, where scores appeared to clearly decrease with increase in teacher qualifications except for teachers with university education.

Teacher absenteeism, an observable indicator of teacher effort and performance, has been the focus of several recent studies. Chaundhury et al. (2006) report on surveys in six developing countries including Uganda that yield observational data on absence of teachers and health workers. Averaging across the six countries, they find an absence rate of 19 percent among primary school teachers.

Uganda's estimated absence rate is 27 percent with highest teacher absence than India (25%) than Indonesia (19%), Bangladesh (16%), Ecuador (14%), or Peru (11%). Furthermore, teachers in private schools are absent less frequently than teachers in public schools. In 2006, the World Bank conducted a study on teacher absenteeism in Uganda (Winkler and Habyarimana, 2007).

According to this study unauthorised absenteeism of teachers is slightly decreasing. Nearly 20 percent of the teachers were not at school at the time of the enumerator visit; head teachers actually produced the highest absence rates.

Results of the study by ANPPCAN (2010) in Iganga district in Uganda found that teacher absenteeism was found to be at 43.6 percent being higher among females (51%), than males (49%). It was found out on average, the absenteeism rate of head teachers is 19.7 percent. The fact that there are differences among teachers and that those differences have implications for schools and student learning has been recognized by Hanushek (1995) and other researchers that have investigated the problem using an approach that allows the estimation of the impact of differential effectiveness of teachers and schools on student outcomes. These results confirm that there are significant differences in teachers' effectiveness. The difficulty has been on consistently identifying what aspects of teacher attributes are important. Part of the limitation with the economic production function tradition is that it has tended to ignore what goes in the classroom or has examined it through measures of teacher characteristics that are easily available such as years of education or experience, but that are removed from the classroom. It is not surprising that results have tended to be inconclusive in that sense.

Again some of Hanushek's recent work has attempted to show that teacher quality matters. Using data from the state of Texas, where several cohort of students have been followed over time (Hanushek, 2004), the authors developed a model that controlled for fixed students characteristics, schools by grade and in some cases school by year effects and then related remaining differences in achievement gains between grades in cohorts to differences in school characteristics, or teacher composition. The within school variance in teacher quality was based on the notion that teacher turnover increased the variance in student outcomes across grades and

cohorts in a school. The results show large differences in student achievement associated with differences in teacher quality, even larger than with class size. However, those differences were not associated with any of the typical measurements of teacher characteristics like education and experience, confirming again that the choice of variables used to assess the contribution of teachers to student outcomes is critical.

Teacher absenteeism, an observable indicator of teacher effort and performance, has been the focus of several recent studies. Chaudhury *et al.* (2006) report on surveys in six developing countries that yield observational data on absence of teachers and health workers. Averaging across the six countries, they find an absence rate of 19 percent, among primary school teachers. Indonesia's estimated absence rate is 19 percent, thus ranking it as atypical country in the sample-with lower teacher absence than India (25%) or Uganda (27%), but higher absence than Peru (11%), Ecuador (14%), or Bangladesh (16%). Two other project studies have yielded preliminary results on the correlation between absence and performance: in India, higher primary-teacher absence is correlated with a small but strongly significant reduction in predicted test scores (Kremer *et al.*, 2005); while in Bangladesh, teacher absence predicts lower scores in English but not mathematics (Chaudhury *et al.*, 2004).

Hanushek concluded that variables that describe the quality of teachers, such as teacher ability, teacher education and teacher experience show very strong correlations with achievement. A subsequent study by the same authors including additional production function studies confirmed their initial findings (Greenwald, Hedges and Laine, 1996). Of the teacher factors examined in the studies, he found that teacher education had a positive significant effect on only 9 percent of the studies and teacher pupil-ratios in 15 percent of the cases, while teacher experience had the highest proportion of positive significant effects at 29 percent. There are few studies that include

the share of graduate teachers and the share of non-regular teachers as controlling characteristics for schools. It is difficult to predict the direction of the net effects of these characteristics. Teachers with higher educational qualifications and more secure employment can be expected to be more motivated to perform. There is also evidence that they are also more prone to be more absent from schools (Chaudhury et al, 2004).

3.5 Pupil Characteristics

Byamugisha and Ogawa (2010) found that the attendance patterns of pupils significantly impacted on the learning achievement as well as the quality outcomes of pupils in Uganda. It is believed that a pupil who attends school regularly has a high chance of performing better in class and examinations than one who absents himself/herself frequently.

In the recent comparative study (Ogawa et al., 2011) conducted in Kenya, Ghana, Malawi and Uganda noted that absenteeism often contributes to high dropouts and repetition and the reasons for absenteeism is failure to raise funds to meet the various school requirements, despite the provision of free primary education. Other reasons include; poverty, child labour, sickness and caring for their sick parents, and lack of encouragement by parents; among others.

On the other hand, a recent study based on a randomized evaluation in Northern Uganda finds that take home rations conditional on school attendance boost math scores for only children aged 11-14 years (Adelman et al., 2008). Notwithstanding the limited impact of such food for education programs, in Uganda, they are externally driven by donors – with limited uptake in other parts of the country not faced by civil war.

Therefore, although other studies have examined education outcomes in Uganda, a quantitative study that combines the home, school and community characteristics in Uganda has been largely ignored¹. Finally, it is important to note that the reviewed studies provide very significant information for improving the quality of primary education in general and enhancing student's achievement in particular. But these factors have not been investigated precisely for the Ugandan pupils at primary stage. Therefore keeping in mind this aspect a systematic attempt has been made in the present study to examine the effects of home, school and community factors on learning achievements of primary pupils.

¹ Other studies examining education outcomes in Uganda include: Nanyonjo, (2007) who examined school inputs using NAPE data and IOB/ MOES (2008) who evaluated primary education in Uganda.

CHAPTER THREE

METHODOLOGY

3.1 Data Source

The Southern African Consortium for Monitoring Education Quality (SACMEQ) III data set 2007 was used in this study. The SACMEQ III data were collected using a stratified two-stage cluster sample design. At the first stage, schools were selected within regions with probability proportional to the number of pupils in the defined target population. At the second stage, a simple random sample of 20 pupils was selected within each selected school. The outcome variables of interest in the SACMEQ III project were pupil scores (on Rasch scales) in reading and mathematics tests at Grade Six. The SACMEQ III tests were developed after careful curriculum mapping by a panel of subject specialists drawn from all the SACMEQ school systems to identify those elements of curriculum outcomes that were considered important and which were to be assessed in the tests. The subject specialists also reviewed the test items to ensure that they conformed to the national syllabi of SACMEQ countries. In addition, during the process of test development and before the tests were administered they were field-tested in all SACMEQ school systems and their psychometric characteristics were examined using classical item analysis and Rasch analysis. The number of pupils tested was 5307 pupils in 264 primary schools.

To assess pupils' reading and mathematics skills, participants in the study responded to a standardized achievement tests. Pupils, teachers and school heads responded to questionnaires that provided contextual information describing the pupil, their family and school characteristics.

The SACMEQ data had sampling weights for pupils and schools. These weights were used at the pupil and school levels in the regression analysis.

The SACMEQ achievement tests used the experience gained by the predecessor studies. They were developed through an international consensus-building process involving input from international experts in mathematics, reading, and measurement, and were endorsed by all participating countries. Based on a curriculum framework developed by educators from the 15 countries, test specifications were developed that included items representing a wide range of mathematics and science topics and eliciting a range of skills from students.

3.2 Dependent variables used in the study

The dependent variables in this study are pupil reading and mathematics achievement indicated by scaled scores adjusted for reliability, difficulty and guessing using Item Response Theory (IRT) statistical procedures. The scale is such that the international mean was 500 with a standard deviation of 100. The SACMEQ achievement tests used the experience gained by the predecessor studies. They were developed through an international consensus-building process involving input from international experts in mathematics, reading, and measurement, and were endorsed by all participating countries. Based on a curriculum framework developed by educators from the 15 countries, test specifications were developed that included items representing a wide range of mathematics and reading topics and eliciting a range of skills from pupils. The SACMEQ tests include items requiring pupils both to select the appropriate response, to provide a short answer to a question or problem, and to provide a more elaborate response or explanation.

While test scores of cognitive achievement in mathematics and reading may be reasonable measures of the output in central areas of schooling and may thus capture important aspects of the

human capital of students, they certainly do not reflect the whole array of socially and economically valuable human capital. First, there are many problems with constructing meaningful and internationally comparable standardized tests of cognitive skills. Second, there are many other subjects in school apart from mathematics and reading many of which do not easily lend themselves to standardized achievement tests. And third, there are many valuable, mostly non-cognitive skills formed outside schools, mainly in families and later in firms.

3.3 Independent variables used in the study.

The independent variables included pupil (individual, and family)-level and school-level characteristics derived from the questionnaires. The variables examined in this study are those variables identified as potential predictors of academic achievement following, sound reasoning and research findings from previous analyses of the SACMEQ I data 1995 (Kulpoo, 1998) and SACMEQ II data 2000 (Byamugisha and Ssenabulya, 2004).

The outcome variables of interest in the SACMEQ III project are average pupil scores in literacy and numeracy (on Rasch scales) in tests at primary 6. The SACMEQ III tests were developed after careful curriculum mapping by a panel of subject specialists drawn from school systems to identify those elements of curriculum outcomes that were considered important and which were assessed in the tests. The subject specialists also reviewed the test items to ensure that they conformed to the national syllabi of Uganda National Curriculum Development Centre (NCDC). Apart from scores in, a wide range of information about pupils, their families, their teachers and characteristics of their schools were collected. The variables examined in this study are those socio-economic variables identified as potential predictors of academic achievement. The main variables used in the analysis are as follows:

- **Family background:** These include possessions at pupil's home (31 items were considered), source of light at home and education level of the mother and father.
- **Pupil's characteristics:** These include sex of the pupil, age, arriving late, absenteeism, skipping classes, drug abuse, bullying, taking alcohol, sexual harassments and fighting.
- **Teachers' characteristics:** These include age of the teacher, sex, qualification, meeting pupils' parents, experience, absenteeism, skipping classes, bullying pupils and arriving late to school.
- **School characteristics:** These include location, type and distance from the main road
- **Home learning support:** These include helping pupils to do homework, ensure that children do home work, stock of textbooks at home and checking pupils' books.

3.4 Data Analysis

This involved processing of the data which was done at three levels using Statistical Package for Social Scientists (SPSS) version 12. The analysis was done at three levels;

3.4.1 Univariate Analysis

At this level of analysis, frequency tables and descriptive statistics were constructed to indicate the background characteristics of pupils, parents, teachers, and headteachers as well as the schools in which the study was conducted. The variables of interest included; sex and age, ownership and location of the schools.

3.4.2 Bivariate Analysis

Statistical significance of the association between the dependent variable (test score of the pupils in literacy/numeracy) and the independent variables (pupil's sex, region, age of the pupils, School location and home and family background) were interpreted using the Pearson chi-square test with the significant level fixed at 5 percent. For cases where the cell frequencies were below 5, Fisher's exact test was applied.

Interpretation of results

The test explains the level of association using P-Value, the level of significance which is the probability of rejecting or accepting the hypothesis being tested. It was fixed at 0.05 and if the p-value is greater than or equal to 0.05, then the statistical relationship between the dependant and independent variable under study is not significant. Else, if the p-value is less than 0.05, then there is a significant statistical relationship between the two variables (dependent and independent) in that a change in one makes the other change. The general formulae of the Chi-square used is

$$X^2 = \sum_{i=1}^r \sum_{j=1}^k \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \dots\dots\dots(3.1)$$

Where;

$j = 1, 2, \dots, k$

$i = 1, 2, \dots, r$

O_{ij} = Observed frequency.

E_{ij} = Expected frequency.

k = Number of categories of the dependent variable.

r = Number of categories of the independent variables.

3.4.3 Factor Analysis

Several measurable socio-economic indicators regarded as important for understanding of the contextual background of pupils in the school system and based on literature were identified to explain the pupils' performance; the indicators were categorized under four pillars: pupil, teacher, home and school related factors. Exploratory factor analysis using SPSS™ v. 12 was used to extract factors representing key elements of the exogenous variables (independent variables). Kaiser-Meyer –Olkin (KMO) measure of sampling adequacy was used and variables whose KMO ≥ 0.5 were considered significant. Principal Components Extraction method was also used with Varimax rotation and 0.50 as a cutoff to identify items with high loadings for inclusion with each factor (Conway and Huffcutt, 2003).

Only factors whose loading were above 0.6 were considered as indicated in annex 1. The factors were named after seeking consultation from Ministry of Education and Sports. The names given to the factors in the same order as they appear in annex1 include the following ; pupil behaviors (K), behaviours of the teachers (L), parents education level (H), use of information communication technology (N), distance to social amenities (O), availability of meals at home (I), grade repetition (M), home work help (J), place of stay (G), experience of the head teacher (P), social economic status (F) and access to textbooks (Q).

3.4.3 Multivariate analysis

This study analysed the determinants of learning achievements, taking into account specific characteristics of pupils and teachers, school learning environment and Family background. All latent variables which passed the test, were used to fit a linear regression model, with the above

variables modeled as a function of the pooled pupil performance, the dependent variables.

Factors influencing learner performance are explained by the model below:

$$Q_{ij} = \alpha + \beta_1 F_i + \beta_2 G_i + \beta_3 H_i + \beta_4 I_i + \beta_5 J_i + \dots + \beta_{13} Q_i + \epsilon_{ij} \dots \dots \dots (3.2)$$

Where; Q_{ij} = pupil's pooled scores in Literacy and Numeracy (dependent variable)

α = the estimated constant

$\beta_1 - \beta_{13}$ = estimated coefficients

ϵ = all unobserved characteristics.

The independent variables include;

F = Socio-economic status

G = Place to stay by pupil

H = Parents' education level

I = Availability of Meals at home

J = Home work help

K = Pupil Behaviors

L = Behaviours of the teachers

M = Grade repetition

N = Use of information communication technology (ICT)

O = Distance to social service centres

P = Experience of the head teacher

Q = Access to instructional and learning materials

3.5 Limitations of the Study

The study used secondary data collected quantitatively from SACMEQ III in 2007 survey, the self-reporting qualitative data that captured the voices of the respondents was not available. Due to time and resources available to the investigator, only a one-time survey study was adopted. The study was limited to studying only primary six pupils and, on reading and mathematics other classes and subjects uncovered. Studying all the subjects across all the classes could have given a broader picture on the socio-economic determinants of learner performance. However, it is assumed that the data used were a carefully chosen sample that could not significantly affect the validity of the results.

3.6 Ethical Consideration

The Southern African Consortium for Monitoring Education Quality (SACMEQ) III data set 2007 was used in this study after seeking permission from the Ministry of Education and Sports.

CHAPTER FOUR

FINDINGS OF STUDY

4.0 Introduction

In this Chapter, findings of the study are presented. The aim of this study was to examine the effects of home and family background, school factors, pupils and teacher's characteristics and explore their influence on pupils learning achievement. The Chapter is divided into three sub-sections which include background information, relationships between socio economic factors and learner performance and the determinants of learning achievements

4.1 Background information

This study focused on; region of the respondent, sex, age and education family background. The primary 6 pupils were also categorised by socio-economic status groups (defined by having above average number of possessions (High SES) and below average number of possessions (Low SES), and by school location as stated by their school head. The purpose was to explore whether these factors were associated with the performance of pupils on both the reading and mathematics tests. Presented results in form of tables and graphs have been explained respectively. Table 4.1 below shows background information for teachers, schools, parents and pupils.

Table 4.1: Background Information

Background information	Frequency	Percent
Region		
Central	1,320	24.9
Eastern	1,581	29.8
Northern	1,147	21.6
Western	1,259	23.7
Total	5307	100
Sex of Pupil's		
Boy	2,621	49.4
Girl	2,686	50.6
Total	5307	100
School Ownership		
Government	232	88
Private	29	11
Not Reported	5	1
Total	264	100
Location		
Isolated	3	1.3
Rural	187	71
Small town	50	18.9
Large City	22	8.4
Not Reported	1	0.5
Total	264	100

4.1.1 Regional Distribution of Respondents

The study drew respondents from Northern, Eastern, Western and Southern Regions of Uganda. It was found out that majority of the respondents were from the Eastern region (29.8%) followed by the Central Region (24.9%). The Northern and Western Regions contributed the least percentage of respondents with 21.6 percent and 23.7 percent respectively.

4.1.2 Sex of respondents

The percentage share of respondents by sex was almost equal with 49.4 percent boys against 50.6 percent girls (Table 4.1). The percentage share of respondents in primary six, relates to the 2007 Uganda annual school census results (49.83% boys and 50.17% girls). On the other hand,

out of 264 headteachers interviewed male (77.2%) constituted the majority. With regards to primary six teachers, a total of 528 were interviewed of which majority (69.8%) were male.

4.1.3 School ownership

There are two major categories of primary school ownership in Uganda and these include government and private. Out of 264 schools that participated in this study, majority of the schools (88%) were government aided. Private contributed 11 percent out of the 264 schools visited (Table 4.1).

4.1.4 Percentage share of schools by location

Uganda is among the developing countries with over 70 percent of the population residing in rural areas. During the study, headteachers were required to categorise their schools in terms of location. Table 4.1 shows that majority of the schools (71%) were found to be located in rural areas followed by those located in small towns with a share of 18.9 percent. Schools in large cities and isolated places contributed the least share with 8.4 percent and 1.3 percent respectively.

4.1.5 Age of Pupils

At the national level, the median age of primary 6 pupils was 14 years. If all pupils had entered school at the official age of entry and there had been no repeating of a class, then the expected age would have been 11 years. That is, on average primary 6 pupils were around 3 years older than might have been expected. The youngest primary 6 pupils on average were located in the Central Region, where the median age was 13 years. The median age for primary six pupils in

the rest of the regions was 14 years. Pertaining to school location and ownership, pupils in rural (14) and government (14) schools were older than their counterparts in urban (13) and private (13) schools respectively.

Table 4.2: Mean and Standard Deviation of pupil’s age, number of books at home and pupil’s scores by Region, Location and School type

		Age (years)	Books at home (number)	Scores	
		Median (SE)	Mean (SE)	Reading Mean (SE)	Mathematics Mean (SE)
Region	Central	13 (0.38)	11.6 (0.7)	489 (2.30)	485 (2.01)
	Eastern	14 (0.37)	8.8 (0.31)	463 (1.84)	472 (1.88)
	Northern	14 (0.46)	9.2 (0.55)	456 (2.06)	461 (2.11)
	Western	14 (0.489)	8.3 (0.28)	508 (1.99)	512 (1.97)
	National	14 (0.217)	9.5 (0.24)	479 (1.06)	482 (1.025)
Location	Rural	14 (0.25)	8.54 (0.22)	462.7 (1.11)	471 (1.16)
	Urban	13 (0.038)	11.9 (0.65)	520.9 (2.2)	512 (1.92)
School type	Government	14 (0.23)	9 (0.23)	470.9 (1.08)	477.3 (1.07)
	Private	13 (0.613)	13 (1.1)	535.9 (3.32)	520.7 (2.9)

4.1.6 Number of text books in pupils’ homes

From Table 4.2, it can be ascertained that on average there were 9 textbooks in pupils’ homes. Availability of textbooks in terms of location was highest (12) among pupils whose homes were located in urban areas. There was also a significant difference in the number of textbooks at home by the school type. On average, there were 9 books and 13 books in the homes of the pupils in government and private schools respectively.

4.1.7 The achievement levels of primary 6 pupils in reading and mathematics

Item Response theory was used in order to scale the test items and pupil scores. It was the one-parameter model that was used and this is often referred to as Rasch scaling. The SACMEQ countries mean is 500 with a standard deviation of 100. The results for Uganda and regions have been presented in Table 4.2.

It can be seen from Table 4.2 that the overall national average mean score for reading was 478.55 which was below the SACMEQ mean of 500 with western region having the highest (508.09) and Northern region, lowest (456). For mathematics the national mean was 482 with Western region having the highest (512) and Northern region the lowest (461). The results indicate that pupils' performance in reading and mathematics is low.

4.2 Relationship between learner performance and socio-economic factors

In this section, the relationship between learner performance and some of the socio-economic factors were examined using Pearson Chi-Square and Fisher's exact test. It was found out that socio-economic factors have significant association with learner performance.

4.2.1 Relationship between region and learner performance

There is a significant relationship between the region in which pupils are located and their performance (Pearson Chi-Square = 385.556, df =9, p= 0.000). Pupils in the western region performed better with 82.5 percent scoring above 450 on average followed by the central region were 68.4 percent of the pupils scored an average mark above 450. Pupils from the Eastern and Northern regions were the worst performers with 56.6 percent and 50.8 percent scoring an average mark above 450. The relationship between region, place of stay and learner performance is presented in Table 4.3 below;

Table 4.3: Relationship between region, place of stay and learner performance

Pupil's Score	Regions									
	Central		Eastern		Northern		Western		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
<350	19	1.4	25	1.6	17	1.5	6	.5	67	1.3
351-450	397	30.2	659	41.9	544	47.8	212	17.0	1812	34.3
451-550	655	49.8	723	46.0	486	42.7	724	57.9	2588	49.0
551+	245	18.6	166	10.6	92	8.1	308	24.6	811	15.4
Total	1316	100.0	1573	100.0	1139	100.0	1250	100.0	5278	100.0
Pearson Chi-Square = 385.556, df =9, p = 0.000										
Place of stay										
Pupil's Score	With family		With other people		Boarding sch		Orphanage		Others	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
<350	53	1.2	6	2.1	7	1.9	5	5.4	5	12.2
351-450	1466	34.0	130	45.3	79	21.2	42	45.2	14	34.1
451-550	2154	49.9	125	43.6	171	46.0	37	39.8	17	41.5
551+	645	14.9	26	9.1	115	30.9	9	9.7	5	12.2
G.Total	4318	100.0	287	100.0	372	100.0	93	100.0	41	100.0
Pearson Chi-Square=107.457, df =12, p=0.000										

4.2.2 Relationship between pupil's score and place of stay

The Pearson chi-square test (Pearson Chi-Square=107.457, df =12, p=0.000) showed that there is a significant relationship between pupil's score and their place of stay. Pupils in boarding schools had better performance followed by those staying with their family with 77.1 percent and 64.8 percent scoring above 450 respectively.

4.2.3 Relationship between sex of the pupils and performance

Results in Table 4.4 showed that there is a significant relationship between performance and sex of the pupils. On average, boys scored higher than girls with 65.8 percent and 63 percent scoring above 451 respectively.

Table 4.4: Relationship between sex of the pupils and performance

Pupil's Score	Boys		Girls		Total	
	Freq	%	Freq	%	Freq	%
<350	34	1.3	33	1.2	67	1.3
351-450	855	32.8	957	35.8	1812	34.3
451-550	1253	48.1	1335	49.9	2588	49.0
551+	462	17.7	349	13.1	811	15.4
G.Total	2604	100.0	2674	100.0	5278	100.0
Pearson Chi-Square = 23.175, df = 3, p= 0.000						
Pupil's score and school type						
Pupil's Score	Government		Private		Total	
	Freq	%	Freq	%	Freq	%
<350	65	1.4	6	1.0	67	1.3
351-450	1724	37.0	72	12.1	1802	34.3
451-550	2295	49.3	279	46.8	2576	49.0
551+	572	12.3	235	39.4	807	15.4
G.Total	4656	100.0	596	100.0	5252	100.0
Pearson Chi-Square=346.775, df =3, Sig =0.000						

4.2.4 Relationship between pupil's score and school type

The two distinguished school types at primary level of education in Uganda that is government and private schools. With regards to learner performance, the Pearson chi-square test in Table 4.4 showed that there is a significant relationship between pupil's average score and the school type. On average, pupils from private schools scored higher than those in private schools with 86.5 percent scoring 450 and above compared to 61.6 percent in government schools. The relationship between pupil's score and school type is presented in Table 4.6 below;

4.2.5 Relationship between pupil's score and school location

School location was stratified into three categories as isolated, rural and urban. Findings in Table 4.5 (Pearson Chi-Square =553.72, df =9, Sig =0.000) indicated that there is a significant relationship between pupil's average score and school location. Pupil's performance was better in schools located in urban places followed by those in rural areas. Pupils in schools located in isolated places had the poorest scores.

4.2.6 Relationship between pupil's score and Socio-economic status

The Pearson Chi-Square test (Pearson Chi-Square =553.72, df =9, Sig =0.000) indicated that there is a significant relationship between socio-economic status and pupils score. Table 4.5 showed that the higher the socio-economic status the higher the pupil's score. Pupil's coming from rich families had the best scores with 90.7 percent scoring above 450 followed by those from the middle class were 71.9 percent scored above 450. Pupils from the poorest and poor families had the poorest scores. The relationship between pupil's score, socio economic status, school location and pupil's age is presented in Table 4.5 below;

Table 4.5: Relationship between pupil's score and school location

Score	Isolated		Rural		Urban		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
<350	5	6.9	57	1.5	10	0.7	67	1.3
351-450	36	50.0	1,511	40.4	253	17.6	1,803	34.3
451-550	24	33.3	1,828	48.9	722	50.1	2,575	49.0
551+	7	9.7	345	9.2	456	31.6	809	15.4
G.Total	72	100.0	3,741	100.0	1,441	100.0	5,254	100.0
Pearson Chi-Square =553.72, df =9, Sig =0.000								
Pupil's Score	Socio-economic status							
	Poorest		Poor		Middle		Rich	
	Freq	%	Freq	%	Freq	%	Freq	%
<350	7	1.6	42	1.7	17	0.9	6	1.7
351-450	190	44.4	1049	41.7	541	27.2	30	8.7
451-550	190	44.4	1195	47.5	1034	52.0	165	48.1
551+	41	9.6	232	9.2	396	19.9	142	41.4
G.Total	428	100.0	2518	100.0	1988	100.0	343	100.0
Pearson Chi-Square =553.72, df =9, p=0.000								
Pupil's score and pupil's age								
Score	10 to 12 Years		13 to 14 Years		15 Years Plus		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
<350	5	.5	36	1.4	26	1.5	67	1.3
351-450	210	22.2	894	35.0	708	39.9	1812	34.3
451-550	450	47.7	1247	48.8	890	50.1	2587	49.0
551+	279	29.6	380	14.9	152	8.6	811	15.4
Total	944	100.0	2557	100.0	1776	100.0	5277	100.0
Pearson Chi-Square = 239.731, df =6, p=0.000								

4.2.7 Relationship between pupil's score and pupil's age

According to Uganda's education system, a child is expected to be in primary six at the age of eleven years. However due to factors such as late entry, drop-out and class repetition pupils tend to exceed the recommended age. The Pearson chi-square test (Pearson Chi-Square = 239.731, df =6, p=0.000) showed that there is a significant relationship between pupil's age and their performance. On average pupils in the age group 10 to 12 years performed better than those in other age groups with 77.3 percent scoring above 450. It was only 63.7 percent and 58.7 percent of the pupils in age groups 13-14 and 15+ that scored above 450 respectively.

4.3 Determinants of learning achievements using linear regression

Only factors whose loading were above 0.6 were considered as indicated in annex 1. The factors were named after seeking consultation from Ministry of Education and Sports. The names given to the factors in the same order as they appear in annex1 include the following ; pupil behaviors (K), behaviours of the teachers (L), parents education level (H), use of information communication technology (N), distance to social amenities (O), availability of meals at home (I), grade repetition (M), home work help (J), place of stay (G), experience of the head teacher (P), social economic status (F) and access to textbooks (Q).

The final results for the analysis of the determinants of learning achievements are summarized and presented in Table 4.6. All the determinants of learner performance are presented in relation to their respective significance. This summary table serves the main purpose of understanding the education realities in Uganda in 2007, and the lessons to be learnt when using such a broad perspective to cover the complexities of the conditions for teaching and learning and their impact on the Ugandan learner's performance. A number of studies have identified a number of socio-economic determinants of learning achievements in different countries. This study also seeks to find out if there is a relationship between these correlates and learner performance particularly for primary six pupils in Uganda. Results of a Linear Regression model analysis for the socio-economic determinants of learning achievement in Uganda are presented in Table 4.6 below;

Table 4.6: Results of a Linear Regression model analysis for the socio-economic determinants of learning achievement in Uganda

Latent variable	Beta Coefficients	t	Sig.
F = Social economic status	-.074	-1.221	.223
G = Place to stay by pupil	.099	2.334	.020*
H = Parents education level	.255	4.106	.000*
I = Availability of Meals at home	.045	1.147	.252
J = Home work help	-.010	-.242	.809
K = Pupil Behaviors	.018	.261	.794
L = Behaviours of the teachers	-.037	-.545	.586
M = Grade repetition	-.130	-3.077	.002*
N = Use of information communication technology (ICT)	.083	1.986	.048*
O = Distance to social service centres	-.096	-2.392	.017*
P = Experience of the head teacher	-.093	-2.101	.036*
Q = Access to instructional and learning materials	-.170	-3.817	.000*

Note: significant: * $t \geq 1.96$ or p-value <0.05

The results obtained by fitting a linear regression model presented in Table 4.6, shows the explanatory variables of grade repetition, pupil's place of stay, computer usage, parents' education level, experience of the headteachers, distance to social service centres and access to instructional and learning materials are significant determinants of learning achievements. However, the effect of pupils' behavior, socio-economic status, availability of meals at home, home work help and teachers' behaviors are not significant in determining pupils' learning achievements in Uganda.

4.3.1 Socio-economic status on learner performance

The socio-economic status at pupils' homes is not significant in determining learner's performance. This implies that whether a child comes from a family with many or few possessions, the two categories of children can ably compete. It is also important to note that primary school going children in Uganda have access to free education which rules out lack of school fees. As much as a higher socio-economic status may come with its associated advantages it does not significantly determine pupil's performance.

4.3.2 Place of stay and learner performance

The findings of the study showed that place of stay is a significant determinant of learner performance. This is because the place of stay determines attention and academic support given to the learners. This explains why children staying in boarding schools had the best scores followed by those that were staying with their biological parents.

4.3.3 Parents' education and learner performance

Parents' education significantly determines pupil's performance in primary schools in Uganda. Parents who are educated put a lot of value and dedication towards the education of their children. Such parents will ensure that their children enroll in schools whose performance is good and they are in position to assist the children pertaining to school related work. Parents who are not educated may not even have the capacity to check pupils' books. In addition, during holidays it may not be possible on the side of uneducated parents to coach their own children.

4.3.4 Meals at home and learner performance

The results of this study revealed that availability of meals at home is not a significant determinant of learner performance in primary schools. Despite the high levels of hunger in different parts of the country, parents in Uganda try their level best to ensure that their children eat at least once in a day. In addition some schools provide meals at school which makes food evenly available to all learners on average.

4.3.5 Homework help and learner performance

Findings of this study showed that homework help is not a significant determinant of learner performance. True the assistance given to the pupil at home may make a difference but it's the teachers that play the most important role and given the necessary material, children are in position to do the home work rightly. In addition, teachers make corrections with learners at school after marking which enables those that were not helped to catch up with those that are helped.

4.3.6 Pupils' behavior and their performance

This study put into consideration of a number of pupil's characteristics which include; theft , cheating, use abusive language, vandalism, bullying pupils, injuring staff, bullying staff, sexually harassing teachers, drug abuse, alcohol abuse, and sexually harassing pupils. Results showed that pupil's behaviours are not a significant determinant of performance in primary six. This is because pupils may have unsocial behavior but concentrate when it comes to classroom learning.

4.3.7 Grade repetition and learner performance

Grade repetition among primary six pupils has a significant effect on their performance. Learners that repeat classes, tend to perform poorer than those that have never repeated a class. In this study, there were two categories of repeaters, those that were repeating grade six and those that had repeated another class. This implies that making pupils to repeat is not a sole solution to improve their performance.

4.3.8 Information Communication Technology (ICT) and learner performance

Information Communication Technology (ICT) is a significant determinant of learner performance in primary schools. These findings are in consonance with the works of Banerjee and others (2004), and (Angrist and Lavy, 2002) who established that computer-assisted learning program is much more positive results oriented than traditional methods. It is also worth noting that pupils who have access to computers tend to get learning concepts faster as compared to those without. However, in the Ugandan setting, most pupils including the teachers do not have access to ICT facilities.

4.3.9 Teachers' characteristics and learner performance

The teacher's characteristics put into consideration include; arriving late, absenteeism, skipping class, bully pupils, harassing other teachers sexually, harassing pupils sexually, using abusive language, drug abuse and alcohol abuse. Results showed that teacher's characteristics are not a significant determinant of learner performance in primary six. This is because a teacher may be of bad character but concentrates when it time for him or her to teach.

4.3.10 Distance to social service centres and learner performance

Distance to social service centres is a significant determinant of learner performance. The service centres considered in this study were; markets, secondary schools and clinics. Access to service centres reduces time wastage as well as absenteeism among learners. For example nearby markets makes it possible for learners to be sent there after school. On the other hand, early cure in case of sickness is an outcome of nearby clinics.

4.3.11 Head teachers' experience and learner performance

The head teacher's experience is a significant determinant of learner performance. Headteachers who have served in the teaching profession for a longer time tend to produce competent learners than those that a just joining the system. Every year of teaching comes with its own achievements and challenges; hence headteachers who have served for a longer time utilize their teaching experience to realize improved performance.

4.3.12 Access to learning and instructional materials and learner performance

With reference made to the study findings, access to textbooks and learning materials is a significant determinant of learner performance in primary schools in Uganda. Nearby libraries makes it favorable for pupils to read independently. On the other hand, access to book shops avails desired textbooks and other learning materials.

4.4 Discussion

The first objective of the study was to find out how pupils' home and family background determine their learning achievements. Results have indicated that pupils' home and family background are found to be insignificant. Generally, the results imply that the social economic background of the pupils do not in isolation matter in their learner achievements as discussed by Majoribanks (1979); Alexander & Entwisle (1998); Instead, social economic background couples with other factors which in turn influence the learner achievements. These results agree with the reality in Ugandan situation.

The second objective of the present study was to examine the effect of pupils' characteristics in influencing their learning achievements. Results indicate that there is positive and significant effect on use of information communication technology among pupils. This finding is in consonance with the works of Banerjee (2004) and (Angrist and Lavy, 2002) who established that computer-assisted learning program is much more positive results oriented than traditional methods. It is also worth noting that pupils who have access to computers tend to get learning concepts faster as compared to those without. However, in the Ugandan setting, most pupils including the teachers do not have access to ICT materials. Secondly, results have shown that pupils' behaviour have a weak impact towards their academic success. The parsimonious model results also demonstrate that instead, behavior acts as a facilitating tool and then other influencing factors can come into play as discussed by Coleman (1966).

Another major objective of the study was to investigate how teacher characteristics influence pupils' achievements. Results have shown that teachers' access to instructional materials can affect pupils' achievements through pupils' use of computers, pupils' behaviour and school environment. This implies that pupils who have attended lessons may not be having access to

enough class resources, wall charts, wall boards and chalk, and therefore are at a disadvantage in reading subject this result is similar to the findings of Nanyonjo (2007). The reasons for the former could be that the bad teachers' behaviours such as drug abuse, alcoholism, bullying pupils, harassing fellow teachers and teacher's bad language are common impediments to the success of the pupils at school. Teachers are persons who should lead by example in every human action.

Finally, the last objective of the study was to establish the extent to which the school environment impacts on pupil's performance. The study indicates that the school resources, experience of the Headteacher and the location of the school matter to the success of the pupils (results are consistent with; Hanushek 1986 and Fuller 1995). The pupils who study from resourceful and suitably situated schools tend to achieve their academic dreams as compared to those with pupils who study from schools with less resources and perhaps far but walk-able distances. The experience of the headteachers is seen as a key factor in redirecting pupils' focus and management of all affairs of the school.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives the summary of findings, conclusions and recommendations about this study on socio-economic determinants of learning achievements. The conclusions are drawn basing on the findings in chapter four and possible recommendations are also made for further areas of research in the future and possible guidelines while formulating policies that will help Uganda improve pupils' performance particularly at primary level of education as a whole.

5.2 Summary of findings

In summary, the Eastern region contributed the highest number of respondents (29.8%). The percentage share of respondents by sex was almost equal with 49.4 percent boys against 50.6 percent girls. 88 percent of the schools were government with majority (71%) located in rural areas.

The mean age of primary 6 pupils was 13.9 years with youngest primary 6 pupils located in the Central Region, where the average age was 13.32 years. The oldest primary 6 pupils were found in the Western region where the average primary 6 pupils were 14.3 years old. Pupils in rural (14) and government (14) schools were older than their counterparts in urban (13) and private (13) schools respectively. Availability of textbooks in terms of location was highest (12) among pupils whose homes were in urban places. The overall national average mean score for reading

was 478.55 (below the SACMEQ mean of 500) with western region having the highest (508.09) and Northern region lowest (456). For mathematics the national mean was 482 with Western region having the highest (512) and Northern region the lowest (461). The results indicate that pupils' performance in reading and mathematics is low.

The study findings revealed that the significant determinants of learning achievements are grade repetition, place of stay, computer usage, parents' education level, experience of the headteachers, distance to social service centres and access to textbooks.

5.3 Conclusion

Based on the findings of this study, the determinants of learning achievements at primary level of education in Uganda are grade repetition, place of stay, computer usage, parents' education level, experience of the headteachers, distance to social service centres and access to instructional and learning materials by the teachers and pupils respectively. Contrary to the findings of other studies, pupils' characteristics, socio-economic status, pupil learning materials, home work help and teachers' characteristics are not significant in determining pupils' learning achievements in Uganda.

5.4 Recommendations

The findings of this study have implications for policies and programs that seek to improve learning achievements at primary level of education in Uganda. First, the Ministry of Education and Sports should review the teacher allocation formulae as a strategy to reduce grade repetition. Allocation of teachers should be based on the number of classes/streams in a school rather than school enrolment to ensure that schools whose enrolments is small can have at least a teacher per

class. This will not only improve the pupil teacher ratio at school level but also effective teaching and learning by class regardless of size. In addition, recruitment of primary school teachers should be based on two categories, that is, lower primary and upper primary to eliminate the tendency concentrating more on upper primary at the expense of lower primary.

Secondly, the government through the Ministry of Education and Sports in Partnership with Education Development Partners (EDP's) and Community should secure resources towards the development of boarding sections in primary schools. Commuting from home on a daily basis is associated with a number of challenges such as domestic work and inadequate assistance when given home work which negatively impacts on pupil's learning. Currently out of 16,600 primary schools in Uganda only 97 (0.58%) are fully boarding and 1,143 (6.9%) partly boarding (EMIS 2009).

The Ministry of Education and Sports through National Curriculum Development Centre should come up with a primary curriculum for Information Communication Technology (ICT). In addition, primary schools need to be equipped with basic ICT facilities to enable pupils to practically learn and discover more on their own.

The results of the study have shown that, there was overwhelming evidence that the education of parents especially mothers positively and significantly influenced pupils learning achievement. Therefore since majority (85 percent) SACMEQ (2007) of the pupils come from rural areas where most mothers are illiterate, it is recommended that the Ministry of Gender and Social Development should develop strategies for strengthening adult literacy campaigns. On the other hand, Ministry of Finance Planning and Economic Development should increase the budget for this activity.

Local Government through the District Service Commissions should consider experience of teachers before promoting them to the rank of Headteachers. In addition, Headteachers should be offered short training courses to improve on their administrative skills. These short courses should focus on making school heads professional administrators of their respective schools

The government of Uganda through line ministries should ensure that social service centres are within the reach of the people. Long distances to social service centres are prone to late coming, absenteeism and lack of learning and teaching materials.

The government of Uganda through the education and sports sector should procure enough learning and instructional materials for all primary schools. These materials should be made accessible to not only the teachers but also the learners to boost the policy on putting books in the hands of the pupils.

Lastly, Parents/guardians should equip their children with necessary learning materials and this should be more emphasised for parents/guardians whose children are under Universal Primary Education who constitute the majority. This needs to be accompanied by sensitization of parents/guardians on the offers of Universal Primary Education. This would enable parents/guardians take charge of their roles and responsibilities.

Annex 1: Factors loading of variables that passed through factor analysis

Factor 1 (K = Pupil Behaviors)		Factor 2 (L = Behaviours of the teachers)		Factor 3 (H = Parents' education level)		Factor 4 (N = Use of ICT)		Factor 5 (O = Distance to social service centres)	
Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings
Pupil Theft	0.68	Teacher Arrive Late	0.74	Source Of Lighting	0.63	Used a Computer-School	0.8	How Far From Market	0.82
Pupil Cheating	0.71	Teacher Absenteeism	0.74	Father's Education	0.72	Used a Computer-Home	0.83	How Far From Sec Sch	0.9
Pupil Use Abusive Language	0.71	Teacher Skip Class	0.79	Mother's Education	0.72	Used a Computer	0.88	How Far From Clinic (Km)	0.91
Pupil Vandalism	0.77	Teacher Bully Pupils	0.88						
Pupil Bullying Pupils	0.81	Teacher Harass Sexually Teachers	0.84						
Pupil Injure Staff	0.81	Teacher Harass Sexually Pupils	0.89						
Pupil Bullying Staff	0.84	Teacher Language	0.82						
Pupil Sexually Harrass Teachers	0.84	Teacher Drug Abuse	0.87						
Pupil Drug Abuse	0.86	Teacher Alcohol Abuse	0.84						
Pupil Alcohol Abuse	0.87	Teacher Health Problem	0.64						
Pupil Sexually Harrass Pupils	0.88								

Annex 1: Factors Loading Cont'

Factor 6 (I = Availability of Meals at home)		Factor 7 (M = Grade repetition)		Factor 8 (J = Home work help)		Factor 9 (G = Place to stay by pupil)		Factor 10 (P = Experience of the head teacher)		Factor 11 (F = Social economic status)		Factor 12 (Q= Access to instructional and learning materials)	
Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings	Items	Loadings
Lunch	0.7	Repeated Grades	0.76	Homework-Help	-0.74	Task-Collecting Firewood	-0.52	Experience of H/Teacher	0.73	Economic Status	0.79	How Far From Library (Km)	0.72
Evening Meal	0.74	Repeating G6	0.76	Books At Home	0.6	Place to Stay	0.56	Age Of School Head	0.79			How Far From Book Shop (Km)	0.79

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