THE ACHIEVEMENT OF S 2 STUDENTS AND TEACHERS IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY

NATIONAL ASSESSMENT OF PROGRESS IN EDUCATION

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EXECUTIVE SUMMARY

The main objective of the 2011 NAPE study was to determine the level of achievement of S 2 students and teachers in English Language, Mathematics and Biology and establish the factors that affect achievement.

The sample consisted of 19,790 S 2 students (54% boys and 46% girls) and 500 teachers drawn from 524 government and private secondary schools, selected from the 112 districts of Uganda.

Overall achievement levels:

- Student achievement was quite good in English Language, below average in Mathematics and weak in Biology. Perhaps due to the large class sizes, teachers are not able to conduct science practicals and provide enough practice to students, which are key elements in the learning of Mathematics and Science.

- Teachers' performance was good in both English Language and Mathematics but weak in Biology. Maybe due to specialization in only a few topics by Biology teachers.

- Both students and teachers were successful in responding to questions which demanded knowledge of facts and in dealing with mechanical aspects of the subject matter. They, however, did not exhibit such skills in answering questions that called for critical thinking and practical skills. This could have been a result of teaching in an abstract manner, without relating the concepts to everyday life experience; and using assessments that test low order thinking skills, rather than higher order thinking skills.

Achievement by gender:

- Boys and girls performed at about the same level in English Language, but boys were better in Biology and Mathematics. Maybe due to the few role models the girls had; as only 8.7% and 19.7% of the teachers of Mathematics and Biology were females; compared to nearly forty percent for language.
- Male and female teachers performed at comparable levels in all the subjects.

- Students with female teachers performed better than those with male teachers. Maybe due to females' motherly patience, which allows them to teach even slow learners.

Achievement by age:

- Students aged 14 years and below performed better than older ones. Possibly due to learning difficulty and the involvement of older students in non-academic matters. This underscores the importance of disseminating such findings to the community, so that people get to know the variables which affect students' learning and achievement.

Achievement by teacher's qualification:

- Students taught by teachers with a Degree in Education performed best, followed by those whose teachers had Grade V (Secondary) and then those taught by teachers with other qualifications. This result suggests that the confidence a teacher derives from appropriate training is a key ingredient in quality teaching.

Achievement by school ownership and USE status:

- Students and teachers in government non-USE schools, performed best and those in PPP schools had the least performance level. Possibly because most government non-USE schools are well established and provide a conducive environment for study. Additionally, they do not severely face the challenges of shortage of qualified teachers, high student enrolment, inadequate infrastructure and lack of lunch for teachers and students, which were mainly reported by the other categories of schools. Hence, teachers are likely to have enough time to prepare, teach and assess the students regularly.

Achievement by zone:

- Among the zones, student performance was better in Kampala, South West (Buhweju, Bushenyi, Ibanda, Isingiro, Kiruhura, Mbarara, Mitooma, Ntungamo, Rubirizi and Sheema) and Far West (Kabale, Kanungu, Kisoro and Rukungiri). However, students and teachers performed at low levels in Mid East I (Bududa, Bukwo, Bulambuli, Kapchorwa, Kween, Manafwa, Mbale and Sironko) and Central II (Kiboga, Kyankwanzi, Luwero, Mityana, Mubende, Nakaseke and Nakasongola). Mid East I is at the Uganda–Kenya border and the population of Central II consists mainly of pastoralists. Perhaps the activities in these zones distract students and teachers from school leading to high rate of absenteeism.

Challenges faced by schools:

The main challenges, reported by schools, especially USE schools, is resource constraints: shortage of qualified teachers, insufficient funds (also released late) and lack of facilities particularly for science; and absenteeism of teachers and students. More effort needs to be put in addressing these challenges, in order to improve the quality of teaching and learning in schools, and hence raise the level of learning achievement.

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ACRONYMS AND ABBREVIATIONS

BTVET	Business, Technical and Vocational Education and Training
DES	Directorate of Education Standards
EFA	Education For All
EMIS	Education Management Information System
EPRC	Education Policy Review Commission
ESSP	Education Sector Strategic Plan
HOTs	Higher Order Thinking Skills
INSET	In-Service Education and Training
LCM	Lowest Common Multiple
LOTS	Low Order Thinking Skills
MDG	Millennium Development Goals
MoES	Ministry of Education and Sports
NAPE	National Assessment of Progress in Education
NCDC	National Curriculum Development Centre
PLE	Primary Leaving Examination
PPP	Public Private Partnership
S 2	Senior Two
S/E	Standard Error
SESEMAT	Secondary Science and Mathematics Teachers' Program
TLs	Team Leaders
UACE	Uganda Advanced Certificate of Education
UCE	Uganda Certificate of Education
UNEB	Uganda National Examinations Board
UPE	Universal Primary Education
USE	Universal Secondary Education
ZCs	Zonal Coordinators

A WORD FROM THE MINISTER

Investment in education has got many returns which reach the majority of the population. More schooling is associated with reduction in gender disparities, and improved family health. Therefore, increased access to education should be poverty alleviating and income equalizing among different sections of Ugandans. In its quest to increase access to education and to improve its quality, the Government of Uganda was the first country in Africa to have free secondary education.

Government is conscious of the formidable challenges that increased student enrolment pose to improvements in the conditions of schooling and student achievement levels. Government has also realised that Mathematics and Science are essential to the development of the country and has adopted policies that promote quality teaching of Mathematics and science. Under the implementation of SESEMAT (Secondary Science and Mathematics Teachers) programme, more regional centers have been established and 4,911 Science and Mathematics teachers have been trained under the regular INSET. In addition, during the training, subject based contents have been introduced stressing the harmonization of the curriculum, UNEB examinations, and textbooks.

Many nations have now established national assessment with the aim of monitoring and evaluating the quality of their education systems across several time points. In Uganda, assessment has continued to target senior two students in the subject areas of Mathematics, Biology and English Language. The choice of these subjects is informed by Education Sector Strategic Plan (ESSP) 2004-2015 which aimed at addressing critical concerns such as students acquiring skills and knowledge that are required to enter the workforce or pursue tertiary education.

The Government has approved the strategic plan for Business Technical Vocational Education and Training (BTVET), which focuses on skills development. The new BTVET system is expected to emerge from the current education certificate system into a comprehensive competence–based system of skills development focused on employability, enhanced productivity and economic growth. The Ministry will ensure that national assessment is extended to the BTVET sub-sector by 2013.

This volume is the fourth annual publication of NAPE at the secondary level. We insist on making these results public so that parents, schools, communities and all the other stakeholders can act positively on the information, well aware of the areas deserving attention in the education of their children. The report details what students have achieved, thereby providing information about the quality of education.

I urge you all to give careful consideration to this report so as to ensure that quality teaching and learning takes place in schools. We need decisiveness and prompt action from all stakeholders.

Hon. Maj. (Rtd) Jessica Alupo (MP)
Minister for Education and Sports

FOREWORD

Many countries have in the recent past realized the key role quality education plays in skills development for national development.

The Government of Uganda has directed its effort and resources, not only towards achieving access to education through Universal Secondary Education (USE), but also to improving the quality education. Currently quality enhancement initiatives such as the training of Science and Mathematics teachers through SESEMAT and curriculum review are being implemented. UNEB, too, has been provided with some resources to annually assess and monitor learning achievement of students.

The findings in the previous volumes have revealed a lot about the teaching learning process and student achievement. For instance revelations have been made about the performance of students under USE programme.

This volume is the fourth annual publication of NAPE at the secondary level, in which assessment has continued to target S 2 students in English Language, Mathematics and Biology.

The report is meant for the key players in education, responsible for policy development and implementation, as well as those who monitor and assess the process and outcomes. The Reader will note that the report format differs from that of academic researchers, due to the wide range of intended users: from parents and the learners to politicians and academicians.

I hope that each category of stakeholder will find the report valuable. We do welcome any feedback that you care to offer.

M B B Bukenya
Executive Secretary

Chapter 1

INTRODUCTION

1.1 BACKGROUND

Uganda is one of the countries in East Africa, located between Latitudes 4^0 12'N and 1^0 29'S and Longitudes 29^0 34'E and 35^0 0' E; astride the equator. It comprises 241,550.7 square kilometers of land and 41,743.2 square kilometers of open water and swamps[1]. The climate is generally tropical in nature, although it differs from one region to another.

Uganda is a land locked country, bordered by Kenya in the East, the Democratic Republic of Congo in the West, Tanzania in the South, Rwanda in the South West and Sudan in the North. The country is mostly a plateau, whose fringes are marked by mountains and valleys, which together with other physical features affect the provision of social services, like education in some areas. For instance, access to schools in the Island District of Kalangala, which is composed of many small islands on Lake Victoria, poses a challenge, not only to pupils and teachers, but also to education administrators and inspectors. The same applies to the rocky and mountainous districts; Bundibugyo and Kisoro in the West and Bukwo and Bududa in the East. The country is currently divided into 112 districts, from the figure of 87 in 2010; 29% increase (see map on page 3). With the policy of decentralization, the districts are administered by the Local Governments, which are supervised by the Central Government's Ministry of Local Government.

Uganda's population is growing at a fast rate; increasing from 24.2 million in 2002 to the estimated figure of 32 million people by the end of 2010[2]. About a half of the population is below 15

[1] Uganda Bureau of Statistics, 2010 Statistical Abstract, Pg 1
http://www.ubos.org

[2] Uganda Bureau of Statistics, 2010 Statistical Abstract, Pg 11
http://www.ubos.org

years of age, which creates a high level of child dependence. For instance, the number of primary school pupils is expected to increase from 8.3 million in 2010 to 18.4 million in 2037[3]. The high rate of population growth affects the country's effort to achieve and sustain quality education.

The population comprises about fifty ethnic groups, each with a different local language, which is supposed to be used as the medium of instruction in lower primary in the rural areas while English is taught as a subject. However, English is the medium of instruction in upper primary and institutions of higher learning. Kiswahili is also taught is some primary and secondary schools.

A list of the districts in Uganda showing with the zones and regions as well as the major languages is given in Table 1.01

Table 1.01

[3] Ministry of Finance and economic Development, Population Secretariat: *Uganda – Population Factors and*

National Development, January 2010, Page 2

TABLE 1.01: REGIONS, ZONES AND DISTRICTS IN UGANDA AND THE MAJOR LANGUAGES SPOKEN

REGION	ZONE	DISTRICTS	MAJOR LANGUAGES
Central	Central I	Buikwe, Butambala, Buvuma, Gomba, Kayunga, Mpigi, Mukono, Wakiso.	Luganda
	Central II	Kiboga, Kyankwanzi, Luweero, Mityana, Mubende Nakaseke, Nakasongola.	Luganda, Lululi, Runyoro
	Central III	Bukomansimbi, Kalangala, Kalungu,Lwengo, Lyantonde, Masaka, Rakai, Sembabule.	Luganda, Runyankore
East	Far East	Amuria, Bukedea, Kaberamaido, Katakwi, Kumi, Ngora, Soroti, Serere.	Ateso, Kumam
	Mid East I	Bududa, Bukwo, Bulambuli, Kapchorwa, Kween, Manafwa, Mbale, Sironko.	Kupsabiny, Lumasaba
	Mid East II	Budaka, Busia, Butaleja, Kibuku, Pallisa, Tororo.	Ateso, Dhopadhola, Kiswahili, Lugwere Lunyole, Lusamya
	Near East	Bugiri, Buyende, Iganga, Jinja, Kaliro, Kamuli, Luuka, Mayuge, Namayingo, Namutumba.	Lusoga, Lusamya
Kampala		Kampala.	English, Kiswahili, Luganda.
North	Mid North I	Alebtong, Amolatar, Apac, Dokolo, Kole, Lira, Otuke, Oyam.	Lango.
	Mid North II	Agago, Amuru, Gulu, Lamwo, Kitgum, Nwoya, Pader.	Acoli.
	North East	Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit, Napak.	Ngakarimojong, Thur.
	West Nile	Adjumani, Arua, Koboko, Maracha, Moyo, Nebbi, Yumbe, Zombo.	Alur, Kakwa, Lugbara, Madi.
West	Far West	Kabale, Kanungu, Kisoro, Rukungiri.	Rukiga, Kinyarwanda, Rufumbira.
	Mid West	Bundibugyo, Kabarole, Kamwenge Kasese, Kyegegwa, Kyenjojo, Ntoroko.	Kiswahili, Lukhonzo, Lwamba, Rutooro.
	North West	Buliisa, Hoima, Kibaale, Kiryandongo, Masindi.	Kiswahili, Runyoro
	South West	Bushenyi, Buhweju, Ibanda, Isingiro, Kiruhura, Mbarara, Mitooma, Ntungamo Rubirizi, Sheema.	Kinyarwanda, Runyankore.

MAP OF UGANDA: SHOWING THE DISTRICTS

1.2 EDUCATION IN UGANDA

Uganda's formal system of education is four-tier: seven years of primary education, four years of lower secondary, two years of upper secondary and two to five years of tertiary education.
The Constitution of Uganda stipulates that education is a fundamental right for every citizen. It is therefore essential for the country to provide quality and relevant education to all its citizens, irrespective of cultural, gender, regional or social differences. Because of this and in response to *the 1990 World Conference on Education for All* (EFA) and *The Millennium Development Goals* (MDGs), Government introduced Universal Primary Education (UPE) in 1997. Ten years later, in 2007, Universal Secondary Education (USE) was also introduced. Accordingly, the total enrolment at secondary level increased by 10 % between 2008 and 2009.[4] Because of the high number of students, some schools are implementing the double-session system. In addition, Government has entered a Public-Private-Partnership (PPP) with some private providers to make it possible for every qualifying student to access secondary education under USE.

Regarding equity, Government has improved the learning environment in schools to make it more conducive for both boys and girls. To reinforce the success in gender parity at the primary level and to roll-out gender equity in the entire education sector, Government launched *The Gender Policy in Education* in 2010. The Ministry of Education and Sports (MoES) has also made effort in the area of special needs education, leading to an increase in the number of secondary school students with special needs by about 20% between 2008 and 2010.[5]

[4] Uganda Bureau of Statistics, 2010 Statistical Abstract , Pg 10

http://www.ubos.org

[5] Uganda Bureau of Statistics, 2010 Statistical abstract, Page 9 – 12

http://www.ubos.org

To improve the quality of education in schools, Government and its development partners have put in place a number of quality enhancement initiatives. Classrooms, libraries and laboratories are being constructed. The curriculum is also under review to make it more relevant to the country's needs. In addition, more resources has been provided to the Directorate of Education Standards (DES) for supervision and monitoring of the teaching-learning process. Recruitment of more teachers, training of Science and Mathematics teachers through SESEMAT (Secondary Science and Mathematics Teachers) programme are some of the other quality improvement initiatives. Uganda National Examinations Board (UNEB) too, has been provided with resources to regularly assess and monitor the learning achievement of students.

1.3 NATIONAL ASSESSMENT OF PROGRESS IN EDUCATION

The Education Policy Review Commission (EPRC, 1989) reported lack of reliable and up-to-date data on educational indicators. Back then, the only assessment information used for monitoring and evaluation was based on the end of cycle examination results and reports by examiners on the examinations. However, these examinations are designed to primarily serve as tools for certification and selection to higher institutions of learning. National Assessment of Progress in Education (NAPE) was, therefore, established to supplement the information from the examinations. NAPE is used to ascertain the level of students, learning achievement and to monitor changes in the achievement levels over time. It determines the skills that a cohort of students has acquired and is capable of acquiring in relation to the objectives of the curriculum. The first national assessment in Uganda at the secondary level was conducted in S 2 in 2008, though at primary level, it started as early as 1996. Since then, it has been conducted annually in has been the same class.

1.3.1 Objectives Of NAPE

The main objectives of NAPE are:

- Determine and monitor the level of achievement of students over time.
- Generate information on what students know and can do in different curricular areas.
- Evaluate the effectiveness of reforms in the education system.
- Provide information on variables which affect learning achievement.
- Suggest measures for the improvement of teaching and learning in schools.
- Provide data for planning and research.

1.4 THE 2011 NAPE STUDY

This volume presents the results of the 2011 NAPE survey. The objectives of the study are presented in the sequel. The description of the instruments and the procedures for selecting the sample and administering the instruments is contained in Chapter 2. Results of students' achievement in English Language are presented in Chapter 3. This is followed by the results of Mathematics in Chapter 4 and Biology in Chapter 5. In Chapter 6, a presentation of teachers' achievement in the three subjects above is made and Chapter 7 describes the achievement of students by teacher factors. Chapter 8 gives an account of the challenges that secondary schools reportedly faced in a period of one year prior to the survey. Finally, the conclusions, discussions and recommendations are given in Chapter 9.

The results are presented in terms of the mean scores and percentages of students achieving the defined levels of proficiency. Statistics are also provided by student gender, age, school USE status (Universal Secondary Education or not), programme (single or double session), ownership (government or private), school location (urban if situated within a municipality, or the major town of a district; and rural if situated outside the main town) and zones of the country.

The 2011 survey had the following objectives:

1. Determine students' level of achievement in English Language, Mathematics and Biology.

2. Examine students' patterns of performance in the competencies, skill areas and topical areas of English Language, Mathematics and Biology.

3. Examine the relationship between achievement and students' gender, age and school USE status, programme, ownership, school location, and zones of the country.

4. Compare achievement of students from 2008 to 2011.

5. Determine the level of achievement of teachers in English Language, Mathematics and Biology.

6. Examine the patterns of performance of teachers in the competencies, skill areas and topical areas of English Language, Mathematics and Biology.

7. Examine the relationship between teachers' achievement and gender, age, highest teaching qualification, teaching experience, school USE status, programme, ownership, location and zones of the country.

8. Examine the relationship between student achievement and teacher gender, age, highest teaching qualification and teaching experience.

Chapter 2

SURVEY PROCEDURES

2.1 INTRODUCTION

This chapter gives a description of the instruments, as well as the procedures that were used in selecting the sample, collecting, capturing and analyzing the data.

2.2 INSTRUMENTS

2.2.1 STUDENT TESTS

There were written tests of Mathematics, English Language and Biology. The tests were based on the Uganda Secondary School Curriculum and were developed at a central workshop by a team of experts comprising secondary school teachers, personnel from the National Curriculum Development Centre (NCDC), Universities and Uganda National Examinations Board (UNEB). The tests consisted of restricted and free response items. The compositions of the tests are given in Tables 2.01–2.03

TABLE 2.01: RELATIVE WEIGHTS ALLOCATED TO EACH SKILL AND SUB-SKILL AREA OF THE ENGLISH LANGUAGE TEST

SKILL AREA	SUB - SKILL AREA	SUB-TOTAL	(WEIGHT)
Reading	Passage	12	36
	Dialogue	8	
	Poetry	8	
	Cartoons	8	
Writing	Report/conversation	10	34
	Formal letter	12	
	Composition	12	
Grammar	Punctuation	4	30
	Structural patterns	8	
	Articles and words of quantity	4	
	Parts of speech.	14	
TOTAL			100

TABLE 2.02: RELATIVE WEIGHTS ALLOCATED TO EACH TOPICAL AREA AND ABILITY LEVEL OF THE MATHEMATICS TEST

TOPICAL AREA	ABILITY LEVELS			Total (Weight)
	Basic	Adequate	Advanced	
Set theory, probability, relations and mappings.	3	3	3	9
Number concepts (including estimation and number patterns and sequences)	6	10	7	23
Cartesian coordinates and graphs.	1	8	5	14
Geometry	4	5	5	14
Measures	5	5	6	16
Transformations and functions.	1	7	4	12
Statistics	2	4	6	12
TOTAL	22	42	36	100

TABLE 2.03: RELATIVE WEIGHTS ALLOCATED TO EACH TOPICAL AREA AND ABILITY LEVEL OF THE BIOLOGY TEST

TOPICAL AREA	ABILITY LEVEL			TOTAL (Weight)
	Basic	Adequate	Advanced	
Introduction to Biology.	5			5
Diversity of living things.	3	3	9	15
Microscopes and hand lenses.	2	6		8
Animal and plant cells.	2	3		5
External features and internal Structures of flowering plants.	8	13	8	29
External features, life cycles and Economic importance of insects.	2	7	5	14
Soil	7	12	5	24
TOTAL	29	44	27	100

2.2.2 TESTS FOR TEACHERS

Teachers of S 2 sat for written tests in English Language, Mathematics and Biology, which were similar to the students'. Each teacher sat for a test in the subject he/she teaches, at the same time as the students, but took three quarters of the time. In addition to the tests, teachers filled in a questionnaire to indicate their gender, age, highest teaching qualification and teaching experience.

2.2.3 INTERVIEW SCHEDULE FOR HEADTEACHERS

There was an interview schedule for headteachers which sought for information on the major challenges the schools had faced within about one year prior to the survey. The instrument was structured and categorized the challenges into two: challenges in administration and management and those in pedagogy.

2.3 SURVEY DESIGN

2.3.1 SURVEY POPULATION

The target population consisted of students in senior two (S 2) in all the secondary schools (both government and private) in Uganda in July 2011.

2.3.2 SAMPLING DESIGN

A two-stage stratified cluster sampling design was used. The first stage involved selecting a random sample of schools, stratified by zone. Within a zone, it was ensured that schools were selected from each of the districts in the zone. Hence, the sample consisted of schools from all the 112 districts of Uganda. In the second stage, a random sample of 30 students was selected from among those who were present in the school on the day of the survey.

2.3.3 SELECTION OF SCHOOLS

A list of secondary schools from the Education Management Information System (EMIS), showing the total school enrolment and the number of S 2 students provided the sampling frame.

The number of schools selected from a particular zone was proportional to the S 2 enrolment in the zone. However, a minimum of three schools were sampled from each of the districts within the zone. The districts of Amudat, Buvuma, Kalangala and Kotido could not raise the required minimum number of schools, so all their schools were included in the sample.

As in the previous surveys, Kampala District was considered as a separate stratum because of its uniqueness. Being the capital city of the country, it is the most urbanized district with a population that has highly competitive socio-economic characteristics, which are likely to enhance the achievement of learners.

Schools for the Blind and the Deaf were included in the sample, but were not considered as part of the zonal quota.

2.3.4 SELECTION OF STUDENTS

A simple random sample of 30[6] students was selected from each school according to set out guidelines which guaranteed the random nature of the selection procedures. The sample size of 30 was maintained as in the previous surveys because increasing the number to more than 30 raises the accuracy level only by a negligible amount, and yet the cost of instrument production and administration gets much higher. Secondly, most secondary school classrooms in Uganda take up to about 30 test takers sitting in appropriately spaced manner, and one test administrator can effectively supervise about 30 students.

[6] In schools for the Deaf and Blind all the S 2 students were included in the sample.

2.3.5 SAMPLE SIZE

The national sample consisted of 524 schools, which was 18.54% of the schools in Uganda, and 19,790 students, representing 7.22% of the S 2 students in the country.

Of the 524 schools, 329 were government and 195 private. The total number of schools in the urban and rural areas was 145 and 379, respectively.

The number of schools sampled from each district as well as the number in the sample frame is shown in Table 2.04.

TABLE 2.04: NUMBER OF SCHOOLS IN THE SAMPLE AND IN THE ZONE AND DISTRICTS

REGION	ZONE	DISTRICTS
Central [132 ; 1011]	Central I (68; 470)	Buikwe (9; 56[+]), Butambala (5; 25) Buvuma (2; 2) Gomba (3; 18), Kayunga (7; 49), Mpigi (7; 42), Mukono (13; 88), Wakiso[*] (22; 190)
	Central II (35; 235)	Kiboga (3; 18), Kyankwanzi (3; 12), Luwero (10; 74), Mityana (6; 38) Mubende (5; 45), Nakaseke (4; 26), Nakasongola (4; 22)
	Central III (29; 165)	Bukomansimbi (3, 16), Kalangala (2; 2), Kalungu (3; 23), Lwengo (3; 17), Lyantonde (3; 7), Masaka (6; 34) , Rakai (5; 45), Sembabule (4; 21)
East [145 ; 687]	Far East (27, 109)	Amuria (3; 12), Bukedea (3; 11), Kaberamaido (3; 16), Katakwi (3; 11), Kumi (3; 11), Ngora (3; 10), Serere (3; 13), Soroti[*] (6; 25)
	Mid East I (37; 160)	Bududa (3; 7), Bukwo (3; 10), Bulambuli (3; 13), Kapchorwa (4; 11), Kween (3; 11), Manafwa (6; 33), Mbale[*] (9; 54), Sironko (6; 21)
	Mid East II (29; 153)	Budaka (3; 14), Busia (6; 31), Butaleja (4; 18), Kibuku (3;11), Pallisa (4; 267, Tororo (9; 52)
	Near East (52; 265)	Bugiri (7; 36), Buyende (3; 12), Iganga (8; 34), Jinja (9; 57), Kaliro (3; 18), Kamuli (8; 39), Luuka (3; 18), Mayuge (4; 26), Namayingo (3; 9), Namutumba (4; 16),
North [99 ; 355]	Mid North I (27; 81)	Alebtong (3; 8), Amolatar (3; 6), Apac (3; 12), Dokolo (3; 7), Kole (3; 10) Lira[*] (6, 25), Otuke (3, 4), Oyam (3, 9)
	Mid North II (22; 79)	Agago (3, 8), Amuru (3; 7), Gulu (4; 24), Kitgum (3; 17), Lamwo (3; 5), Nwoya (3; 4), Pader (3; 14).
	North East (19; 22)	Abim (3; 4), Amudat (2; 2), Kaabong (3; 3), Kotido (2; 2), Moroto (3; 5), Nakapiripirit (3, 3), Napak (3, 3).
	West Nile (31; 174)	Adjumani (3; 15), Arua (8; 67), Koboko (3; 13), Maracha (3; 12), Moyo (3; 13), Nebbi (4; 23), Yumbe (4; 22), Zombo (3; 9)
West [130 ; 773]	Far West (28; 165)	Kabale (12; 74), Kanungu (5; 27), Kisoro (4; 27), Rukungiri (7; 37)
	Mid West (32; 192)	Bundibugyo (3, 14), Kabarole (7, 42), Kamwenge (3, 26), Kasese (10, 77), Kyegegwa (3, 10), Kyenjojo (4, 21), Ntoroko (2, 2)
	North West (25; 144)	Buliisa (3, 6), Hoima (6, 38), Kibaale (8, 59), Kiryandongo (3, 15) Masindi (5, 26)
	South West (45; 272)	Buhweju (3; 5), Bushenyi (6; 30), Ibanda (4; 15), Isingiro (3; 32), Kiruhura (3; 25), Mbarara (9; 55), Mitooma (4; 32), Ntungamo (7; 44), Rubirizi (3; 8), Sheema (3; 26)
Kampala		Kampala (18; 141)
Uganda	(524; 3,067)	

[+] First figure in the brackets is the number of schools in the sample and the second is the number of schools in the zone or district.

[*] These Districts had schools for the Blind or Deaf.

2.3.6 DISTRIBUTION OF SAMPLED STUDENTS BY SELECTED FACTORS

In this section, the distribution of S 2 students who actually participated in the survey according to gender, age, school ownership, location and zone is presented.

The distribution of S 2 students in the achieved sample according to gender, age, school USE, program, ownership, location and zone is given in Tables 2.05 to 2.10.

TABLE 2.05: THE DISTRIBUTION OF S 2 STUDENTS IN THE ACHIEVED SAMPLE BY AGE AND GENDER

AGE (years)	BOYS (N, Percent)		GIRLS (N, Percent)		ALL (N, Percent)	
12 – 13	95	(0.88)	142	(1.57)	237	(1.20)
14	852	(7.92)	1,166	(12.90)	2,018	(10.20)
15	2,127	(19.78)	2,672	(29.57)	4,799	(24.25)
16	3,088	(28.72)	3,015	(33.36)	6,103	(30.84)
17	2,638	(24.53)	1,494	(16.53)	4,132	(20.88)
18	1,264	(11.75)	429	(4.75)	1,693	(8.55)
18+[β]	689	(6.41)	119	(1.32)	808	(4.08)
Total	10,753	(54.34)	9,037	(45.66)	19,790	(100.00)

TABLE 2.06: DISTRIBUTION OF S 2 STUDENTS IN THE ACHIEVED SAMPLE BY SCHOOL USE STATUS AND GENDER

SCHOOL USE STATUS	BOYS (N, Percent)		GIRLS (N, Percent)		ALL (N, Percent)	
USE	9,003	(55.15)	7,323	(44.85)	16,326	(82.50)
Non – USE	1,750	(50.52)	1,714	(49.48)	3,464	(17.50)
Total	10,753	(54.34)	9,037	(45.66)	19,790	(100.00)

[β] Above 18 years old.

TABLE 2.07: DISTRIBUTION OF S 2 STUDENTS IN THE ACHIEVED SAMPLE BY SCHOOL OWNERSHIP AND GENDER

SCHOOL OWNERSHIP	BOYS (N, Percent)	GIRLS (N, Percent)	ALL (N, Percent)
Government	7,848 (56.01)	6,165 (43.99)	14,013 (70.81)
Private	2,905 (50.29)	2,872 (49.71)	5,777 (29.19)
Total	10,753 (54.34)	9,037 (45.66)	19,790 (100.00)

TABLE 2.08: DISTRIBUTION OF S 2 STUDENTS IN THE ACHIEVED SAMPLE BY SCHOOL OWNERSHIP, USE STATUS AND GENDER

SCHOOL OWNERSHIP AND USE STATUS		BOYS (N, Percent)	GIRLS (N, Percent)	ALL (N, Percent
GOVERNMENT	USE	7,474 (55.77)	5,927 (44.23)	13,401 (95.63)
	Non-USE	374 (61.11)	238 (38.89)	612 (4.37)
	TOTAL	7,848 (56.01)	6,165 (43.99)	14,013 (100.00)
PRIVATE	USE	1,529 (52.27)	1,396 (47.73)	2,925 (50.63)
	Non-USE	1,376 (48.25)	1,476 (51.75)	2,852 (49.37)
	TOTAL	2,905 (50.29)	2,872 (49.71)	5,777 (100.00)

TABLE 2.09: DISTRIBUTION OF S 2 STUDENTS IN THE ACHIEVED SAMPLE BY SCHOOL PROGRAM AND GENDER

SCHOOL PROGRAM	BOYS (N, Percent)	GIRLS (N, Percent)	ALL (N, Percent)
Single – session	7,482 (53.75)	6,437 (46.25)	13,919 (70.33)
Double – session	3,271 (55.71)	2,600 (44.29)	5,871 (29.67)
Total	10,753 (54.34)	9,037 (45.66)	19,790 (100.00)

TABLE 2.10: DISTRIBUTION OF S 2 STUDENTS IN THE ACHIEVED SAMPLE BY SCHOOL LOCATION AND GENDER

SCHOOL LOCATION	BOYS (N, Percent)	GIRLS (N, Percent)	ALL (N, Percent)
Urban	3,371 (55.48)	2,705 (44.52)	6,076 (30.70)
Rural	7,382 (53.83)	6,332 (46.17)	13,714 (69.30)
Total	10,753 (54.34)	9,037 (45.66)	19,790 (100.00)

TABLE 2.11: DISTRIBUTION OF S 2 STUDENTS IN THE ACHIEVED SAMPLE BY ZONE AND GENDER

REGION	ZONE	BOYS (N, Percent)		GIRLS (N, Percent)		ALL (N, Percent)	
Central	Central I	1,107	(10.29)	1,167	(12.91)	2,274	(11.49)
	Central II	663	(6.17)	655	(7.25)	1,318	(6.66)
	Central III	433	(4.03)	557	(6.16)	990	(5.00)
East	Far East	604	(5.62)	458	(5.07)	1,062	(5.37)
	Mid East I	679	(6.31)	693	(7.67)	1,372	(6.93)
	Mid East II	936	(8.70)	624	(6.90)	1,560	(7.88)
	Near East	1,210	(11.25)	1,096	(12.13)	2,306	(11.65)
Kampala	Kampala	411	(3.82)	409	(4.53)	820	(4.14)
North	Mid North I	551	(5.12)	309	(3.42)	860	(4.35)
	Mid North II	625	(5.81)	300	(3.32)	925	(4.67)
	North East	364	(3.39)	207	(2.29)	571	(2.89)
	West Nile	667	(6.20)	382	(4.23)	1,049	(5.30)
West	Far West	409	(3.80)	431	(4.77)	840	(4.24)
	Mid West	782	(7.27)	616	(6.82)	1,398	(7.06)
	North West	628	(5.84)	468	(5.18)	1,096	(5.54)
	South West	684	(6.36)	665	(7.36)	1,349	(6.82)
Uganda		10,753	(54.34)	9,037	(45.66)	19,790	(100.00)

2.3.7 SAMPLING WEIGHTS

Sampling weights were determined and applied to the data in order to be able to reflect the probability of being sampled, adjustments for non-response as well as post stratification adjustments. This would allow for un-biased estimates of the levels of proficiency and mean scores in English Language, Mathematics and Biology.

2.4 DATA COLLECTION

A total of 820 officers were appointed from UNEB, DES, NCDC, Kyambogo University, Gulu University, Nkumba University and the Headquarters of the Ministry of Education and Sports, secondary school teachers and retired senior educationists to work as Zonal Coordinators (ZC) and Team Leaders (TLs) of the data collection process in the schools.

The ZCs and TLs had a one–day training in Kampala facilitated by senior NAPE officers. They used a pre–prepared Test Administrator's Manual, which detailed the procedures. The officers discussed fully what was outlined in the Manual, which included, among others, how to obtain a random sample of 30 students and how to conduct the tests as well as the timetable for each day of assessment.

In a school, each TL worked with one test administrator, selected from among secondary school teachers. Double-session schools had two test administrators each. The test administrators had a one–day training in the zone, facilitated by the ZC. Thereafter, the two (or three in a double-session school) conducted assessments in one school for two consecutive days, following the timetable.

2.5 STATISTICAL DATA ANALYSIS

The tests were scored by secondary school teachers in a central venue in Kampala. The test scores were captured using EpiDATA (version 3.02), and analysis was done using the STATA (version 11.0) statistical package.

Data analysis was done at three levels. Firstly, the analysis involved determining the overall achievement level in each subject in terms of

mean scores and the percentages of students reaching the desired levels of proficiency. Secondly, the proportion of students rated proficient in each competency of a subject was determined. Finally, performance was analyzed by students' gender and age, school USE status, program, ownership, location and zone.

Students' achievement in each of the tests was described using one of three levels: 'Advanced', 'Adequate', and 'Basic'. This criterion was set at the time of preparing the tests. Detailed description of the categorization of the competencies, by performance levels is given in Section 2 of Chapters 3 – 5. The performance levels were defined as follows:

Advanced level: Indicates superior performance. A student with this rating is considered to have demonstrated complete mastery of the subject matter.

Adequate level: Demonstrates competence in the subject matter. This is the minimum performance level that was desired of the students.

Basic level: Demonstrates the ability to understand only elementary concepts and skills. A student at this level is performing below his/her class level.

NOTE: ***A student is rated proficient if he/she has reached 'Advanced' or 'Adequate' level of proficiency.***

Chapter 3

ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE

3.1 INTRODUCTION

This chapter presents of the achievement of S 2 students in English Language. The overall mean score and the proportions of students reaching different levels of proficiency are given first. Then the proportions of students rated proficient in the different language sub-skills and competencies are described. After this, the mean scores and percentages of students rated proficient are given according to gender and age, school ownership, USE status, program, location and zone. A description of the competencies assessed in the test is given in the next section.

3.2 DESCRIPTION OF THE COMPETENCIES BY PROFICIENCY LEVELS

The description of the competencies assessed is given below.

NOTE: A student at any proficiency level is assumed to have mastered all the competencies specified at his/her own level plus those below his/her level.

Skill Area	Competencies by performance levels		
	BASIC LEVEL	ADEQUATE LEVEL	ADVANCED LEVEL
• Reading Comprehension	A student is able to: • Read a text and answer direct questions about it.	A student is able to: • Read a text, derive meaning of words used and interpret the message in the text.	A student is able to: • Read a text and answer questions about it by making predictions, inferences and applying information in new situations.
Writing	Write a composition, but makes errors in spellings, punctuation, sentence construction and tenses. Write a conversation, but make errors in punctuation and spellings. Write a formal letter with some errors in the format, punctuation, spellings and sentence construction.	Write a well sequenced composition, but make a few errors in spellings, punctuation and tenses. Write a conversation, but with a few errors in punctuation. Write a formal letter, but makes some errors in the format.	Write a coherent composition, relevant to the topic with correct spellings, punctuation and tenses. Write a conversation with a situation, correct punctuation and spellings. Write a formal letter, with the correct format and sentence construction.
Grammar	Identify the present and past simple tenses. Use the present and past simple tenses. Use a few parts of speech correctly. Use a few punctuation marks and capital letters correctly. Use a few familiar structures correctly. Use a few words of quantity and articles correctly.	Identify the past continuous tense. Use most parts of speech correctly. Use most punctuation marks and capital letters correctly. Use most structures correctly. Use words of quantity and articles correctly.	Identify the future tense. Use the past continuous and future tenses correctly. Use parts of speech correctly. Use punctuation marks and capital letters correctly. Use given structures correctly.

NOTE: *A student is rated proficient if he/she has reached 'Advanced' or 'Adequate' level of proficiency.*

3.3 OVERALL LEVEL OF ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE

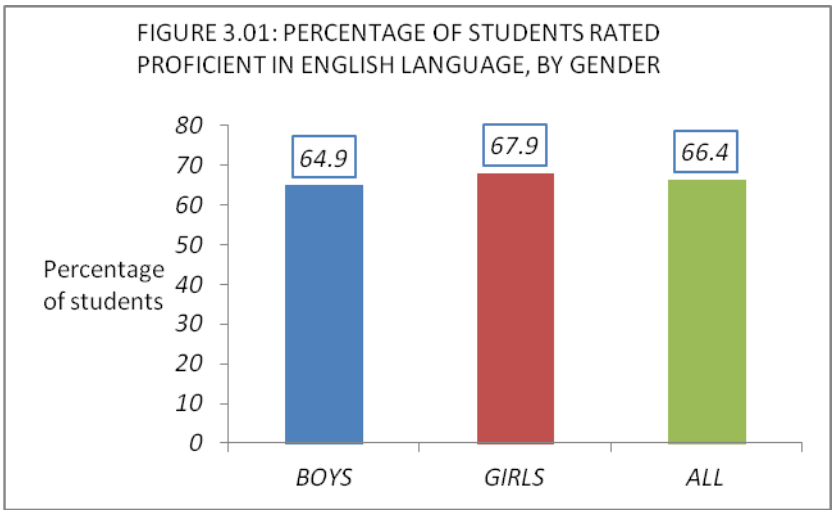
The overall mean score of S 2 students in English Language was 49.3%; standard error (S.E): 0.61. There was no significant difference between the mean score of boys of 48.8% (S.E: 0.66) and of the girls of 49.8% (S.E: 0.75%). Table 3.01 shows the percentage of students who reached the various proficiency levels in English Language.

TABLE 3.01: PERCENTAGE OF STUDENTS REACHING VARIOUS PROFICIENCY LEVELS IN ENGLISH LANGUAGE, BY GENDER

PROFICIENCY LEVELS	BOYS	GIRLS	ALL
Advanced	2.4	2.2	2.3
Adequate	62.5	65.7	64.1
Basic	35.1	32.1	33.6

A total of 2.3% of the students were categorized as "Advanced". These were students who showed that they had mastered the skills of English Language specified at S 2 level. The next group achieved the "Adequate" level of proficiency and comprised 64.1% of the students. These students that they had acquired the minimum desired level of demonstrated proficiency in English Language specified at this level. Lastly, 33.6% of the students were rated "Basic". These students demonstrated ability only in the basic skills of English Language.

Figure 3.01 shows the percentage of students rated proficient in English Language by gender.



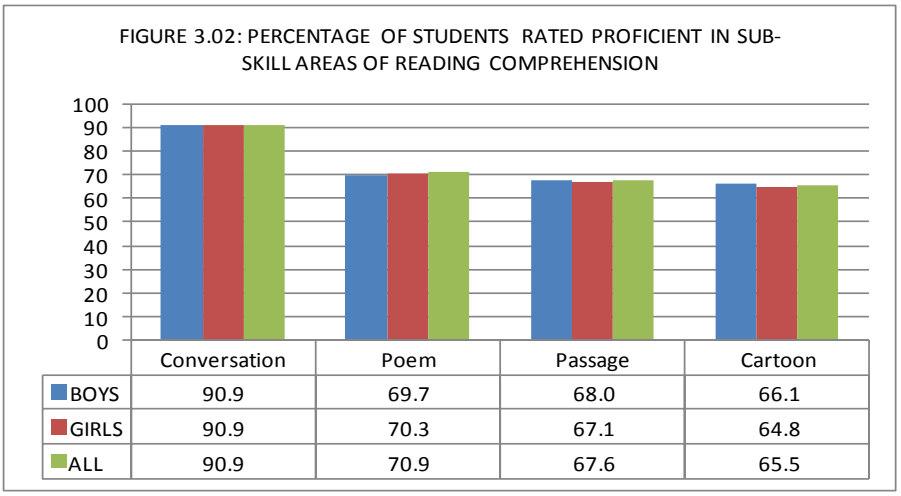
Overall, 66.4% of the students were rated proficient in English Language: 64.9% of the boys and 67.9% of the girls; meaning that the girls performed slightly better than the boys. However, this difference was not significant.

3.4 ACHIEVEMENT OF STUDENTS IN ENGLISH LANGUAGE BY SKILL AREAS

3.4.1 Achievement of Students in the Sub-skill Areas and Competencies of Reading Comprehension

This section presents the students' achievement in English Language by the sub-skill areas of Reading Comprehension. The flag on each competency was assigned the colour; 'Green', 'Yellow', or 'Red' where: 'Green' represents a competency in which at least three quarters of the students were rated proficient. 'Yellow' represents competencies in which at least a half, but less than three quarters of the students reached the desired proficiency. Lastly, 'Red' indicates the competencies in which less than a half of the students attained the desired rating.

Figure 3.02 shows the percentage of students rated proficient in the sub-skill areas of Reading Comprehension.



A large number of students (90.9%) were rated proficient in 'reading a dialogue'. 'Reading a cartoon' registered the lowest proportion of students (65.5%) in the desired proficiency level. However, gender difference in performance in each sub-skill area was not significant.

Table 3.02 shows the percentages of students rated proficient in selected competencies of Reading Comprehension.

TABLE 3.02: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF READING COMPREHENSION

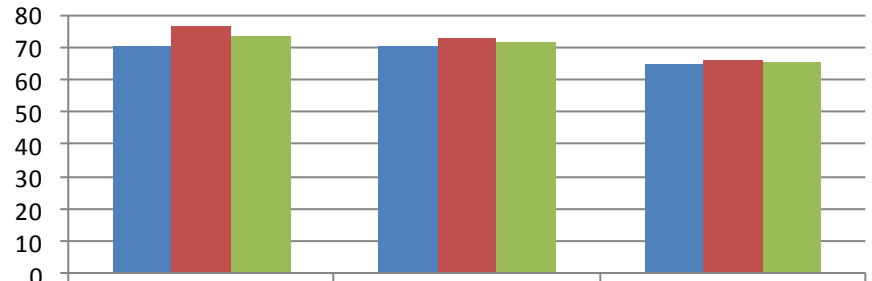
COMPETENCIES	BOYS	GIRLS
Reading a conversation		
Reading a conversation and answering questions which require direct responses from the text.	92.3	92.4
Reading a conversation and answering questions which require one to form own opinion.	34.9	33.1
Passage		
Reading a passage and selecting appropriate information directly from the text to answer a question.	73.1	70.8
Reading a passage and deriving contextual meaning of a statement.	18.5	15.4
Reading a passage and making conclusions by reasoning based on the information in the text.	13.8	12.1
Cartoon		
Reading a cartoon and stating what it portrays.	43.9	41.6
Reading a cartoon and giving it a suitable title.	28.9	29.3
Reading a cartoon and making appropriate inferences based on it.	20.8	22.3

The majority of students exhibited better performance in competencies which required picking of appropriate information directly from the text, compared to those which required reasoning and drawing inferences. For example, in conversation reading, 92.4% of the students could select appropriate information directly from the text and only 34.0% could form their own opinion on the context of the conversation. Similarly, in reading a passage, 72.0% of the students could answer questions calling for direct responses from the text and only 17.0% could derive contextual meaning of statements in the passage. In addition, merely 13.0% of the students were able to make inferences based on the events in the story. A similar tread prevailed in the performance in the competencies of cartoon reading. However the percentages of boys and girls rated proficient in each competency were nearly the same.

3.4.2 Achievement of Students in Sub-skill Areas and Competencies of Writing

Students' achievement in Writing is presented in this section. Figure 3.03 shows the percentage of students rated proficient in the sub-skill areas of Writing.

FIGURE 3.03: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SUB-SKILL AREAS OF WRITING



	Composition	Formal letter	Conversation
BOYS	70.3	70.2	64.9
GIRLS	76.4	72.7	65.8
ALL	73.3	71.4	65.4

The majority of the students (73.3%) were rated proficient in writing a narrative composition – discussing something they had ever experienced. Whereas 71.4% of the students could competently

write a formal letter, a smaller proportion of 65.4% could write conversation between two speakers. More girls than boys were rated proficient in each of the sub skill areas. However, the difference was only significant in 'composition writing'. Table 3.03 shows the percentage of students rated proficient in selected attributes of composition and conversation writing.

TABLE 3.03: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN SELECTED ATTRIBUTES OF A COMPOSITION AND A CONVERSATION

ATTRIBUTE	BOYS	GIRLS	ALL
Composition			
Legibility	76.1	82.1	79.1
Title	66.9	72.4	69.6
Format	61.5	66.6	64.0
Sequence	57.9	60.5	59.2
Grammar	57.2	59.9	58.6
Content	55.3	59.3	57.3
Conversation			
Speakers	60.8	60.2	60.5
Content	56.1	57.6	56.9
Introduction	55.3	55.3	55.3
Format	52.3	50.0	51.1

As many as 79.1% of the students wrote compositions that were legible, though just about two thirds managed to give a clear title and to use the correct format. Fewer students (57.3%) wrote compositions whose content was relevant to the topic. Girls performed better than the boys in each of the attributes, but with no significant difference.

In conversation writing, 60.5% of the students were able to appropriately name the two speakers. Fewer students, about a half, were rated proficient in each of the three remaining attributes of 'conversation writing'. There was no significant difference in the

percentages of boys and girls rated proficient in any of the attributes.

3.4.3 Achievement of Students in Grammar

The achievement of students in Grammar is presented in this section. Table 3.04 shows the percentage of students rated proficient in the competencies of Grammar.

TABLE 3 .04: PERCENTAGE OF STUDENTS RATED PROFICIENT IN THE COMPETENCIES OF GRAMMAR

COMPETENCIES	BOYS	GIRLS	ALL
Using articles.	94.1	93.4	93.8
Using prepositions.	84.2	86.8	85.5
Using adjectives.	78.8	81.7	80.2
Using the correct tenses	70.2	71.2	70.7
Using given sentence structures.	60.8	60.6	60.7
Applying the correct punctuation.	60.0	60.5	60.2
Using adverbs.	58.5	59.4	58.9
Using pronouns.	42.4	44.2	43.2
Using nouns.	39.5	40.3	39.9

Most of the students showed skills in using articles, prepositions and adjectives, in which over 80% were rated proficient. A smaller number (70.7%) showed similar competence in using tenses; and fewer number, 43.2% and 39.9% respectively were able to use pronouns and nouns correctly. On the whole, slightly more girls than boys had the desired rating, but the differences were not significant.

3.5 ACHIEVEMENT OF STUDENTS IN ENGLISH LANGUAGE BY AGE

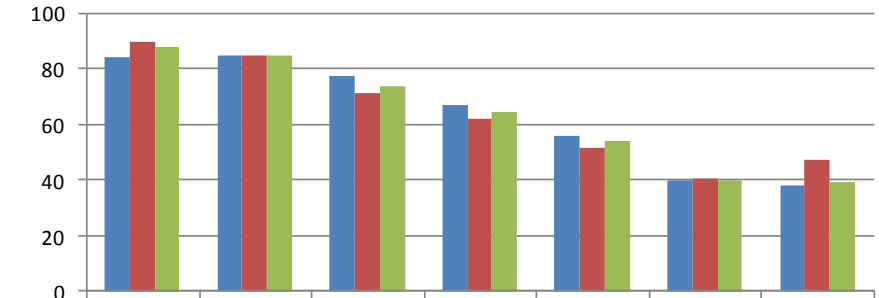
A presentation of the achievement of students in English Language by age is given in this section. Table 3.05 shows the mean scores of students in English Language by age and gender.

TABLE 3.05: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY AGE AND GENDER

AGE (years)	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
12-13	59.5	2.37	61.1	2.12	60.6	1.76
14	58.9	1.15	58.9	1.17	58.9	0.95
15	54.2	0.81	51.3	0.73	52.6	0.63
16	48.8	0.73	46.1	0.75	47.4	0.62
17	44.6	0.75	41.8	0.66	43.6	0.58
18	39.3	0.95	38.6	1.71	39.1	0.85
18+	36.4	1.28	39.2	2.25	36.7	1.21

As age increased, there was a decline in the mean score. The highest mean of 60.6% was scored by students aged 12 -13 years, followed by 58.9% obtained by the 14 year olds. The lowest mean of 36.7% was scored by students aged 18+ years. There was no significant gender difference at any age, and boys and girls aged 14 years had the same mean score. However, at ages 12-13 and 18+ years, girls had higher mean scores. Figure 3.04 shows the percentage of students rated proficient in English Language by age and gender.

FIGURE 3.04: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, BY AGE AND GENDER



	12-13	14	15	16	17	18	18+
BOYS	84.1	84.9	77.3	67.0	55.7	40.0	38.1
GIRLS	89.3	84.4	71.2	61.9	51.3	40.2	47.4
ALL	87.6	84.6	73.8	64.4	54.2	40.1	39.4

AGE (years)

There was a decline in the percentage of students rated proficient as age increased. Although the majority of the 12-13 year olds (87.6%) were proficient, the figure for the 14 year olds dropped to 84.6%; and only 39.4% of those aged 18+ years obtained a similar rating. At the age of 12-13 years, more girls (89.3%) than boys (84.1%) were rated proficient; thereafter more boys were proficient, up to age 18+ years, when the girls were again better.

3.6 ACHIEVEMENT OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL OWNERSHIP AND USE STATUS

In this section, a description of the students' achievement in English Language by school ownership is made first. Following this, student achievement is described by school USE status. Finally, an account of the achievement of students according to both school ownership and USE status is given.

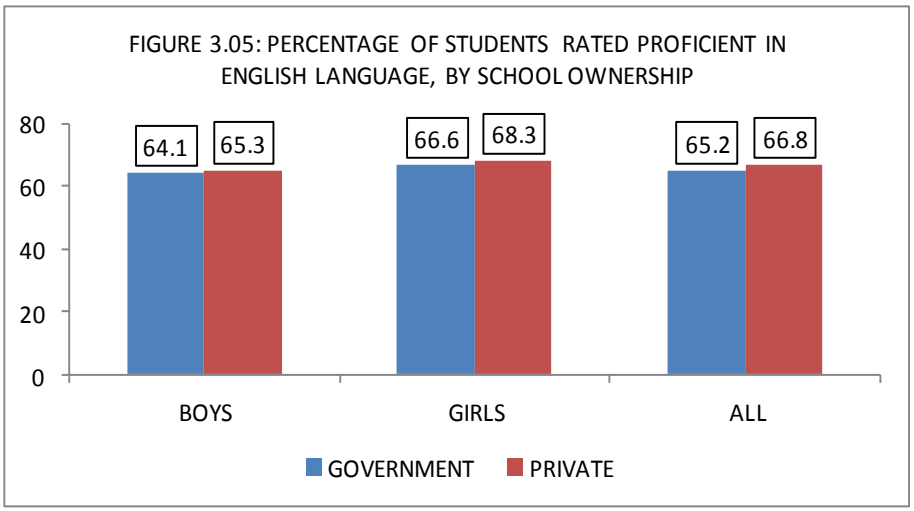
3.6.1 ACHIEVEMENT OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL OWNERSHIP

In this section, the students' achievement by school ownership is presented. The mean scores students in English Language by school ownership are shown in Table 3.06.

TABLE 3.06: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL OWNERSHIP AND GENDER

SCHOOL OWNERSHIP	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government	48.6	1.03	48.7	0.90	48.6	0.85
Private	48.9	0.90	50.3	1.00	49.6	0.85

Students in government schools scored a mean of 48.6%, which was not significantly different from that of the students from private schools of 49.6%. The gender difference in either case was not significant, but the girls in private schools obtained a slightly higher mean score. The percentage of students rated proficient in English Language by school ownership is shown in Figure 3.05.



About two thirds of the students in private schools (66.8%) reached the desired level of proficiency in English Language, compared to 65.2% of those in the government schools; implying the two groups of students performed at about the same level. Gender difference, though, was not significant in each type of school.

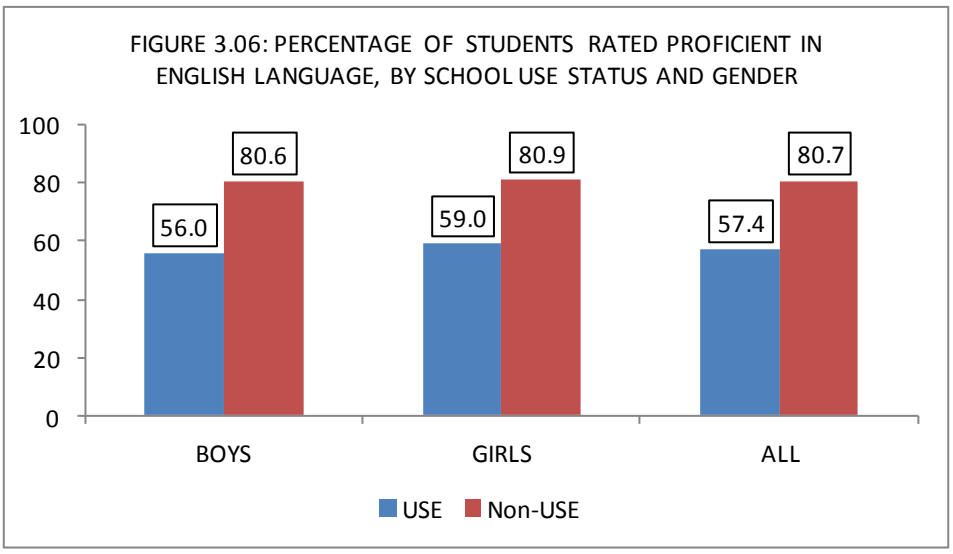
3.6.2 Achievement of Students in English Language by School USE Status

This section describes the achievement of students in English Language by school USE status. Table 3.07 shows the mean scores of students in English Language by school USE status.

TABLE 3.07: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL USE STATUS

SCHOOL USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
USE	44.4	0.60	44.9	0.70	44.7	0.59
Non-USE	56.4	1.19	57.1	1.13	56.8	1.02

In non-USE schools, students obtained a mean score of 56.8%, which was significantly higher than the 44.7% of the students in the USE schools. Gender difference in each type of school status was, however, insignificant, though the girls' mean scores were slightly higher. Figure 3.06 shows the percentage of students rated proficient in English Language by school USE status and gender.



The percentage of 80.7% of the students in non-USE schools rated proficient was significantly higher than the 57.4% of those in USE schools with the same rating. There was no significant gender difference in schools of each USE status. Nonetheless, while slightly more girls than boys in the USE schools were proficient, the percentages of boys and girls in non-USE schools rated proficient were almost equal.

3.6.3 ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE, BY SCHOOL OWNERSHIP AND USE STATUS

This section presents the achievement of students in English Language by school ownership and USE status. The mean scores of students in English Language by school ownership and USE status are given in Table 3.08.

TABLE 3.08: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL OWNERSHIP AND USE STATUS

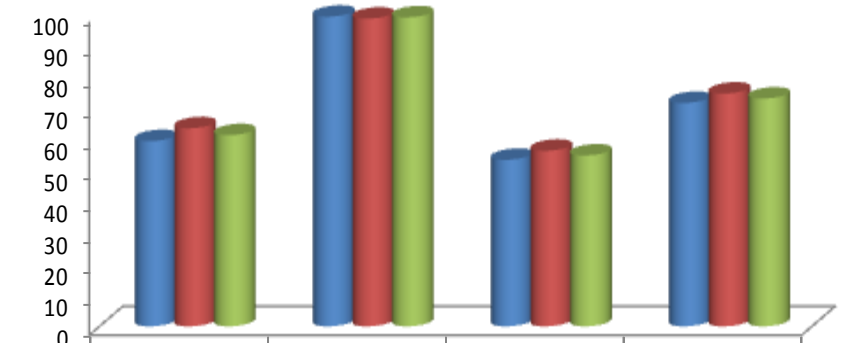
SCHOOL OWNERSHIP AND USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government USE	45.4	0.59	46.5	0.54	45.9	0.52
Government Non-USE	72.3	1.92	70.3	2.26	71.6	1.47
Private USE$^{\alpha}$	43.7	1.01	43.9	1.14	43.8	0.98
Private Non-USE	51.7	0.79	53.2	0.86	52.4	0.72

Students from government non-USE schools scored the significantly highest mean score of 71.6%. This was followed by students from private non-USE schools, with a mean of 52.4%, in comparison to 45.9% and 43.8% for the government and private USE schools respectively. The gender difference in mean scores in each school type was negligible. The percentage of students rated proficient in

$^{\alpha}$ Commonly referred to as PPP: public-private partnership.

English Language by school ownership, USE status and gender is given in Figure 3.07.

FIGURE 3.07: PERCENTAGE OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE BY SCHOOL OWNERSHIP, USE STATUS AND GENDER



	GOVERNMENT		PRIVATE	
	USE	NON-USE	USE	NON-USE
BOYS	59.3	99.1	53.3	71.5
GIRLS	63.4	98.5	56.2	74.5
ALL	61.2	98.9	54.7	72.9

In English Language, performance was best among the students in government non-USE schools, with nearly all of them (98.9%) rated proficient. This was followed by 72.9% of the students in private non-USE schools. Between the USE schools, a significantly higher percentage of students in government schools (61.2%) were proficient compared to 54.7% of their counterparts in private USE schools. The greatest difference was, therefore, between students in government non-USE schools and those in private USE schools. Minimal gender disparity occurred, with girls showing slightly better performance in all school types, except in government non-USE schools, in which boys were better.

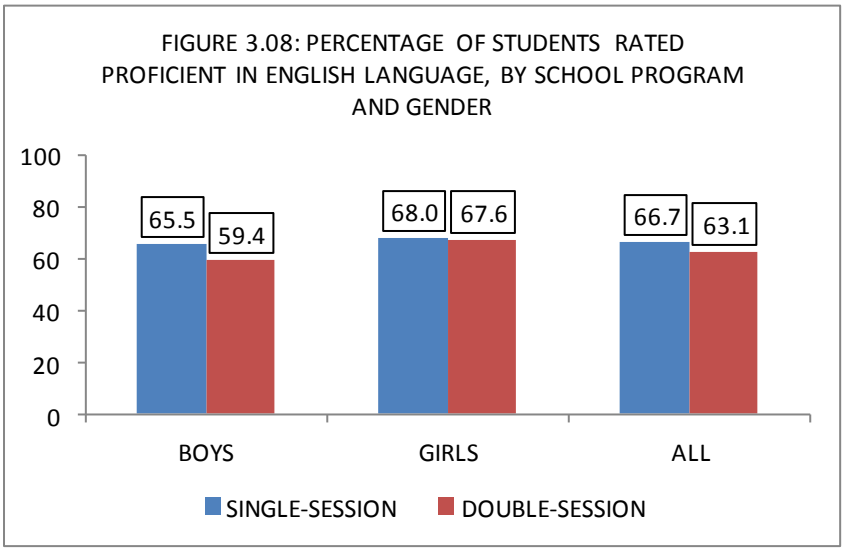
3.7 ACHIEVEMENT OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL PROGRAM

Students' achievement in English Language by school program is described in this section. Table 3.09 shows the mean scores of the students in English Language by school program and gender.

TABLE 3.09: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL PROGRAM AND GENDER

SCHOOL PROGRAM	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Single-session	49.1	0.73	50.0	0.82	49.6	0.68
Double-session	45.1	0.89	48.0	0.97	46.5	0.89

The students in single-session schools performed at a non significantly higher level than those in double-session schools. They scored a mean of 49.6% compared to 46.5% scored by those in double-session schools. No significant gender difference was observed in schools of either program. However, the mean scores of the girls were higher than the boys', especially in the double-session schools. Figure 3.08 shows the percentage of students rated proficient in English Language by school program.



More of the students from single-session schools (66.7%) were rated proficient in English Language compared to 63.1% of those in double-session schools. In single-session schools, there was no significant difference in the percentages of girls and boys rated proficient, though slightly more girls were proficient. However, significantly more girls than boys in double-session schools were rated proficient.

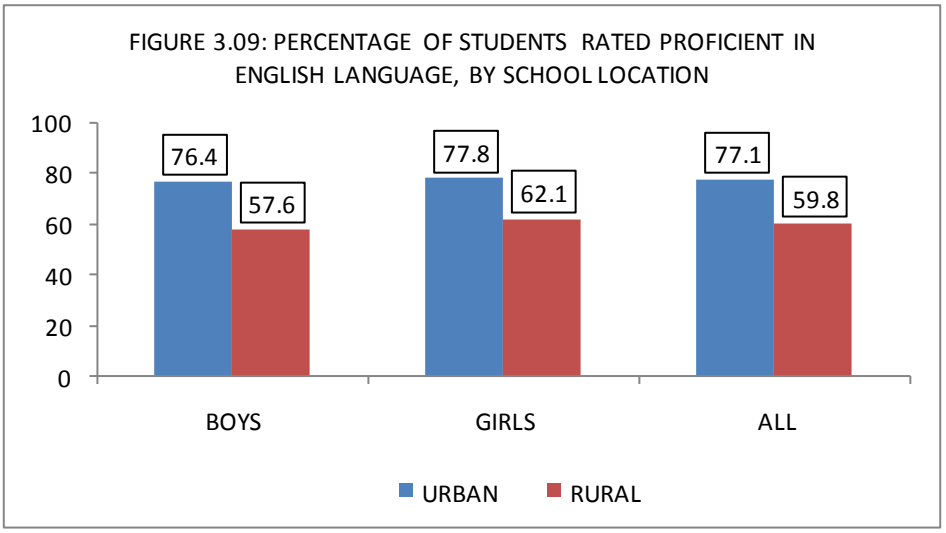
3.8 ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE BY SCHOOL LOCATION

This section describes the students' achievement in English Language by school location. A presentation of the mean scores of students in English Language by school location is shown in Table 3.10.

TABLE 3.10: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL LOCATION AND GENDER

SCHOOL LOCATION	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Urban	53.8	1.12	54.8	1.24	54.3	1.01
Rural	45.6	0.75	47.0	0.92	46.3	0.77

The students from urban schools obtained a mean score of 54.3%, which was significantly higher than 46.3% for those in rural schools. There was no significant gender difference in each school location, though girls had higher mean scores. The percentage of students rated proficient in English Language by school location is shown in Figure 3.09.



Even though over three quarters of the students in urban schools (77.1%) were proficient in English Language, only 59.8% of their counterparts in rural schools had a similar rating.

The gender differences in the performance of students in schools in both locations were not significant, though more girls in each location reached the desired rating, with a wider difference in the rural schools.

3.9 ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE BY ZONE

In this section, the results of S 2 students' performance in English Language by zone are presented. The mean scores of the students by zone and gender are shown in Table 3.11.

TABLE 3.11: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY ZONE AND GENDER

ZONE	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Kampala	58.9	2.27	62.9	2.07	61.0	1.85
Central I	53.8	1.44	55.6	1.40	54.7	1.31
South West	55.1	2.18	51.3	1.40	53.3	1.68
Far West	51.7	4.70	47.8	2.80	49.8	3.03
Far East	48.2	4.04	50.6	5.21	49.3	4.52
Mid North II	47.2	1.87	50.4	3.81	48.3	2.54
North East	47.4	1.60	49.6	4.43	48.2	2.17
Central III	46.6	2.84	47.8	4.30	47.3	3.09
Mid North I	48.0	2.10	45.8	1.62	47.1	1.65
Mid West	45.5	2.10	46.0	3.80	45.7	2.75
Mid East II	45.1	2.32	46.2	1.26	45.6	1.64
North West	43.2	0.55	46.1	1.82	44.5	1.06
Mid East I	43.2	1.63	43.3	1.80	43.2	1.62
Central II	43.3	2.43	43.4	2.23	43.3	2.24
Near East	41.9	1.60	43.4	1.73	42.6	1.46
West Nile	43.3	1.42	40.4	1.48	42.1	1.36
Uganda	***48.0***	***0.65***	***49.8***	***0.75***	***49.3***	***0.61***

Only three zones: Kampala, Central I and South West had a mean score which was above 50%. The rest of the zones had means ranging from 42.1% in West Nile to 49.8% in Far West. Kampala had the highest mean score of 61.0%. The difference in the mean scores of boys and girls was insignificant in each zone, though, girls' means were slightly higher than the boys' in twelve out of sixteen zones. Table 3.12 shows the percentage of the students rated proficient in English Language by zone and gender.

TABLE 3.12: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE BY ZONE AND GENDER

ZONE	BOYS	GIRLS	ALL
Kampala	87.6	94.5	91.3
Central I	75.0	78.4	76.8
South West	75.9	74.1	75.1
Mid North II	67.8	76.6	70.9
North East	69.6	68.5	69.2
Far East	64.5	71.5	67.7
Far West	71.2	61.1	66.3
Mid North I	67.9	63.6	66.3
Central III	60.5	62.0	61.4
Mid West	60.9	60.1	60.5
Mid East II	59.3	61.6	60.4
North West	54.7	61.0	57.8
Mid East I	51.6	55.5	53.6
Central II	52.2	54.9	53.6
West Nile	55.6	47.1	52.2
Near East	47.3	53.0	50.3

Key

75	75% or above of students rated proficient.
50	50-74% of students rated proficient.
49	Less than 50% of students rated proficient.

Three zones: Kampala, Central I, and South West had more than 75% of their pupils rated proficient in English Language. However, even the rest of the zones had at least 50% of the students rated proficient.

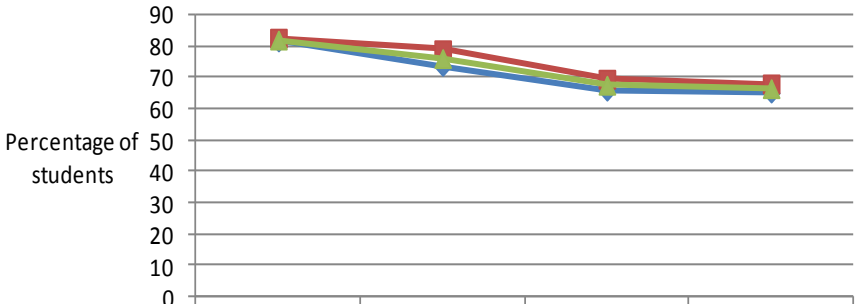
More of the girls were proficient in 10 cut of the 16 zones. The differences were wider in Kampala, North West, Far East and Mid North II, but not significant. However, significantly more boys than were proficient in Far West.

3.10 ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE FROM 2008 – 2011

This section gives a description of the performance of S 2 students in English Language in the years 2008 - 2011.

The percentage of students rated proficient in English Language in 2008-2011 is shown in Figure 3.10.

FIGURE 3.10: PROPORTION OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE: 2008 -2011, BY GENDER



	2008	2009	2010	2011
BOYS	81.3	73.5	65.6	65.0
GIRLS	82.5	78.8	69.4	67.9
ALL	81.9	76.0	67.5	66.4

The percentage of students rated proficient in English Language showed a decline over the four years. It dropped from 81.9% in 2008 to 76.0% in 2009. The following year, it decreased further to 67.5% and then slightly to 66.4% in 2011.

However, gender difference in performance over the four years was negligible.

3.11 CONCLUSION

In Reading Comprehension, the majority of the students could ably respond to questions whose responses could be obtained directly from the text. However, very few exhibited skills in responding to questions that required critical thinking; such as, drawing inferences and making summaries of the events in the text.

In Writing, students did well in composition writing compared to the other sub-skill areas: conversation and formal letter writing. However, few wrote pieces that were well sequenced and relevant to the topic.

In Grammar, students did well mostly in the use of articles and words of quantity compared to the other areas, such as the use of nouns and pronouns.

Chapter 4

ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS

4.1 INTRODUCTION

This chapter presents of the achievement of S 2 students in Mathematics. The overall mean score and of percentages of students reaching different levels of proficiency are presented first, followed by the proportions of students rated proficient in the different topical areas and competencies. Secondly, the mean scores and percentages of students rated proficient are presented by gender, age, school ownership and school USE status program, location and zone.

The competencies assessed in the test are highlighted, by proficiency levels in section 4.2.

4.2 DESCRIPTION OF THE COMPETENCIES BY PROFICIENCY LEVELS

NOTE:

A student at any proficiency level is assumed to have mastered all the competencies specified at his/her level plus the competencies below:

BASIC LEVEL	ADEQUATE LEVEL	ADVANCED LEVEL
A student is able to: • State the different types of mapping: many to many, one to many etc. • Perform the four basic operations on whole numbers. • List multiples and factors of numbers. • Plot a point on a Cartesian plane. • Carry out currency conversions. • Indicate direction on a compass bearing. • Compute the range, median and mean of ungrouped data. • State the relationship between a point and its image on a mirror.	A student is able to: • Complete a papygram. • Correct a number to a specified number of decimal places. • Perform the four basic operations on decimals. • Complete a number sequence. • Find the equation of a line passing through given points. • Draw a distance – time graph. • Solve problems involving shopping. • Compute the surface area of regular shapes. • Draw a circle accurately. • Draw graphs of linear functions.	A student is able to: • Represent a relationship using appropriate Venn diagram. • Use the concept of LCM in daily life. • Interpret simple distance-time or speed-time graphs. • Compute the principal, rate, time and simple interest. • Construct a triangle of given dimensions. • Determine the images of given points/lines/plane shapes under multiple reflections. • Interpret frequency tables, pictograms, bar charts, pie-charts and line graphs.

NOTE: *A student is rated proficient if he/she has reached 'Advanced' or "Adequate' level of proficiency.*

4.3 OVERALL ACHIEVEMENT LEVEL OF S 2 STUDENTS IN MATHEMATICS

This section presents the overall level of achievement of S 2 students in Mathematics. The mean score was 36.0% with a standard error (S.E) of 0.52. The mean scores of boys and girls were 38.4% (S.E: 0.60) and 33.5% (S.E: 0.59) respectively, implying that boys did significantly better than girls. Table 4.01 shows the percentage of students attaining different levels of proficiency in Mathematics.

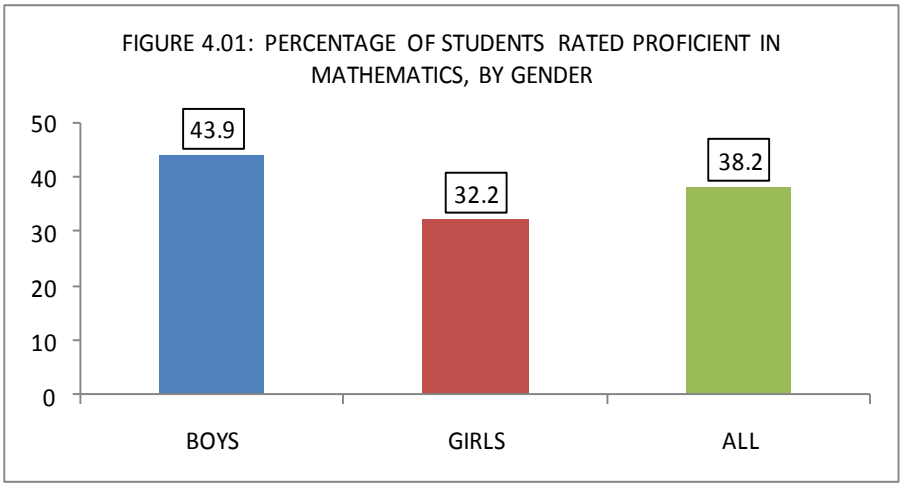
TABLE 4.01: PERCENTAGE OF STUDENTS REACHING VARIOUS LEVELS OF PROFICIENCY IN MATHEMATICS, BY GENDER

PROFICIENCY LEVELS	BOYS	GIRLS	ALL
Advanced	2.9	1.0	2.0
Adequate	41.0	31.2	36.2
Basic	56.0	67.8	61.8

Only 2.0% of the students were rated 'Advanced'. These were the students who demonstrated superior academic performance in Mathematics. They not only exhibited an in-depth understanding of the Mathematics concepts and skills, but also competently applied these skills to solve mathematical problems in novel situations.

The second category of students, rated 'Adequate', constituted 36.2%. This group demonstrated satisfactory performance in Mathematics, demonstrating understanding of most of the Mathematics concepts and skills specified at this level.

The last category of students, rated 'Basic', constituted 61.8%. This group of students showed marginal academic performance and showed competence only in basic concepts. Figure 4.01 shows the percentage of students rated proficient in Mathematics by gender.

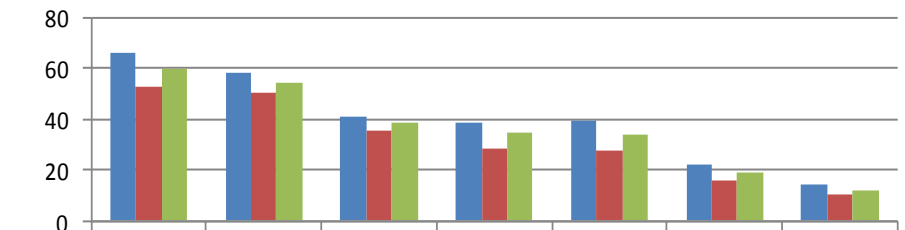


The proportion of students who reached the desired proficiency level in Mathematics was 38.2%. The respective proportions of boys and girls rated proficient were 43.9% and 32.2%. There was, therefore, a significant difference in the proportions of boys and girls attaining the desired proficiency levels, with more boys rated proficient.

4.4 ACHIEVEMENT OF STUDENTS IN MATHEMATICS BY TOPICAL AREAS

In this section, a description of the achievement of students in the main topical areas of Mathematics is made. Figure 4.02 shows the percentage of students rated proficient in different topical areas of Mathematics by gender.

FIGURE 4.02: PERCENTAGE OF STUDENTS RATED PROFICIENT IN TOPICAL AREAS OF MATHEMATICS BY GENDER



	Measures	Numerical concepts	Set theory	Statistics	Geometry	Graphs	Transfor-mations
BOYS	66.0	58.3	41.2	38.4	39.4	22.5	14.3
GIRLS	52.9	50.4	35.3	28.5	27.6	16.1	10.1
ALL	59.6	54.4	38.3	34.5	33.6	19.3	12.2

Over a half of the students attained the desired proficiency level in only two topics: 'Measures' and 'Numerical concepts'. The best performance was exhibited in 'Measures' in which 59.6% of the students were rated proficient. The students demonstrated poor skills in 'Transformations and functions' and 'Cartesian coordinates and Graphs', where only 12.2% and 19.3% respectively were proficient.

More boys than girls were rated proficient in all the topical areas, with wider variations in 'Measures' and 'Geometry'. All the differences were significant, except in 'Transformations and functions'.

4.5 ACHIEVEMENT OF STUDENTS IN SELECTED COMPETENCIES OF MATHEMATICS

An outline of the performance of students in Mathematics competencies is given in this section. The flag on each competency was assigned the colour; 'Green', 'Yellow', or 'Red' where: 'Green' represents a competency in which at least three quarters of the students were rated proficient. 'Yellow' represents competencies in which at least a half, but less than three quarters of the students reached the desired proficiency. Lastly, 'Red' indicates the

competencies in which less than a half of the students attained the desired rating. Tables 4.02 – 4.08 show the percentages of students attaining the desired proficiency level in the different competencies of Mathematics grouped in topical areas.

TABLE 4.02: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'MEASURES'

COMPETENCY	BOYS	GIRLS	ALL
Solving problems involving shopping.	85.5	84.2	84.9
Computing the surface area of a cube.	69.1	65.2	67.2
Carrying out currency conversions.	58.6	40.7	49.8
Computing simple interest.	50.2	42.8	46.5
Computing the circumference of a circle.	18.5	10.6	14.6

Overall 84.9% of the students displayed skills in 'solving problems involving shopping'. Further, about 2 in 3 students ably computed the surface area of a cube. However, only about a half of the students could carry out currency conversions or compute simple interest. The proportion of students (14.6%) who could compute the circumference of a circle was low. More boys than girls reached the desired proficiency level in all the competencies of 'Measures', but the difference was not significant in 'solving problems involving shopping'.

TABLE 4.03: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'NUMERICAL CONCEPTS'

COMPETENCIES	BOYS	GIRLS	ALL
Performing the four basic operations.	85.5	80.9	83.2
Finding the LCM of numbers.	70.4	69.2	69.8
Converting a decimal to fraction & vice versa.	68.0	62.9	65.5
Expressing a percentage as a ratio.	55.6	49.6	53.2
Finding multiples and factors of numbers.	39.1	33.6	36.4
Correcting a number to a specified decimal place.	16.0	12.2	14.1
Using the concept of LCM in novel situations.	17.2	9.7	13.5

Best performance was exhibited in 'performing the four basic operations', in which 83.2% of the students were rated proficient. About two thirds of the students were able to convert decimals to fractions and vice versa. Worse performance was observed in 'correcting a number to a specified number of decimal places' and in 'using the concept of LCM in novel situations'. Boys were significantly better than girls in all the competencies of Numerical concepts.

TABLE 4.04: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'SET THEORY, RELATIONS AND MAPPING'

COMPETENCIES	BOYS	GIRLS	ALL
Representing a relationship using a Venn diagram to solve a problem.	62.3	58.5	60.5
Completing a diagram showing a relation.	46.0	46.1	46.1
Identifying a type of mapping.	16.3	12.1	14.2
Representing a relationship using set symbols.	3.3	2.6	2.9

Over a half of the students (60.5%) were able to represent a relationship using a Venn diagram and use it to solve a problem. Less than a half (46.1%) ably completed a diagram showing a relation. However, less than a quarter could identify a type of mapping, and merely 2.9% could correctly represent a relationship

using set symbols. More boys than girls were rated proficient in each competency, but the difference was significant only in 'identifying a type of mapping'.

TABLE 4.05: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'STATISTICS'

COMPETENCIES	BOYS	GIRLS	ALL
Computing the range for non-grouped data.	62.0	58.5	60.3
Interpreting a frequency table.	39.4	28.4	34.0
Presenting information in a bar chart.	35.7	26.5	31.2
Interpreting a pie chart.	15.6	8.0	11.8

Whereas over a half of the students (60.3%) could compute the range of discrete data, only about a third could either interpret a frequency table or present data in a bar chart. Furthermore, merely 11.8% could interpret a pie chart. More boys than girls were rated proficient and the difference was significant, except in 'computing a range' for non-grouped data.

TABLE 4.06: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'GEOMETRY'

COMPETENCIES	BOYS	GIRLS	ALL
Drawing a circle accurately.	85.5	88.0	86.7
Measuring lengths and angles accurately.	61.5	52.9	57.2
Constructing a triangle.	46.5	37.7	42.2
Constructing a line parallel to another line.	25.4	15.9	20.7
Finding the number of sides of a regular polygon.	13.5	12.6	13.1
Showing a direction on a compass bearing.	8.2	7.0	7.6

Although, the majority of the students (86.7%) could draw a circle, a lower proportion (57.2%) was able to measure a given length and angle accurately. Further, only 42.2% could construct a triangle and less than a quarter were able to construct a line parallel to a given line. Worse still, only 7.6% of the students could show a direction

on a compass bearing. While the boys were significantly better than the girls in most of the competencies of Geometry, slightly more girls could draw a circle accurately. In addition, the two genders performed at about the same level in 'finding the number of sides of a regular polygon' and in 'showing the direction on a compass bearing'.

TABLE 4.07: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'CARTESIAN COORDINATES AND GRAPHS'

COMPETENCIES	BOYS	GIRLS	ALL
Plotting points on a Cartesian plane.	59.3	56.6	58.0
Making inequality statements using inequality symbols.	48.5	42.7	45.6
Drawing a distance-time graph.	21.8	17.5	20.0
Finding the equation of a line for a given set of points.	15.6	13.2	14.4
Interpreting simple speed-time graphs.	0.8	0.5	0.6

Over a half of the students (58.0%) were able to plot a point on a Cartesian plane. However, a few of them: 20.2% and 14.4% respectively, were able to draw a distance-time graph or find the equation of a line whose set of points had been provided. Worse of all, merely 0.6% of the students demonstrated skills in 'interpreting simple speed-time graphs'. The proportions of boys rated proficient were higher than girls' in each competency of 'Cartesian coordinates and graphs'; but the disparities were significant only in 'making inequality statements' and 'drawing a distance-time graph'.

TABLE 4.08: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'TRANSFORMATIONS AND FUNCTIONS'

COMPETENCIES	BOYS	GIRLS	ALL
Working out values of a linear function.	64.0	59.6	61.8
Drawing a graph of linear functions.	13.8	10.8	12.4
Determining the images of points under multiple reflections.	6.9	4.1	5.5

Although over a half of the students (61.8%) were able to work out the values of a linear function, very small proportions could draw a graph of a linear function or determine the images of points under multiple reflections. Boys performed better than the girls in each competency, but the difference was in 'drawing a graph'.

4.6: ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY AGE

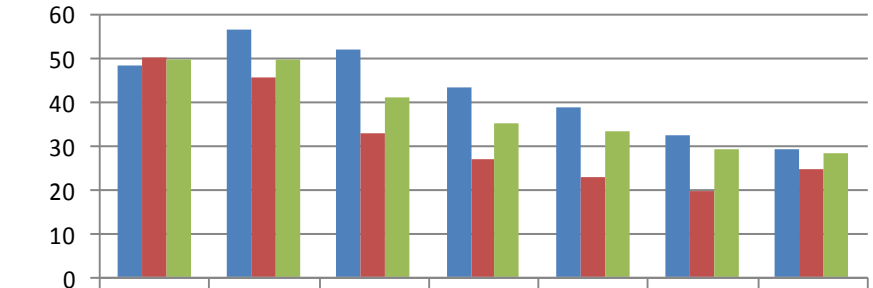
In this section, the performance of students in Mathematics by age is described. Table 4.09 shows the mean scores of students in Mathematics by age and gender.

TABLE 4.09: MEAN SCORES (PERCENTAGE) OF STUDENTS IN MATHEMATICS BY AGE AND GENDER

AGE (years)	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
11-13	43.6	3.66	40.4	2.87	41.4	2.26
14	44.0	1.42	38.0	1.16	40.2	0.95
15	41.3	0.94	34.0	0.57	37.1	0.63
16	38.4	0.70	31.6	0.58	34.9	0.55
17	36.1	0.70	29.8	0.68	33.9	0.57
18	33.4	0.87	28.6	1.29	32.2	0.79
18+	32.3	1.30	29.9	1.44	32.0	1.78

The mean scores of students decreased as age increased; from 41.4% for the 11-13 year olds to 40.2% for those aged 14 years, and finally, to 32.0% at 18+ years. At each age, boys obtained a significantly higher mean score than girls, with wider differences between ages 14 and 17 years. Figure 4.03 shows the percentage of students rated proficient in Mathematics by age and gender.

FIGURE 4.03 PERCENTAGE OF STUDENTS RATED PROFICIENT IN MATHEMATICS, BY AGE AND GENDER



	11-13	14	15	16	17	18	18+
BOYS	48.2	56.3	52.0	43.3	38.7	32.3	29.1
GIRLS	50.1	45.6	32.6	26.9	22.7	19.4	24.7
ALL	49.5	49.6	40.8	35.0	33.1	29.1	28.4

As age increased the proportion of students rated proficient decreased; from 49.6% at age 14 years to 40.8% for the 15 year olds, then to 28.4% at 18+ years. Figures for the 11-13 and 14 years olds were almost the same. There was a significant gender difference, with more boys than girls rated proficient. However, at age 11 – 13 years, slightly more girls reached the desired proficiency level, but the difference was insignificant.

4.7 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY SCHOOL OWNERSHIP AND USE STATUS

This section, describes students' achievement in Mathematics by school ownership and USE status separately. Then achievement is presented by school ownership and USE status combined.

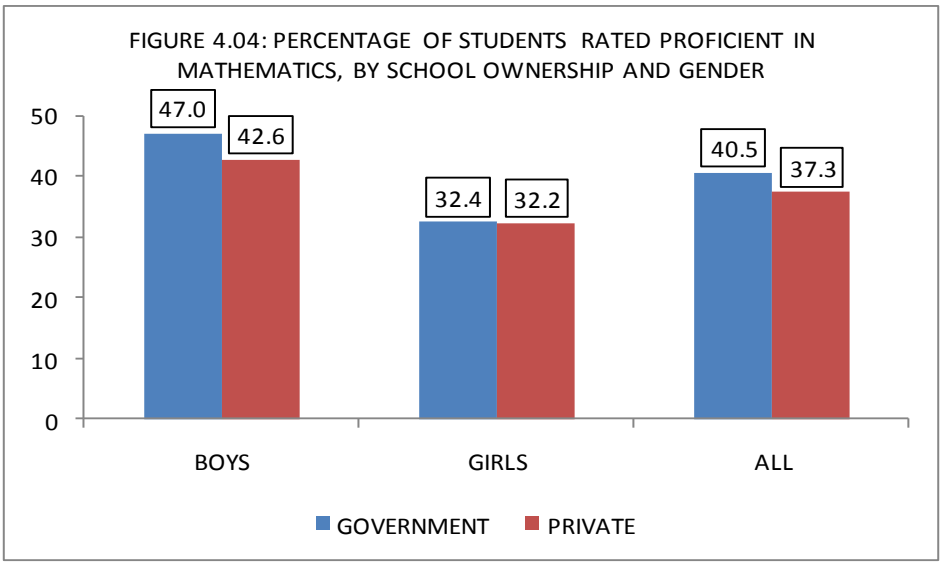
4.7.1 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY SCHOOL OWNERSHIP

A presentation of the performance of students in Mathematics by school ownership is made in this section. Table 4.10 shows the mean scores of students in Mathematics by school ownership and gender.

TABLE 4.10: MEAN SCORES (PERCENTAGE) OF STUDENTS IN MATHEMATICS BY SCHOOL OWNERSHIP AND GENDER

SCHOOL OWNERSHIP	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government	40.2	1.03	34.0	0.86	37.4	0.84
Private	37.7	0.77	33.4	0.76	35.5	0.67

Students from government schools obtained a mean score of 37.4%, which was higher than the 35.5% obtained by those in private schools. However, the difference was not significant. Boys obtained a significantly higher mean score than girls in each school type. The percentage of students rated proficient in Mathematics by school ownership is shown in Figure 4.04.



The proportion of students in government schools rated proficient was 40.5%, which was higher than the 37.3% of those in private schools. The difference was insignificant. However, in each school type, significantly more boys than the girls were proficient.

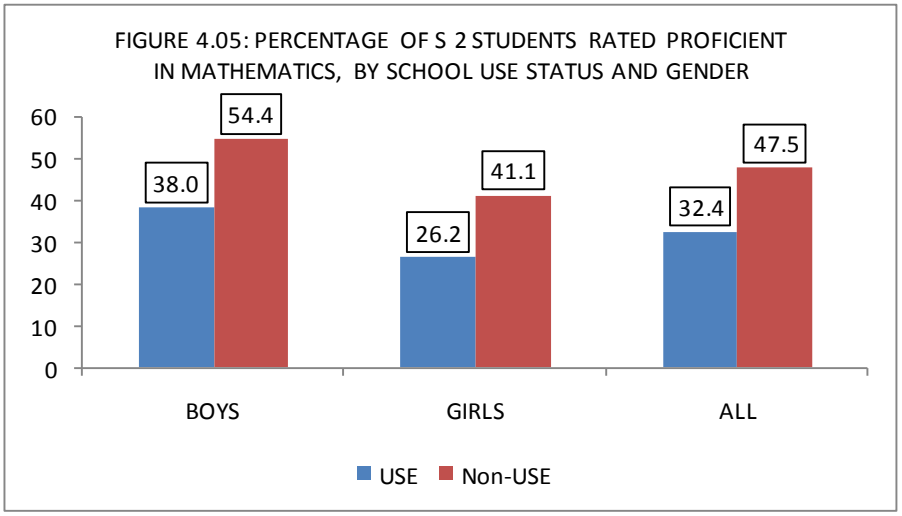
4.7.2 ACHIEVEMENT OF STUDENTS IN MATHEMATICS BY SCHOOL USE STATUS

This section describes the performance of students in Mathematics by school USE status. Table 4.11 shows the mean scores of students in Mathematics by school USE status.

TABLE 4.11: MEAN SCORES (PERCENTAGE) OF STUDENTS IN MATHEMATICS BY SCHOOL USE STATUS AND GENDER

SCHOOL USE STATUS	BOYS		GIRLS		ALL	
	Mean	SE	Mean	SE	Mean	SE
USE	35.9	0.64	30.9	0.57	35.5	0.58
Non-USE	43.0	1.11	37.3	1.01	40.1	0.89

The mean score of students from USE schools was 35.5%, compared to and significantly higher mean of 40.1% for those from non-USE schools. Boys obtained a significantly higher mean score than girls in each type of school. Figure 4.05 shows the percentage of students rated proficient in Mathematics by school USE status and gender.



About a third of the students (32.4%) from USE schools were rated proficient, compared to a significantly higher figure of 47.5% of those from non-USE schools. Significantly more boys than girls were rated proficient in each type of school.

4.7.3 ACHIEVEMENT OF STUDENTS IN MATHEMATICS BY SCHOOL OWNERSHIP AND USE STATUS

This section gives a presentation of the achievement of students in Mathematics by school ownership and USE status. The mean scores of students in Mathematics by school ownership, USE status and gender is given in Table 4.12.

TABLE 4.12: MEAN SCORES (PERCENTAGE) OF STUDENTS BY SCHOOL OWNERSHIP, USE STATUS AND GENDER

SCHOOL OWNERSHIP AND USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government USE	37.3	0.50	32.0	0.39	34.9	0.40
Government non-USE	61.9	2.78	53.8	3.40	58.8	2.41
Private USE$^{\alpha}$	34.8	1.10	30.2	0.94	32.5	0.98
Private non-USE	40.5	0.69	35.4	0.71	38.0	0.58

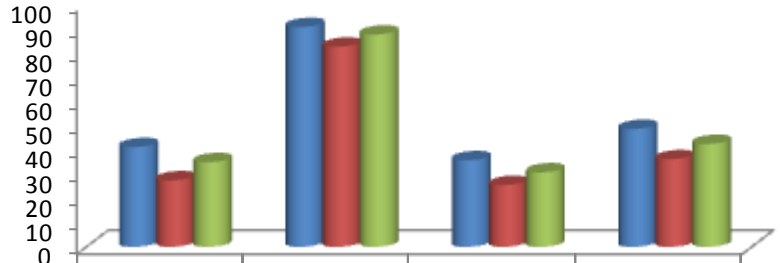
$^{\alpha}$ Commonly referred to as PPP –public-private partnership.

Students from government non-USE schools obtained a significantly higher mean score (58.8%) than the 34.9% of students from government USE schools. The boys' mean scores in both government non-USE and government USE schools were also significantly higher than those of the girls in the same USE status.

The mean scores of students from the private non-USE and private USE schools were 38.0% and 32.5% respectively. The difference in the mean scores was significant. These were a significant differences in the mean scores of boys and girls in both private. USE and private non-USE schools which the boys having higher means.

The percentages of students rated proficient in Mathematics by school ownership and USE status are given in Figure 4.06.

FIGURE 4.06: PERCENTAGE OF STUDENTS RATED PROFICIENT IN MATHEMATICS BY SCHOOL USE STATUS AND OWNERSHIP



	GOVERNMENT		PRIVATE	
	USE	NON-USE	USE	NON-USE
BOYS	41.1	90.6	35.7	48.6
GIRLS	27.4	82.5	25.5	36.1
ALL	34.9	87.5	30.7	42.4

Although the majority of the students in government non-USE schools (87.5%) were rated proficient, only 34.9% of their counterparts in government USE schools had a similar rating. Likewise, 42.4% of the students in private non-USE were proficient, as opposed to 30.7% in private USE schools. In all the school types, boys' performance was significantly better than the girls'.

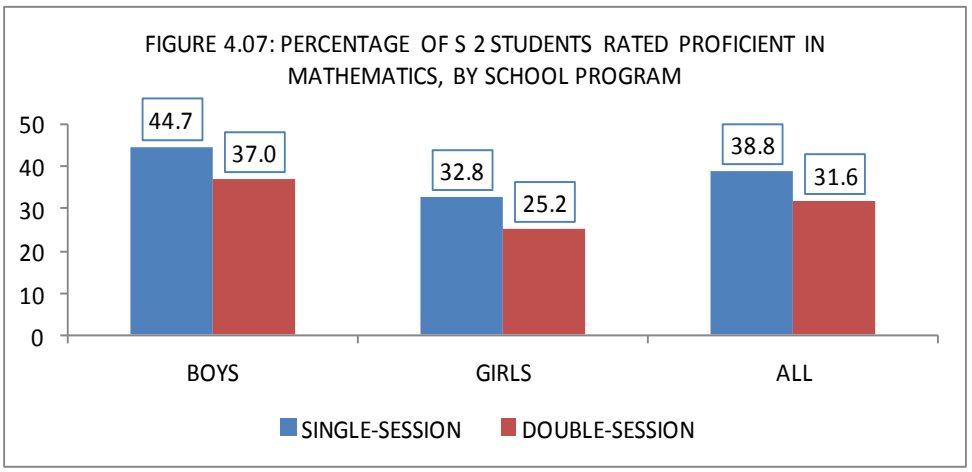
4.8 ACHIEVEMENT OF STUDENTS IN MATHEMATICS BY SCHOOL PROGRAM

In this section, a description of the achievement of students in Mathematics by school program is made. Table 4.13 shows the mean scores of students in Mathematics by school program and gender.

TABLE 4.13: MEAN SCORES (PERCENTAGE) OF S 2 STUDENTS IN MATHEMATICS BY SCHOOL PROGRAM

SCHOOL PROGRAM	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Single-session	38.7	0.65	33.7	0.64	36.2	0.56
Double-session	35.9	0.86	31.5	0.66	33.9	0.72

With a mean score of 36.2%, students from single-session schools performed non significantly better than those from double-session schools who had a mean of 33.9%. However, boys performed significantly better than girls in both single and double session schools. Figure 4.07 shows the percentage of students rated proficient in Mathematics by school program.



A higher proportion of students from single-session schools (38.8%) were rated proficient, in comparison to 31.6% in double-session schools. The difference in the proportions was significant. Boys performed significantly better than the girls in schools of either program.

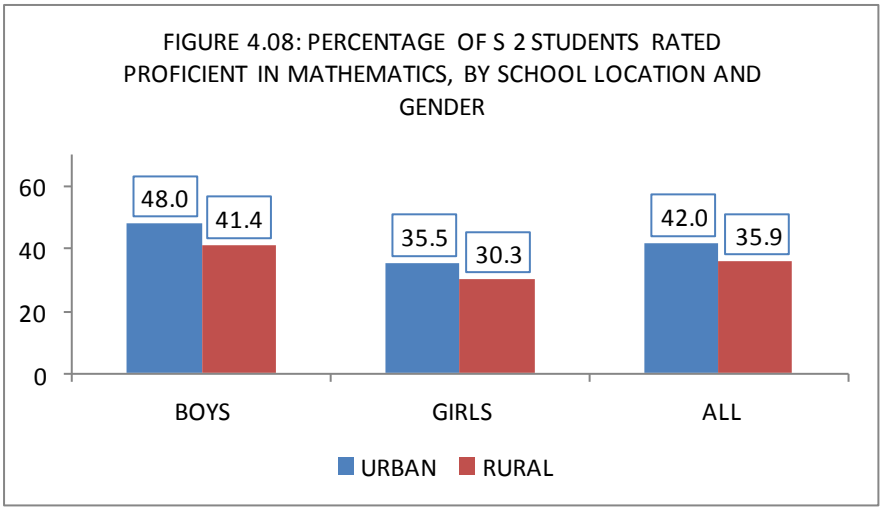
4.9 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY SCHOOL LOCATION

In this section, an account of the performance of students in Mathematics by school location is given. Table 4.14 shows the mean scores of students in Mathematics by school location and gender.

TABLE 4.14: MEAN SCORES (PERCENTAGE) OF STUDENTS IN MATHEMATICS BY SCHOOL LOCATION AND GENDER

SCHOOL LOCATION	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Urban	40.4	1.12	35.0	1.12	37.8	0.94
Rural	37.2	0.71	32.7	0.67	34.9	0.63

The mean scores of students from urban and rural schools were 37.8% and 34.9% respectively, which were not significantly different, implying the students' performance was comparable. However, in each location, boys had a significantly higher mean score than the girls. Figure 4.08 shows the percentage of students rated proficient in Mathematics by school location and gender.



The proportions of students rated proficient from urban and rural schools were 42.0% and 35.9% respectively. The difference in the proportions was significant. In either school location, significantly more boys than girls reached the desired proficiency level.

4.10 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY ZONE

In this section, a presentation of the performance of students in Mathematics by zone is made. Table 4.15 shows the mean scores of students in Mathematics by zone.

TABLE 4.15: MEAN SCORES (PERCENTAGE) OF S 2 STUDENTS IN MATHEMATICS BY ZONE AND GENDER

ZONE	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
South West	48.3	1.72	40.1	1.22	44.4	1.37
Far West	45.0	3.26	36.7	1.37	41.0	2.16
Kampala	41.4	2.06	39.2	3.37	40.2	2.30
Mid North I	41.8	3.48	31.4	2.80	37.9	3.18
Mid North II	40.4	2.06	32.1	0.87	37.4	1.70
Central I	40.1	1.47	34.7	1.07	37.2	1.17
Far East	39.1	3.19	35.0	3.57	37.2	2.87
Central III	37.1	2.81	34.5	3.18	35.6	2.34
North West	35.5	1.45	33.4	1.18	34.5	1.01
North East	36.9	1.56	29.3	3.32	34.3	1.37
Mid West	35.6	1.57	30.5	2.19	33.4	1.71
Near East	34.6	1.85	32.1	1.63	33.4	1.64
West Nile	36.4	1.73	27.1	1.54	32.7	1.60
Mid East II	34.3	2.00	29.4	1.32	32.1	1.55
Central II	31.9	2.00	28.7	1.36	30.3	1.60
Mid East I	30.4	1.48	24.5	1.09	27.4	1.26
Uganda	***38.4***	***0.60***	***33.5***	***0.59***	***36.0***	***0.52***

Students from three zones: South West, Far West and Kampala obtained mean scores which were over 40%. Students from South West obtained the highest mean score of 44.4%. Apart from Mid–East I, where the students obtained a mean score of 27.4%, the rest of the zones obtained mean scores ranging from 30% - 38%.

In most of the zones, boys' mean scores were higher than the girls', with significant differences in Mid North I and II, West Nile, Far West and South West. Table 4.16 shows the percentage of students rated proficient in Mathematics by zone and gender.

TABLE 4.16: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN MATHEMATICS BY ZONE AND GENDER

ZONE	BOYS	GIRLS	ALL
South West	70.2	49.9	60.6
Far West	62.4	37.5	50.3
Kampala	51.3	43.9	47.3
Mid North I	55.4	25.3	44.0
Mid North II	50.2	24.8	41.2
Central I	46.9	36.1	41.1
Far East	42.9	36.9	40.1
Central III	39.5	35.1	36.9
North East	42.4	24.8	36.2
North West	36.1	29.5	33.1
Mid West	37.2	26.3	32.3
Near East	33.5	28.4	31.0
West Nile	40.0	15.3	30.1
Mid East II	35.0	18.7	27.8
Central II	27.6	21.0	24.3
Mid East I	23.8	9.9	16.8

KEY

75	75% or above of students proficient.
50	50-74% of students proficient.
49	Less than a half of the students proficient.

The proportions of students rated proficient ranged from 16.8% in Mid East I to 60.6% in South West. South West and Far West had at least a half of their students rated proficient. However, less than a quarter of the students in Mid-East I and Central II, reached the desired proficiency level.

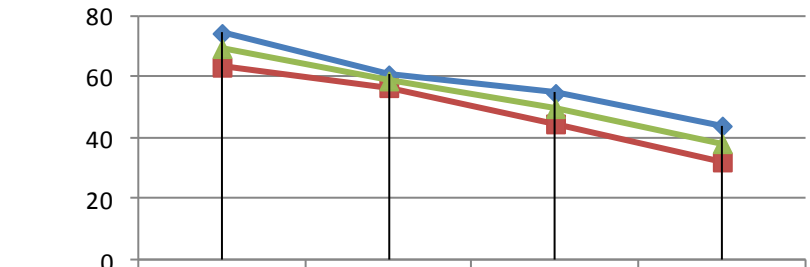
The proportion of girls rated proficient in Mathematics was lower than that of the boys in all the zones. It is worth noting that in Mid-North I, Mid-North II, Mid-East I and West Nile sub-regions the proportion of boys rated proficient was more than double that of the girls with a similar rating.

4.11 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS FROM 2008 TO 2011

This section outlines the trends in the performance of S 2 students in Mathematics over the years 2008 to 2011.

Figure 4.09 shows the percentage of S 2 students rated proficient in Mathematics in 2008-2011 by gender.

FIGURE 4.09: PERCENTAGE OF STUDENTS RATED PROFICIENT IN MATHEMATICS 2008-2011, BY GENDER



	2008	2009	2010	2011
BOYS	74.4	60.8	54.7	44.0
GIRLS	63.3	56.6	44.7	32.2
ALL	69.4	58.8	49.7	38.2

Over the years, the proportions of students rated proficient in Mathematics declined at an almost constant rate of about 10%. There was a significant difference between the proportions of boys and girls attaining the desired proficiency across the years, with more boys rated proficient.

4.12 CONCLUSION

In Mathematics, students performed reasonably well in only two topics: 'Measures' and 'Numerical concepts'. They performed worse in 'Transformations and functions' and 'Cartesian coordinates and Graphs'.

Within each topic, many students were generally competent in answering questions that involved routine computations, but failed to show similar competence in responding to questions that required analytical skills and application of concepts in new situations. They were also able to solve mathematical problems which were based on their experiences or familiar circumferences. This is illustrated in the following examples:

In 'Measures', the majority of students were proficient in 'solving problems involving shopping', but few could compute simple interest.

In 'Numerical concepts', many students could perform the basic operations on natural numbers and decimals and also convert decimals to fractions and vice versa. On the other hand, students had difficulty in correcting a number to a specified number of decimal places and applying the concept of LCM to determine the concurrent points of events of different frequencies.

In 'Set theory', about 6 in 10 students were able to represent a relationship using a Venn diagram and use it to solve a problem, but merely 3 in 10 could correctly represent a relationship using set symbols.

In 'Statistics', the majority of students were successful in computing the range of discrete data, but only about 1 in 10 could interpret a pie chart.

In 'Geometry', although the majority of the students could draw a circle, less than a quarter were able to construct a line parallel to another. The proportion that could show a direction on a compass was even smaller, about a tenth.

In ‘Cartesian coordinates and graphs’, just over a half of the students were able to plot a point on a Cartesian plane, a paltry one percent demonstrated skills in ‘interpreting simple speed-time graphs’.

In ‘Transformations and functions’, about two thirds of the students were able to work out the values of a linear function, but very small proportions could draw a graph of a linear function or determine the images of points under multiple reflections.

Chapter 5

ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY

5.1 INTRODUCTION

In this chapter, the achievement of S 2 students in Biology is described. The overall mean score and the percentages of students attaining different levels of proficiency are presented first, followed by the percentages of students rated proficient in the various topical areas and competencies. Then the mean scores and percentages of students rated proficient are presented by gender and age, school ownership, USE status, program, location and zone.

The competencies assessed in the test are highlighted, by proficiency level in section 5.2.

5.2 DESCRIPTION OF THE COMPETENCIES BY PROFICIENCY LEVEL S

BASIC LEVEL	ADEQUATE LEVEL	ADVANCED LEVEL
A student is able to: • State the characteristics of living things. • State the importance of Biology. • List the taxonomic groups of living organisms from 'order' to the smallest taxa. • Give the advantages of one type of microscope over another. • Label parts of a microscope. • Identify specialized cells. • Define Biological terms. • Label parts of a flowering plant. • Identify leaf types. • Name modified roots, stems and leaves. • Label the external features of a named vector. • Name the components of soil. • State the properties of each type of soil.	A student is able to: • Describe how living things can be collected. • Estimate the number of organisms in a given area. • Describe the care of hand lenses and microscopes • Describe the different types of tissues/organs/organ systems in plants and animals. • Label the internal structure of a leaf or stem. • Explain the functions of each part of a flower. • Describe the functions of modified stems. • Describe the life cycle of a named vector. • State the role of the essential elements in a complete culture solution. • Describe an experiment to show the presence of micro–organisms in a soil sample. • Explain the factors which affect the quality of the soil.	A student is able to: • Classify organisms into their taxonomic groups up to class level. • Construct an identification key. • Draw and label the external parts of a flower/seed. • Draw the external features of a named vector. • Draw and explain the nitrogen cycle. • Draw and label the external/internal parts of roots, fruits/seeds.

NOTE: *A student is rated proficient if he/she reached 'Advanced' or "Adequate' levels of proficiency*

5.3 OVERALL ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY

The overall achievement of S 2 students in Biology is presented in this section. The overall mean score was 25.2% with a standard error (S.E) of 0.32%. Boys and girls obtained respective mean scores of 26.5 (S.E: 0.37) and 23.9 (S.E: 0.37). There was a significant difference between the mean scores of boys and girls, with the boys performing better.

Table 5.01 shows the percentage of students attaining various levels of proficiency in Biology by gender.

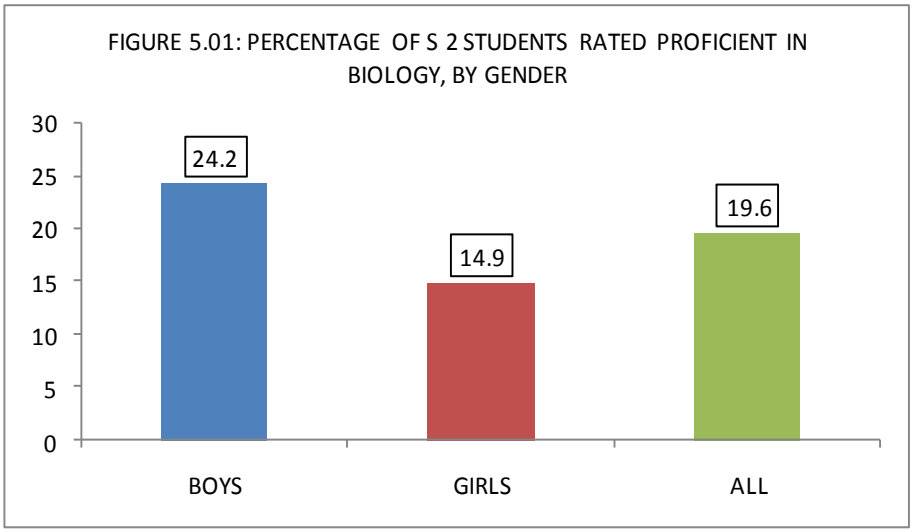
TABLE 5.01: PERCENTAGE OF S 2 STUDENTS REACHING VARIOUS LEVELS OF PROFICIENCY IN BIOLOGY BY GENDER

PROFICIENCY LEVEL	BOYS	GIRLS	ALL
Advanced	0.0	0.0	0.0
Adequate	24.2	14.9	19.6
Basic	75.8	85.1	80.4

No student was rated 'Advanced', meaning none of the S 2 students demonstrated mastery of Biology concepts and skills specified at this level.

Almost one fifth of the students (19.6%) were rated 'Adequate'. This group of students demonstrated competence in most of the Biological concepts and skills specified at S 2 level.

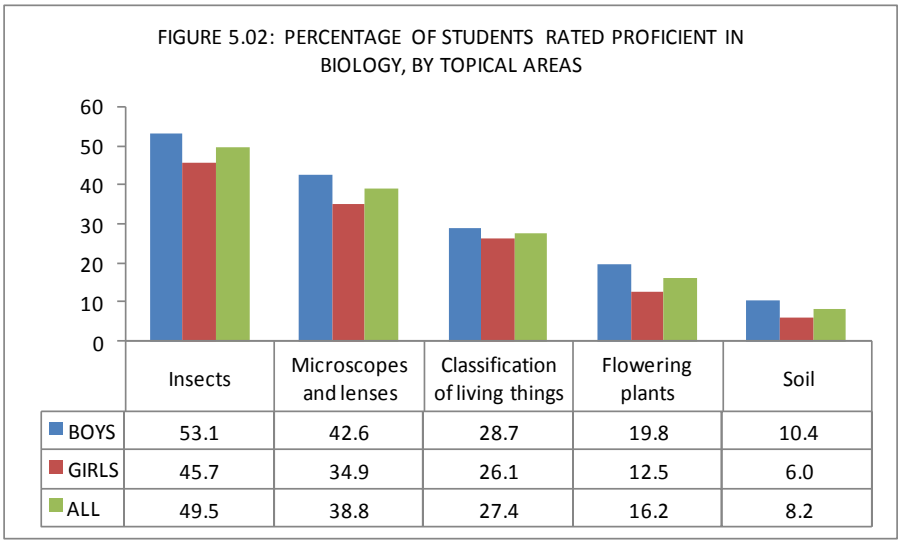
Over three quarters of the students (80.4%) were in the 'Basic' category. These are the students who showed that they had acquired just the elementary concepts and skills of the subject. Figure 5.01 shows the percentage of students rated proficient in Biology by gender.



About a fifth of the students (19.6%) were rated proficient in Biology. The respective proportions of boys and girls with the desired rating were 24.2% and 14.9%, implying that boys performed significantly better than the girls.

5.4 ACHIEVEMENT OF STUDENTS IN BIOLOGY BY TOPICAL AREAS

In this section, a presentation of the performance of the students in Biology by topical areas is done. Figure 5.02 shows the percentage of students rated proficient in the various topical areas.



	Insects	Microscopes and lenses	Classification of living things	Flowering plants	Soil
BOYS	53.1	42.6	28.7	19.8	10.4
GIRLS	45.7	34.9	26.1	12.5	6.0
ALL	49.5	38.8	27.4	16.2	8.2

Among the topics, the best performance was demonstrated in 'Insects', where about a half of the students (49.5%) were rated proficient. This was followed by 'Microscopes and hand lenses' with 38.8% of the students attaining the desired rating. The worst performance was in 'Soil', where a paltry 8.2% were rated proficient.

Boys performed significantly better than the girls in all the topical areas of Biology, except 'Classification of living things', where the difference was not-significant.

5.5 ACHIEVEMENT OF S 2 STUDENTS IN THE VARIOUS COMPETENCIES

This section presents the achievement of students in the various competencies of Biology. The flags against the competencies were assigned the colours: 'Green, 'Yellow', and 'Red' where: 'Green' represents the competencies in which at least three quarters of the students were rated proficient. 'Yellow' represents the competencies in which at least a half, but less than three quarters of the students reached the desired proficiency. Lastly, 'Red' represents the competencies in which less than a half of the students attained the desired rating.

Tables 5.02 – 5.06, show the percentage of students rated proficient in the competencies of Biology, grouped in topical areas.

TABLE 5.02: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'EXTERNAL FEATURES, LIFE CYCLES AND ECONOMIC IMPORTANCE OF INSECTS'

COMPETENCIES	BOYS	GIRLS	ALL
Naming the diseases spread by a vector.	90.8	91.0	90.9
Describing the life cycle of a vector.	55.5	50.7	53.1
Labelling the external features of a vector.	38.1	32.0	35.1

The majority of the students (90.9%) could name the diseases spread by a vector, while about a half of them could describe the life

cycle of a vector. Fewer (35.1%) were able to label the external features of a vector. More boys than girls attained the desired rating, but the difference was significant only in 'labelling the external features of a vector'.

TABLE 5.03: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'MICROSCOPES AND HAND LENSES'

COMPETENCIES	BOYS	GIRLS	ALL
Microscopes			
Labelling the parts of a microscope.	81.0	72.8	77.0
Computing the magnification of a specimen.	61.1	61.2	61.1
Describing the care of hand lenses and microscope.	27.5	27.3	27.4
Stating the advantages of one type of microscopes over another.	16.4	10.4	13.5
Plant and animal cells			
Describing tissue and organ systems in plants and animals.	52.3	46.4	49.4
Identifying specialized cells.	7.2	6.3	6.8

Over three quarters of the students (77.0%) could label the parts of a microscope while nearly two thirds (61.1%) were able to compute the magnification of a specimen. However, only 13.5% were able to state the advantages of one type of microscope over another. In 'plant and animal cells', nearly a half of the students (49.4%) could describe the tissue and organ systems in plants and animals, but just 6.8% reached a similar rating in 'identifying specialized cells'. The proportions of boys and girls reaching the desired proficiency were comparable, except in labelling the parts and stating the advantages of a microscope and 'describing tissue and organ systems in plants and animals', where the boys did significantly better than the girls.

TABLE 5.04: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF CLASSIFICATION OF LIVING THINGS'

COMPETENCIES	BOYS	GIRLS	ALL
Stating the characteristics of living things.	85.1	84.8	85.0
Classifying organisms into their taxonomic groups up to class level.	54.0	49.5	51.8
Estimating the number of organisms in an area.	39.8	41.8	40.8
Describing how living things can be collected.	31.5	24.0	27.8
Constructing an identification key.	2.2	1.4	1.8

While about three quarters of the students (72.6%) could state the characteristics of living things, which is a competency taught at primary education level, just about a half or less reached a similar level of proficiency in the other competencies. A paltry 1.8% of the students demonstrated competence in 'constructing an identification key'.

Boys were significantly better than girls in 'describing how living things can be collected', but the performance of the two genders in the other competencies were comparable, although more girls were rated proficient in 'estimating the number of organisms in an area'.

TABLE 5.05: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'FLOWERING PLANTS'

COMPETENCIES	BOYS	GIRLS	ALL
Labelling the parts of a flowering plant.	95.2	94.1	94.7
Identifying leaf types.	44.6	38.6	41.6
Drawing and labelling the internal parts of a root.	37.0	34.3	35.7
Explaining the functions of the parts of a flower.	22.3	15.5	19.0
Describing the functions of modified stems.	16.6	13.3	15.0
Drawing and labelling the external structure of a seed.	14.7	10.1	12.5

It was only in 'labelling the parts of a flowering plant' that the majority of students (94.7%) were rated proficient. In the rest of the competencies, less than a half of the students showed capability. Students registered very low levels of performance in 'describing the functions of modified stems' and 'explaining the functions of the parts of a flower' in which less than a fifth were proficient. In general, the boys performed significantly better than the girls in all the competencies of flowering plants.

TABLE 5.06: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'SOIL'

COMPETENCIES	BOYS	GIRLS	ALL
Stating the causes of soil erosion.	68.0	63.6	65.8
Explaining the factors that affect the quality of the soil.	19.1	16.5	17.8
Drawing and explaining the nitrogen cycle.	8.9	5.9	7.5
Describing an experiment to show the presence of micro organisims in a soil sample.	3.5	2.4	2.9

The majority of the students (65.8%) showed ability only in 'stating the causes of soil erosion'. Less than a fifth (17.8%) could explain the factors that affect the quality of soil, but very small proportions were able to draw and explain the nitrogen cycle or describe an experiment to show the presence of micro organisms in a soil sample. Although more boys than girls attained the desired proficiency level in all the competencies of 'Soil', the differences were not significant.

5.6 ACHIEVEMENT OF STUDENTS IN BIOLOGY BY AGE

A description of the achievement of students in Biology by age is given in this section. Table 5.07 shows the mean scores of students in Biology by age.

TABLE 5.07: MEAN SCORES (PERCENTAGE) OF S 2 STUDENTS IN BIOLOGY BY AGE AND GENDER

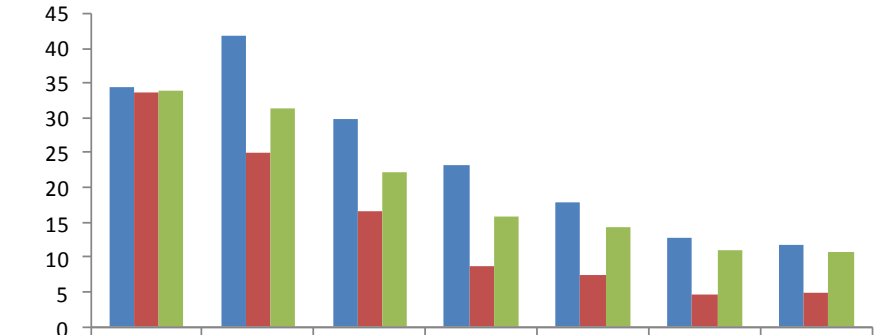
AGE (years)	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
11-13	29.9	2.03	29.0	1.95	29.2	1.48
14	31.1	0.98	26.8	0.74	28.4	0.67
15	28.5	0.53	24.5	0.35	26.2	0.36
16	26.5	0.42	22.5	0.37	24.5	0.32
17	24.6	0.39	21.3	0.39	23.4	0.32
18	22.8	0.49	19.8	0.86	22.1	0.43
18+$^{\alpha}$	22.4	0.82	22.5	1.02	22.4	0.75

The mean scores of students decreased with increase in age. The 11-13 year olds had the highest mean score (29.2%), while the 18 year olds had the lowest (22.1%).

Between ages 14 and 18 years, boys performed significantly better than girls. However, at ages 11-13 and 18^{+} years the differences were not significant. Figure 5.03 shows the percentages of students rated proficient in Biology by age and gender.

$^{\alpha}$ Above 18 years old.

FIGURE 5.03: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN BIOLOGY, BY AGE AND GENDER



	11-13	14	15	16	17	18	18+
BOYS	34.3	41.9	29.9	23.1	17.8	12.9	11.8
GIRLS	33.6	25.1	16.7	8.8	7.4	4.7	4.8
ALL	33.8	31.3	22.3	15.9	14.2	10.9	10.8

AGE (years)

The percentage of students reaching the desired proficiency level in Biology by age, decreased with increase in age. Although a third of the 11-13 year olds (33.8%) were proficient, the proportion of the 14 year olds with the same rating was 31.3%. The figure dropped to 22.3% for the students aged 15 years and continued to decrease up to 10.8% at age 18+ years. The difference in the proportions of boys and girls rated proficient was significant for ages 14 years and above. More boys than girls reached the desired proficiency level. For the 11-13 year olds, the proportions of boys and girls with the desired rating were comparable.

5.7 ACHIEVEMENT OF STUDENTS IN BIOLOGY BY SCHOOL OWNERSHIP AND USE STATUS

In this section, a description of students' achievement in Biology by school ownership USE status is given, achievement of students is described by both school ownership and USE status.

5.7.1 ACHIEVEMENT OF STUDENTS IN BIOLOGY BY SCHOOL OWNERSHIP

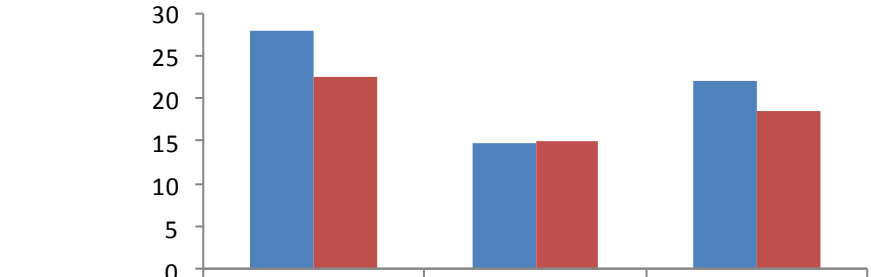
In this section, a presentation of students' achievement in Biology by school ownership is made. Table 5.08 shows the mean scores of students in Biology by school ownership and gender.

TABLE 5.08: MEAN SCORES (PERCENTAGE) OF STUDENTS IN BIOLOGY BY SCHOOL OWNERSHIP AND GENDER

SCHOOL OWNERSHIP	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government	27.5	0.69	23.7	0.54	25.8	0.56
Private	26.1	0.45	24.0	0.47	25.0	0.40

At 25.8% and 25.0% respectively, the mean scores of the students from government schools and private schools were comparable. Boys obtained higher mean scores than girls in either schools type. Figure 5.04 shows the percentage of students rated proficient in Biology by school ownership and gender.

FIGURE 5.04: PERCENTAGE OF STUDENTS RATED PROFICIENT IN BIOLOGY, BY SCHOOL OWNERSHIP AND GENDER



	BOYS	GIRLS	ALL
GOVERNMENT	27.9	14.8	22.1
PRIVATE	22.5	14.9	18.6

About a quarter of the students from government schools (22.1%) reached the desired proficiency, as compared to only 18.6% of those from private schools. Significantly higher proportions of boys than girls in either category of schools attained the desired rating.

5.7.2 ACHIEVEMENT OF STUDENTS IN BIOLOGY BY SCHOOL USE STATUS

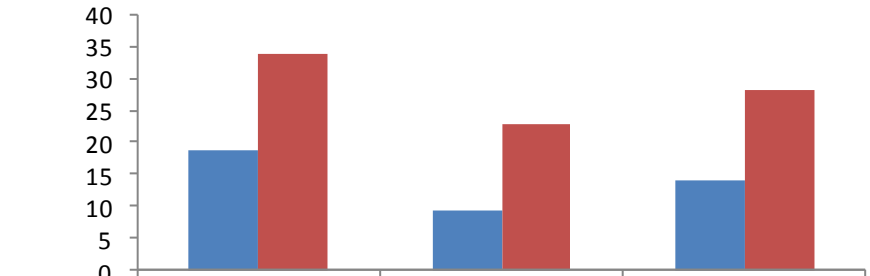
In this section, a presentation of the achievement of students in Biology by school USE status is given. Table 5.09 shows the mean scores of the students in Biology by school USE status.

TABLE 5.09: MEAN SCORES (PERCENTAGE) OF STUDENTS IN BIOLOGY BY SCHOOL USE STATUS

SCHOOL USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
USE	24.9	0.36	22.1	0.31	23.6	0.29
Non-USE	29.3	0.74	26.5	0.65	27.9	0.62

Students from the Non-USE schools obtained a significantly higher mean score (27.9%) than their counterparts from the USE schools (23.6%). In each type of schools, the boys obtained higher mean scores than the girls, though the differences were not significant. Figure 5.05 shows the percentage of students rated proficient in Biology by school USE status.

FIGURE 5.05: PERCENTAGE OF STUDENTS RATED PROFICIENT IN BIOLOGY, BY SCHOOL USE STATUS AND GENDER



	BOYS	GIRLS	ALL
USE	18.7	9.4	14.2
Non-USE	33.8	22.9	28.2

The proportion of students from Non-USE schools (28.2%) who reached the desired proficiency was twice that of the students from USE schools (14.2%). The difference in the proportions was significant. Within each school type, significantly more boys than girls reached the desired proficiency level.

5.7.3 ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY, BY SCHOOL OWNERSHIP AND USE STATUS

This section gives a presentation of the achievement of students in Biology by school ownership and USE status. The mean scores of students in Biology by school ownership and USE status is given in Table 5.10.

TABLE 5.10: MEAN SCORES (PERCENTAGE) OF STUDENTS BY SCHOOL OWNERSHIP AND USE STATUS

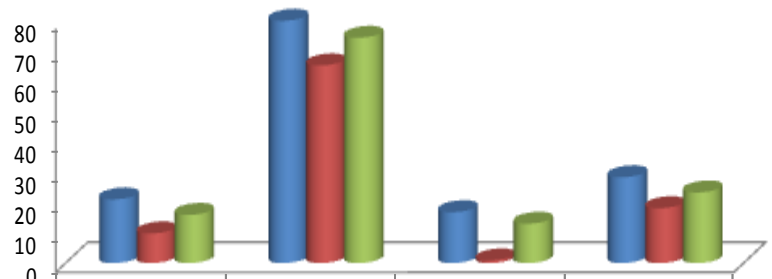
SCHOOL OWNERSHIP AND USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government USE	25.6	0.32	22.4	0.25	24.2	0.25
Government Non-USE	41.7	2.00	36.0	1.90	39.5	1.70
Private USE*	24.4	0.59	21.9	0.49	23.2	0.48
Private Non-USE	27.7	0.46	25.0	0.47	26.4	0.41

* Commonly referred to as PPP schools-Public Private Partnership schools.

In of either category of schools, students in non-USE schools scored means that were higher than for students in USE schools. The difference in mean scores was, however, significant only for students in government USE and non-USE schools. Students in government non-USE schools obtained the highest mean score of 39.5%. This was followed by the mean of 26.4% scored by students in private non-USE schools. The lowest mean (23.2%) was scored by the students in private USE schools. Although in each category of schools, boys scored higher means than the girls; the difference was only significant in government non-USE schools.

The percentage of students rated proficient in Biology by school ownership and USE status is given in Figure 5.06.

FIGURE 5.06: PERCENTAGE OF STUDENTS RATED PROFICIENT IN BIOLOGY BY SCHOOL OWNERSHIP AND USE STATUS



	GOVERNMENT		PRIVATE	
	USE	NON-USE	USE	NON-USE
BOYS	21.0	79.9	16.8	28.3
GIRLS	9.8	65.2	0.9	18.1
ALL	15.9	74.3	13.0	23.3

While nearly three quarters of students (74.3%) in government non-USE schools were proficient, the figure dropped to less than a quarter (23.3%) for those in private non-USE schools. Government and private USE schools had very few of their students rated proficient; 15.9% in government USE schools and 13.0% in private USE schools. Gender disparities were wide in all school types, the widest being in private USE schools. In fact, only about one percent of girls from private USE schools were rated proficient, in comparison to 16.8% of the boys.

5.8 ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY BY SCHOOL PROGRAM

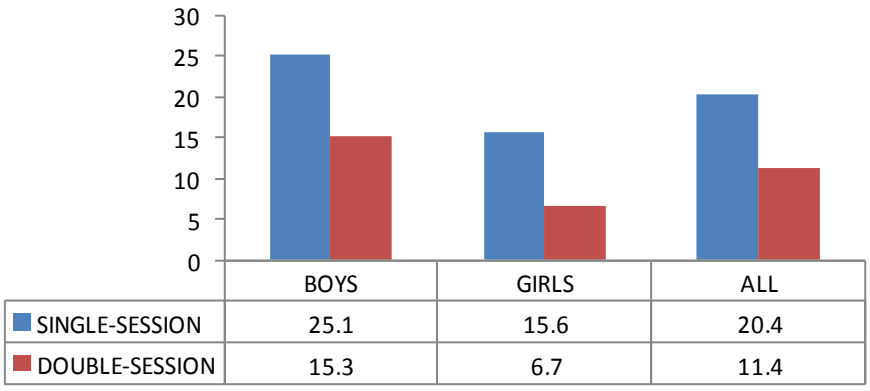
A description of the achievement of students in Biology by school program is given in this section. Table 5.11 shows the mean scores of students in Biology by school program and gender.

TABLE 5.11: MEAN SCORES (PERCENTAGE) OF STUDENTS IN BIOLOGY BY SCHOOL PROGRAM AND GENDER.

SCHOOL PROGRAM	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Single-session	26.8	0.40	24.1	0.40	25.5	0.35
Double-session	24.0	0.51	21.6	0.41	22.9	0.42

The mean score of students from single-session schools was significantly higher than that of the students from double-session schools. The boys obtained a higher mean score than girls in each type of school non-significantly. Figure 5.07 shows the percentage of students rated proficient in Biology by school program.

FIGURE 5.07: PERCENTAGE OF STUDENTS RATED PROFICIENT IN BIOLOGY, BY SCHOOL PROGRAM AND GENDER



	BOYS	GIRLS	ALL
SINGLE-SESSION	25.1	15.6	20.4
DOUBLE-SESSION	15.3	6.7	11.4

One fifth of the students from single session schools attained the desired rating, as compared to only 11.4% of the students from double session schools. A significantly higher percentage of boys from each type of schools attained the desired rating compared to the girls.

5.9 ACHIEVEMENT OF STUDENTS IN BIOLOGY BY SCHOOL LOCATION

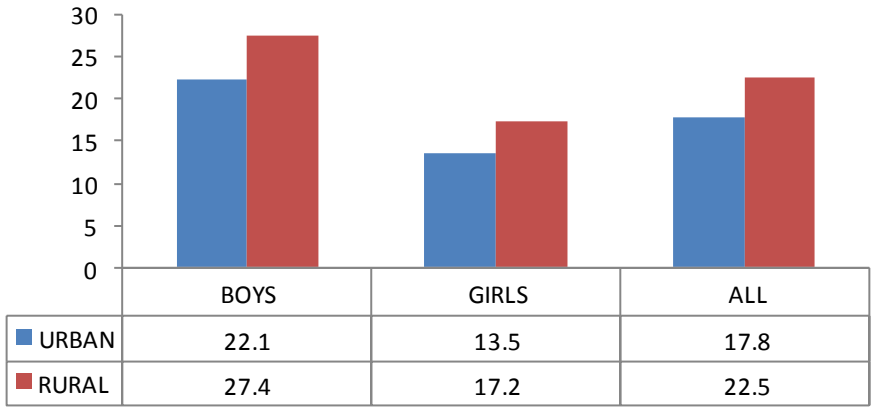
This section presents the performance of students in Biology by school location. Table 5.12 shows the mean scores of students in Biology by school location and gender.

TABLE 5.12: MEAN SCORES (PERCENTAGE) OF STUDENTS IN BIOLOGY BY SCHOOL LOCATION AND GENDER.

SCHOOL LOCATION	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Urban	27.3	0.68	24.4	0.68	25.9	0.57
Rural	26.0	0.45	23.6	0.44	24.8	0.40

The mean scores of students from urban and rural schools were 25.9% and 24.8% respectively. The difference in the mean scores was insignificant. In either school types, however, boys' mean score exceeded the girls'. Figure 5.08 shows the percentage of students rated proficient in Biology by school location and gender.

FIGURE 5.08: PERCENTAGE OF STUDENTS RATED PROFICIENT IN BIOLOGY, BY SCHOOL LOCATION AND GENDER



	BOYS	GIRLS	ALL
URBAN	22.1	13.5	17.8
RURAL	27.4	17.2	22.5

Although the proportion of students in urban schools with the desired rating was more than that of those in rural schools, the

difference was not significant. However in schools of each location, significantly more boys than girls were proficient with a bigger disparity among students in the rural schools.

5.10 ACHIEVEMENT OF STUDENTS IN BIOLOGY BY ZONE

In this section, a description of the achievement of students by zone and gender is given. Table 5.13 shows the mean scores of students in Biology by zone and gender.

TABLE 5.13: MEAN SCORES (PERCENTAGE) OF STUDENTS IN BIOLOGY BY ZONE

ZONE	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
South West	32.1	1.10	26.9	1.03	29.6	0.87
Mid North I	31.5	1.69	25.8	1.45	29.3	1.53
Mid North II	30.9	1.11	26.3	2.21	29.2	1.26
Kampala	28.6	1.68	27.2	2.00	27.9	1.58
Far West	29.2	1.21	25.7	1.11	27.5	1.05
Far East	27.6	2.11	24.6	2.31	26.2	1.83
Central I	27.1	1.03	24.9	0.81	25.9	0.86
North East	26.3	1.39	23.4	2.27	25.3	1.37
West Nile	26.8	1.08	22.1	0.75	24.9	0.86
North West	24.3	1.01	23.0	1.32	23.7	0.82
Mid East II	24.6	0.89	22.4	0.81	23.7	0.66
Central III	24.6	1.79	23.1	1.85	23.7	1.34
Near East	24.1	0.94	21.8	0.76	23.0	0.72
Central II	23.1	0.98	22.1	0.84	22.6	0.84
Mid West	23.3	0.55	20.8	1.07	22.2	0.65
Mid East I	22.5	0.89	20.0	1.02	21.2	0.86
Uganda	***26.5***	***0.37***	***23.9***	***0.37***	***25.2***	***0.32***

Students from schools in South West obtained the highest mean score (29.6%), followed by students from Mid-North I (29.3%) and

then Mid-North II (29.2%). All the other zones obtained mean scores ranging from 21.2% in Mid-East I to 27.9% in Kampala.

Boys' mean scores in Biology were higher than girls' in all the zones of the country, but the differences were significant only in South West and the Northern zones of West Nile, Mid North I and Mid-North II. Table 5.14 gives the percentage of students rated proficient in Biology by zone and gender.

TABLE 5.14 : PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN BIOLOGY BY ZONE

	BOYS	GIRLS	ALL
Mid North I	44.6	16.0	33.7
South West	44.8	20.4	33.3
Mid North II	40.6	13.5	31.0
Kampala	31.8	24.2	27.7
Far West	33.6	17.5	25.8
Central I	25.6	20.9	23.1
North East	21.6	14.4	19.1
Far East	24.4	9.9	17.6
Central III	19.6	14.3	16.5
West Nile	21.8	7.9	16.2
Mid East II	16.7	9.7	13.6
Near East	15.8	9.7	12.9
North West	13.5	8.5	11.2
Mid West	14.5	5.3	10.4
Mid East I	13.2	6.8	10.0
Central II	11.1	8.3	9.7
Uganda	***24.2***	***14.9***	***19.6***

KEY	
75	75% or above of students rated proficient.
50	50-74% of students rated proficient.
49	Less than 50% of students rated proficient

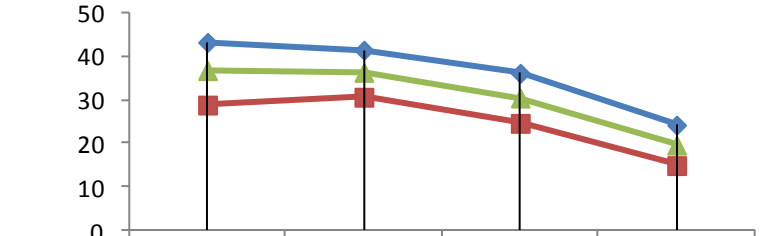
Only two zones (out of sixteen): Mid-North I and South West, had at least a third of the students rated proficient. In the rest of the zones, the proportions of students rated proficient ranged from 9.7% in Central II to 31.0% in Mid-North II.

More boys than girls reached the desired rating in each zone, with significant differences in South West, Mid North I and II, Far West, Far East and West Nile.

5.11 ACHIEVEMENT OF STUDENTS IN BIOLOGY IN 2008 – 2011

This section compares the performance of students in Biology in the years 2008-2011.
The percentage of students reaching the desired proficiency is given in Figure 5.09

FIGURE 5.09: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN BIOLOGY IN 2008 - 2011, BY GENDER



	2008	2009	2010	2011
BOY	43.2	41.4	36.1	24.2
GIRL	28.8	30.6	24.6	14.9
ALL	36.7	36.3	30.4	19.6

In 2008 and 2009, the percentages of students rated proficient in Biology were almost the same. However, the proportion decreased from 36.3% in 2009 to 30.4% in the following year and then to 19.6% in 2011.

5.12 CONCLUSION

Students' performance in the topics of Biology was best in 'Insects' and worst in 'Soil'. Even then, students exhibited better performance in the competencies which called for recall of facts, rather than those which required critical thinking and practical skills. Students' performance in the various competencies within a topic varied as follows:

In 'Insects', almost all the students could name the diseases spread by a vector, but fewer were able to label the external features of a vector.

In Microscopes and lenses', over three quarters of the students could label the parts of a microscope, but just about one in ten reached a similar rating in 'identifying specialized cells.'

In 'Classification of living things', while about three quarters of the students could state the characteristics of living things, which is a competency taught at primary education level, a paltry 2 in 10 demonstrated skills in 'constructing an identification key'.

In 'Flowering plants', it was only in 'labelling the parts of a flowering plant' that the majority of students were rated proficient. In the rest of the competencies, less than a half of the students showed capability. Students were particularly deficient in 'describing the functions of modified stems'.

In 'Soil' the majority of the students could state the causes of soil erosion. However, very small proportions were able to draw and explain the nitrogen cycle or describe an experiment to show the presence of micro organisms in a soil sample.

Chapter 6

ACHIEVEMENT OF S 2 TEACHERS IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY

6.1 INTRODUCTION

In each school three teachers were assessed. These were teachers who teach English Language, Mathematics and Biology in S 2. Each teacher sat for a test in the subject he/she teaches, which were similar to the students'.

This chapter presents the achievement of the teachers in the three subjects. The chapter begins by describing the distribution of the teachers by the following factors: gender, age, highest teaching qualification and teaching experience. Thereafter, the overall mean score and the percentage of teachers rated proficient in each subject are presented.

Following this, the achievement of the teachers in the sub-skill areas and competencies of each subject is described. Finally, the achievement of the teachers in terms of mean scores and the percentages rated proficient are presented according to the factors listed above, as well as school ownership, USE status, program, location and zone.

6.2 DISTRIBUTION OF TEACHERS BY SELECTED FACTORS

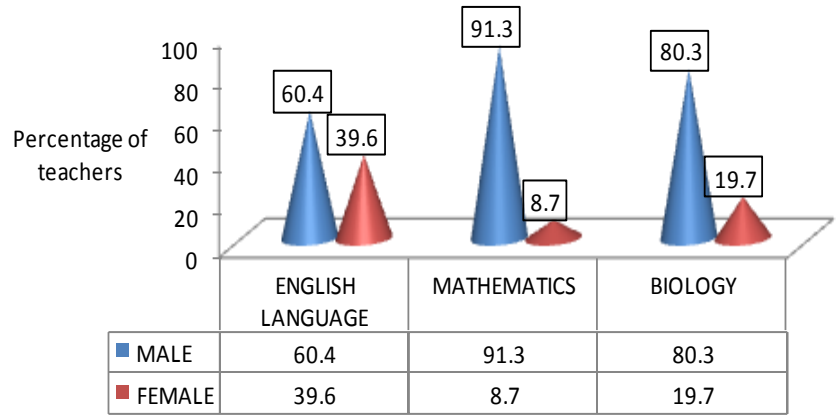
In this section, the distribution of the S 2 teachers who participated in the survey is presented according to various factors.

6.2.1 DISTRIBUTION OF TEACHERS BY GENDER

In all, 1,501 teachers: 1,206 males and 295 females were assessed.

The percentages of teachers by the subject they taught and gender is shown in Figure 6.01.

FIGURE 6.01: DISTRIBUTION OF TEACHERS BY SUBJECT AND GENDER



	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
MALE	60.4	91.3	80.3
FEMALE	39.6	8.7	19.7

English Language had the greatest proportion of female teachers (39.6%) and Mathematics the least, only 8.7%. About four-fifths of the teachers of Biology (80.3%) were males and only 19.7% females.

6.2.2 DISTRIBUTION OF TEACHERS BY AGE

The average age of the teachers was 30.5 years. The teachers of English Language, Mathematics and Biology had respective mean ages of 31.8, 29.6 and 30.2 years. Thus, on average, the English Language teachers were slightly older than those of Mathematics and Biology. However, the last two categories had almost the same mean age. The distribution of the teachers by age group and subject is given in Table 6.01.

TABLE 6.01: DISTRIBUTION OF TEACHERS BY AGE AND SUBJECT

AGE GROUP (YEARS)	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY		TOTAL	
	N	Percent	N	Percent	N	Percent	N	Percent
20 – 29	221	44.8	255	50.7	209	42.5	685	46.0
30 – 39	149	30.2	163	32.4	200	40.7	512	34.4
40 – 49	92	18.7	63	12.5	66	13.4	221	14.9
50 and above	31	6.3	22	4.4	17	3.4	70	4.7
TOTAL	493	100.0	503	100.0	492	100.0	1.488[8]	100.0

For each subject, the majority of the teachers were less than 40 years old.

6.2.3 DISTRIBUTION OF TEACHERS BY THE HIGHEST TEACHING QUALIFICATION

Table 6.02 shows the distribution of teachers by the highest teaching qualification and subject.

[8] The total is less because some teachers did not indicate their age.

TABLE 6.02: DISTRIBUTION OF TEACHERS BY THE HIGHEST TEACHING QUALIFICATION

HIGHEST PROFESSIONAL QUALIFICATION	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY		TOTAL	
	N	Percent	N	Percent	N	Percent	N	Percent
Masters in Education	1	0.2	0	0.0	2	0.4	3	0.2
Bachelors in Education	176	37.9	172	37.2	137	30.0	485	35.1
Grade V Secondary	241	51.9	215	46.5	274	60.1	730	52.8
Grade V Primary	2	0.4	2	0.4	3	0.7	7	0.5
Grade III	1	0.2	1	.02	1	0.2	3	0.2
Others	43	9.3	72	15.6	39	8.6	154	11.1
TOTAL	464	100.0	462	100.0	456	100.0	1,382	100.0

Over a half of the teachers (52.8%) were holders of Grade V (Secondary) teaching certificate. About a third (35.1%) had a Bachelors in Education degree and just 0.2% had a Masters degree in Education. However there were small proportions with Grade V (Primary) or Grade III teaching certificates, which qualifications are for primary school teachers. The 'others' comprised holders of a degree or diploma in fields other than education. There were also a total of 42 holders of the Uganda Advanced Certificate of Education (UACE) among the 'others'.

6.2.4 DISTRIBUTION OF TEACHERS BY TEACHING EXPERIENCE

The distribution of teachers by teaching experience is shown in Table 6.03

TABLE 6.03: DISTRIBUTION OF TEACHERS BY TEACHING EXPERIENCE AND SUBJECT

TEACHING EXPERIENCE (years)	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY		TOTAL	
	N	Percent	N	Percent	N	Percent	N	Percent
1 – 5	219	49.2	265	56.7	242	53.2	726	53.1
6 – 10	110	24.7	104	22.3	122	26.8	336	24.6
11 – 20	82	18.5	79	16.9	66	14.5	227	16.6
21 and above	34	7.6	19	4.1	25	5.5	78	5.7
TOTAL	445	100.0	467	100.0	455	100.0	1,367	100.0

Overall, over half of the teachers (53.1%) had a teaching experience of 1-5 years. However, less than half of the teachers of English Language (49.2%) had teaching experience. This means that, in comparison to teachers of Mathematics and Biology, more of the teachers of English Language had teaching experience of over five years.

6.3 TEACHER ACHIEVEMENT IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY

The achievement of teachers in English Language, Mathematics and Biology is described in this section[9].

[9] Because there were few female teachers, only large gender differences were significant.

6.3.1 OVERALL ACHIEVEMENT OF TEACHERS

The mean score of teachers in each of the three subjects is given in Table 6.04.

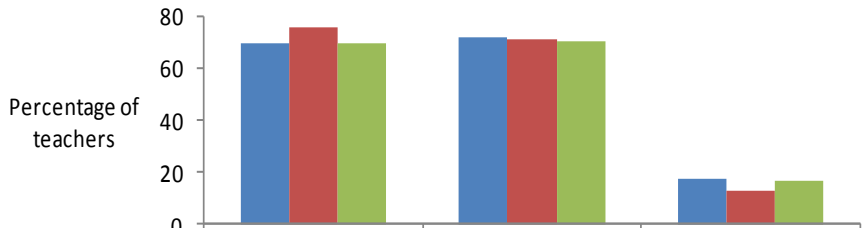
TABLE 6.04: MEAN SCORES (PERCENTAGE) OF TEACHERS BY GENDER

TEACHER GENDER	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	SE	Mean	SE	Mean	SE
Male	82.0	0.49	81.4	0.59	61.3	0.81
Female	82.5	1.46	82.0	0.91	60.3	3.09
Total	82.1	0.79	81.7	0.95	61.2	1.14

Overall, teachers got the highest mean score in English Language of 82.1% and the lowest in Biology (61.2%). In each subject, male and female teachers scored comparable mean scores. Figure 6.02 shows the percentage of teachers rated proficient by gender.

NOTE: *A teacher was rated proficient in a subject if he/she reached the 'Advanced' level of proficiency, as specified for the students' rating in each subject in sections 3.2, 4.2 and 5.2.*

FIGURE 6.02: PERCENTAGE OF TEACHERS RATED PROFICIENT BY GENDER



	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
MALE	69.0	71.5	17.9
FEMALE	75.6	70.9	12.7
ALL	69.4	70.3	16.6

While 69.4% and 70.3% of the teachers of English Language and Mathematics respectively were rated proficient, merely 16.6% of those who taught Biology had a similar rating in the subject. In English Language, more female teachers reached the desired level of proficiency in comparison to the males, but the difference was not significant. However, in Mathematics and Biology, more males than females were proficient. Although both differences were not significant, the gap was wider for Biology.

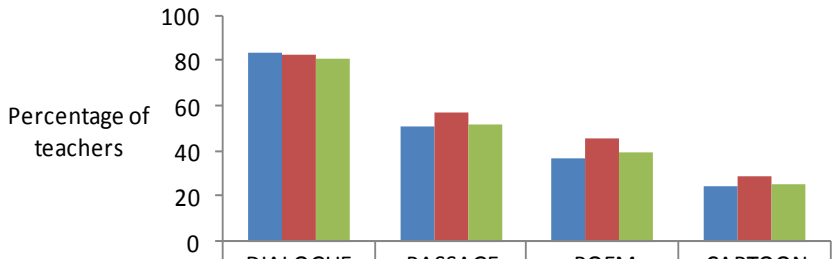
6.3.2 ACHIEVEMENT OF TEACHERS IN SKILL AREAS AND COMPETENCIES OF ENGLISH LANGUAGE

This section highlights the performance of the teachers in skill areas and selected competencies of English Language.

6.3.2.1 TEACHER ACHIEVEMENT IN SUB-SKILL AREAS AND SELECTED COMPETENCIES OF READING COMPREHENSION

This sub-section presents teacher achievement in English Language by sub-skill areas of Reading Comprehension. Figure 6.03 shows the percentages of teachers rated proficient in sub-skill areas of Reading Comprehension.

FIGURE 6.03: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SUB-SKILL AREAS OF READING COMPREHENSION



	DIALOGUE	PASSAGE	POEM	CARTOON
MALES	83.1	50.9	36.6	24.1
FEMALES	82.8	57.0	45.9	28.9
ALL	80.6	51.7	38.9	25.1

Whereas the majority of teachers (80.6%) exhibited skills in reading and comprehending a dialogue, fewer showed similar skills in reading a story, a poem and a cartoon. 'Reading a cartoon' was the worst done area, with only about a quarter of the teachers (25.1%) rated proficient. More female teachers than males were rated proficient in all the sub–skill areas of Reading Comprehension, but the difference was only significant in 'poem'.

The percentage of teachers rated proficient in selected competencies of Reading Comprehension are given in Table 6.05.

TABLE 6.05: PERCENTAGES OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF READING COMPREHENSION

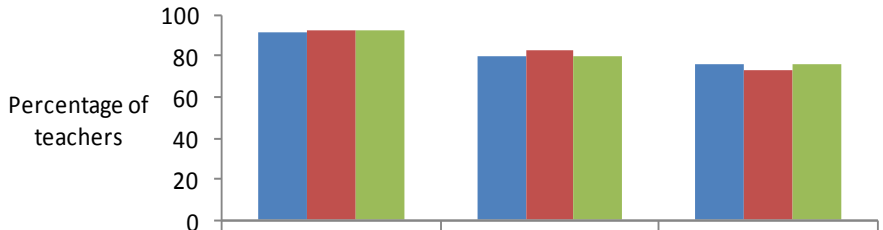
COMPETENCIES	MALES	FEMALES	ALL
Passage			
Reading a passage and selecting appropriate information directly from the text to answer a question.	93.0	97.7	94.8
Reading a passage and deriving the contextual meaning of statements.	74.4	78.7	76.0
Reading a passage and making conclusions by reasoning based on the information in the text.	53.1	55.0	53.9
Poem			
Reading a poem and describing the characters in the poem.	85.5	91.5	87.8
Reading a poem and explaining the meaning of words as used in the poem.	52.6	65.9	57.7
Reading a poem and making inferences based on the episode in the poem.	39.5	46.8	42.3
Cartoon			
Reading a cartoon and stating what it portrays.	49.1	61.2	53.5
Reading a cartoon and providing a suitable title for it.	53.5	48.0	51.4
Reading a cartoon and making inferences based on it.	40.2	41.2	40.7

Teachers' performance varied across the competencies of Reading Comprehension. In most cases, teachers were more competent in answering questions that required direct responses from the text, rather than those which demanded application of the information in a different context. For instance, 94.8% of the teachers were able to read a passage and extract appropriate information directly from the text to answer a question, 76.0% could derive the contextual meaning of a phrase used in the passage and only 53.9% were able to draw conclusions based on the events in the story.

6.3.2.2 ACHIEVEMENT OF TEACHERS IN SUB-SKILL AREAS AND COMPETENCIES OF WRITING

This section presents the achievement of students in the sub-skill areas and competencies of Writing.
Figure 6.04 shows the percentage of teachers rated proficient in the sub-skill areas of Writing.

FIGURE 6.04: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SUB-SKILL AREAS OF WRITING



	CONVERSATION	COMPOSITION	FORMAL LETTER
MALES	92.0	80.0	76.4
FEMALES	92.8	82.8	73.0
ALL	92.1	80.3	75.9

A great majority of the teachers; 92.1%, were able to write a conversation correctly. However, smaller percentages showed similar skills in writing a composition and a formal letter: 80.3% and 75.9% respectively. Male and female teachers performed at about the same level in each sub-skill area of Writing. Tables 6.06 and

6.07 give the percentages of teachers rated proficient in the attributes of a composition and a conversation.

TABLE 6.06: PERCENTAGES OF TEACHERS RATED PROFICIENT IN SELECTED ATTRIBUTES OF A COMPOSITION

ATTRIBUTE	MALE	FEMALE	ALL
Sequence	97.9	96.2	97.2
Format	89.0	88.6	88.8
Title	83.9	85.7	84.5
Grammar	81.0	78.9	77.8
Content	65.6	63.3	64.7
Impression	63.4	59.0	60.0

The majority of teachers (over 80%) wrote well sequenced compositions, using the correct format and indicating the titles. Many also used the correct grammar. However, smaller proportions wrote compositions that were relevant and impressive. The difference in the performance of male and female teachers in each competency was not significant.

TABLE 6.07: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED ATTRIBUTES OF A CONVERSATION

ATTRIBUTE	MALE	FEMALE	ALL
Title	92.6	94.8	93.4
Format	92.2	94.1	92.9
Speakers	92.1	93.9	92.7
Content	91.5	93.0	89.4
Grammar	89.0	90.1	89.4

A great number of teachers (about 90%) were rated proficient in each of the attributes of 'conversation writing.' In all cases, female teachers performed better than their male counterparts, though the differences were not significant.

6.3.2.3 ACHIEVEMENT OF TEACHERS IN THE COMPETENCIES OF GRAMMAR

The achievement of teachers in the competencies of Grammar is described in this sub-section.
Table 6.08 shows the percentage of teachers rated proficient in the competencies of Grammar

TABLE 6.08: PERCENTAGE OF TEACHERS RATED PROFICIENT IN COMPETENCIES OF GRAMMAR

COMPETENCIES	MALE	FEMALE	ALL
Using adverbs	95.6	94.9	95.3
Using nouns	93.8	90.4	92.5
Using prepositions	92.0	85.2	89.3
Using the correct tenses	86.2	91.0	88.1
Using pronouns	77.2	77.6	77.0
Using articles and words of quantity	79.5	70.4	76.1
Applying punctuation correctly.	70.1	77.0	72.7
Using adjectives	54.2	44.6	49.1
Using given structures correctly.	30.9	39.2	33.1

Most of the teachers (95.3%) were able to use adverbs correctly, and 92.5% showed similar skills in 'using nouns'. However, only a third (33.1%) proved they had skills in 'using structures correctly' and just about a half (49.1%) could use adjectives correctly. While male teachers exhibited more skills in using articles and adjectives, the females did so in applying punctuation and using structures. Performance in the rest of the competencies did not reflect significant gender differences.

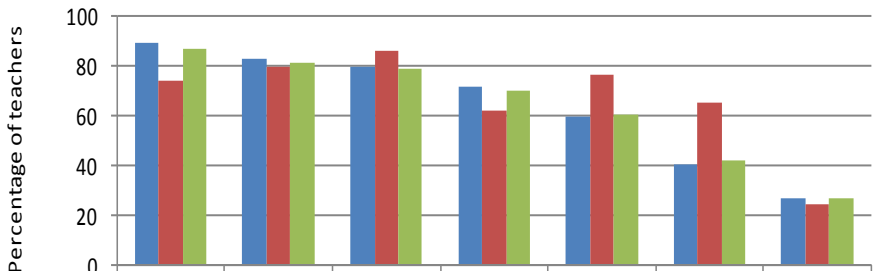
6.3.3 ACHIEVEMENT OF TEACHERS IN THE TOPICAL AREAS AND COMPETENCIES OF MATHEMATICS

A description of the achievement of teachers in the main topical areas and competencies of Mathematics is given in this section.

6.3.3.1 Achievement of Teachers in the Topical Areas of Mathematics

Figure 6.05 shows the percentage of teachers rated proficient in the topical areas of Mathematics.

FIGURE 6.05: PERCENTAGE OF TEACHERS RATED PROFICIENT IN THE TOPICAL AREAS OF MATHEMATICS



	Measures	Transfor-mations	Numerical concepts	Statistics	Graphs	Set theory	Geometry
MALES	89.1	82.7	79.2	71.6	59.6	40.6	27.0
FEMALES	74.0	79.4	85.8	62.1	76.5	64.8	24.3
ALL	86.4	81.1	78.6	69.6	60.1	42.1	26.3

Teachers exhibited best performance in 'Measures,' in which 86.4% of them were rated proficient. The majority of teachers also reached the desired proficiency levels in 'Transformation and functions' as well as 'Numerical concepts.' However, in 'Geometry', only 26.3% of the teachers were proficient. Male teachers performed better in 'Measures' and 'Statistics', while the females were better in 'Graphs' and 'Set theory'. Nevertheless, the differences were not significant.

6.3.3.2 Achievement of Teachers In Selected Competencies Of Mathematics

This section describes the performance of teachers in different Mathematics competencies. Tables 6.09 – 6.15 give the percentages of teachers who were rated proficient in selected Mathematics competencies, grouped in topical areas.

TABLE 6.09: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'MEASURES'

COMPETENCIES	MALE	FEMALE	ALL
Computing profit and loss.	94.7	97.3	94.9
Computing simple interest.	93.4	82.5	92.5
Solving problems involving shopping.	92.1	87.0	91.7
Carrying out currency conversions.	90.7	94.3	91.0
Computing the circumference of a circle.	90.9	78.5	89.8

In 'Measures', nearly all the teachers performed very well, with about 9 in 10 rated proficient in each competency. Male teachers performed significantly better than the females in 'computing the circumference of a circle' and 'computing simple interest.' On the other hand, females were better in 'carrying out currency conversions' and 'computing profit and loss,' though the differences were not significant.

TABLE 6.10: PERCENTAGES OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'TRANSFORMATIONS AND FUNCTIONS'

COMPETENCIES	MALE	FEMALE	ALL
Working out values of linear functions.	97.5	99.1	97.6
Relating object distance to the image distance in a reflection.	90.1	85.6	89.7
Drawing a graph of a linear function.	85.1	96.9	86.1
Determining the image of a point under multiple reflections.	75.6	76.0	75.7

Almost all the teachers (97.6%) could work out values of linear functions. Large proportions (over 75%) also demonstrated skills each of in the remaining competencies. More females than males were proficient in all the competencies, except 'relating object distance to the image distance in a reflection,' where males were better. However, the differences were not significant.

TABLE 6.11: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'NUMERCIAL CONCEPTS'

COMPETENCIES	MALE	FEMALE	ALL
Expressing a percentage as a ratio.	95.2	93.6	95.1
Correcting a number to a specified number of decimal places.	93.8	83.0	92.8
Determining the LCM of numbers.	91.4	93.5	91.5
Performing the four basic operations on natural numbers.	84.2	78.0	82.3
Finding multiples of numbers.	77.5	72.0	77.1
Converting a decimal to a fraction and vice versa.	68.3	69.2	68.5
Applying the concept of LCM in novel situations.	34.3	41.2	34.9

In 'Numerical concepts', more teachers proved competent in the mechanical aspects, such as, 'expressing a percentage as a ratio' and 'correcting a number to a specified number of decimal place'; in which over 90% were proficient. However, smaller numbers were able to apply already learnt concepts in novel situations. For instance, just over a third (34.9%) could apply the concept of LCM in a novel situation. In all, males performed better in about a half of the competencies of 'Numerical concepts' and females were better in the other half, but the differences were not significant. However, males performed significantly better in 'correcting a number to a specified number of decimal places'.

TABLE 6.12: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'STATISTICS'

COMPETENCIES	MALE	FEMALE	ALL
Presenting a set of observations in a bar graph.	91.0	84.9	90.5
Computing the range of non-grouped data.	88.9	87.6	88.8
Interpreting a pie chart.	82.8	73.2	81.9
Interpreting a frequency table.	78.0	73.0	77.6

Teachers exhibited skills in all the competencies of 'Statistics.' A great majority (90.5%) proved able to 'accurately present a set of observations in a bar graph'. Least performance was in 'interpreting a frequency table,' even so, up to 77.6% of the teachers attained the desired rating in the competency. Male teachers performed better than the females in all the competencies, but the differences were not significant.

TABLE 6.13: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'CARTESIAN CORDINATES AND GRAPHS'

COMPETENCIES	MALE	FEMALE	ALL
Plotting points.	94.3	93.9	94.2
Writing the equation of a line.	86.2	98.4	87.3
Drawing a distance-time graph.	85.5	87.8	85.7
Interpreting speed-time graphs.	10.3	14.1	10.6

In 'Cartesian coordinates and graphs', most of the teachers (over 80%) demonstrated skills in 'plotting points,' 'writing the equation of a line from a set of points' and 'drawing a distance-time graph'. Nonetheless, only about one in ten were capable of interpreting a speed-time graph. More females than males reached the desired rating in most of the competencies, but the difference was significant only in 'writing the equation of a line.'

TABLE 6.14: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'SET THEORY, RELATIONS AND MAPPING'

COMPETENCIES	MALE	FEMALE	ALL
Using a Venn diagram.	89.2	98.1	90.0
Identifying types of mapping.	58.1	45.5	57.0
Using set symbols.	34.0	21.5	32.4
Showing a relation in a diagram.	28.7	52.7	30.8

In 'Set theory', almost all the teachers (90.0%) correctly represented a relation using a Venn diagram and use it to solve a problem. However, less than a third could show a relation in a diagram or use set symbols correctly. More males than females were rated proficient in 'using set symbols,' and identifying types of mapping.' The reverse occurred in the performance in the remaining two competencies. These differences, though, were not significant.

TABLE 6.15: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'GEOMETRY'

COMPETENCIES	MALE	FEMALE	ALL
Measuring length.	90.6	99.0	91.3
Drawing a circle accurately.	80.8	91.4	81.7
Constructing a line parallel to another.	78.5	78.8	78.5
Constructing a triangle.	74.1	87.4	75.2
Measuring an angle.	60.8	73.0	61.9
Calculating the exterior angle of a polygon.	21.7	11.9	20.9
Showing a compass bearing.	16.8	13.0	16.4

Although most of the teachers (91.3%) could accurately measure length, the proportion that could measure an angle was much smaller (61.9%). Over three quarters of the teachers exhibited skills in 'drawing a circle accurately' and constructing a parallel line and a triangle. It was disappointing to note that less than one in five teachers (16.4%) could show a direction on a compass bearing and

just about one-fifth were able to calculate the exterior angle of a polygon. Female teachers performed significantly better than the males in most of the competencies of Geometry. Male teachers were better only in the two competencies where there was worse performance: 'Calculating the exterior angle of a polygon' and 'Showing a compass bearing.'

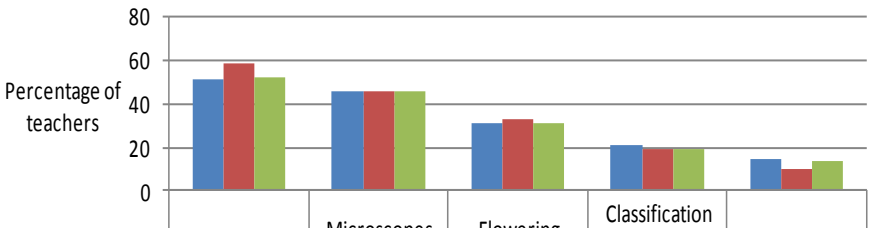
6.3.4 ACHIEVEMENT OF TEACHERS IN THE TOPICS AND COMPETENCIES OF BIOLOGY

The achievement of teachers in the topics and competencies of Biology is described in this section.

6.3.4.1 Achievement of Teachers In The Topics Of Biology

The performance of teachers in the various topics of Biology is described in this section. Figure 6.06 shows the percentage of teachers rated proficient in the topics of Biology.

FIGURE 6.06: PERCENTAGE OF TEACHERS RATED PROFICIENT IN TOPICAL AREAS OF BIOLOGY



	Insects	Microscopes and lenses	Flowering plants	Classification of living things	Soil
MALES	50.9	45.2	31.1	20.7	14.6
FEMALES	58.4	45.4	32.4	18.7	9.6
ALL	52.0	45.2	31.3	19.5	13.5

Best performance was shown in 'Insects', in which about a half of the teachers (52.0%) reached the desired proficiency level. This was followed by 'Microscopes and hand lenses', with 45.2% rated proficient. At 13.5% and 19.5% respectively, the percentages of teachers rated proficient in 'Soil' and 'Classification of living things'

were vey low. The difference in the proportions of males and females rated proficient in any of the topics was not significant, although more females were proficient in 'Insects' with the reverse pattern occurring in 'Soil'.

6.3.4.2 Achievement of Teachers In Selected Competencies of Biology

In this section, a presentation is made of the achievement of teachers in selected competencies of Biology. Tables 6.16–6.20 show the percentages of teachers rated proficient in selected competencies, grouped in the five topical areas: 'Insects', 'Microscopes and hand lenses', 'Flowering plants', 'Classification' and 'Soil'.

TABLE 6.16: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'INSECTS'

COMPETENCIES	MALE	FEMALE	ALL
Naming the diseases spread by a vector.	70.4	82.5	70.9
Describing the life cycle of a vector.	68.4	64.5	67.2
Drawing the external features of a vector.	32.1	24.6	31.1

Although over two thirds of the teachers were able to name the diseases spread by a vector and also describe the life cycle of a vector, less than a third (31.1%) demonstrated similar ability in 'drawing the external parts of a vector.' Females performed at a significantly higher level in 'describing the life cycle of a vector'. In contrast, the males did better in the remaining competencies, even if the differences were not significant.

TABLE 6.17: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'MICROSCOPES AND HAND LENSES'

COMPETENCIES	MALE	FEMALE	ALL
Microscopes			
Computing the magnification of a specimen.	88.3	85.2	87.1
Labelling the parts of a microscope.	56.2	61.6	56.1
Describing the care of hand lenses and microscopes.	28.7	32.0	28.8
Stating the advantages of one type of microscopes over another.	16.3	12.6	15.8
Plant and animal cells			
Identifying specialized cells.	93.0	80.9	90.7
Describing tissue and organ systems in plants and animals.	73.4	57.1	68.5

The majority of teachers, about nine in ten, were able to identify specialized cells. A big number (87.1%) could also compute the magnification of a specimen. But the proportion that could state the advantages of one microscope over another was small–only 15.8%. There were non-significant gender differences, with males performing better in some competencies and females in others.

6.18: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'CLASSIFICTION OF LIVING THINGS'

COMPETENCIES	MALE	FEMALE	ALL
Classifying organisms into their taxonomic groups.	86.8	90.5	87.1
Stating the characteristics of living things.	75.4	72.8	74.3
Constructing an identification key.	54.6	59.0	54.4
Describing how living things can be collected.	30.1	29.0	29.7
Estimating the number of organisms in an area.	18.5	15.8	17.9

There were variations in the teachers' performance in the competencies of 'Classification of living things.' Although as many as 87.1% demonstrated knowledge in 'classifying organisms into their taxonomic groups,' less than a third (29.7%) could describe how living things can be collected, and just 17.9% showed similar skills in 'estimating the number of organisms in an area.' Male teachers performed better than females in three of the competencies and females were superior in the remaining two. The differences, however, were not significant.

TABLE 6.19: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'FLOWERING PLANTS'

COMPETENCIES	MALE	FEMALE	ALL
Labelling the parts of a flowering plant.	81.3	82.9	81.5
Identifying leaf types.	63.2	64.3	63.5
Drawing and labelling the internal parts of a root.	13.0	28.9	14.5
Explaining the functions of the parts of a flower.	9.6	6.3	9.1
Drawing and labelling the external structure of a seed.	4.8	3.0	4.6
Describing the functions of modified stems.	0.6	0.0	0.5

Although as many as 81.5% of the teachers could correctly label the parts of a flowering plant, only 63.5% were able to identify leaf types. It was disappointing to note that merely 0.5% of the teachers were able to describe the functions of modified roots. More males than females were rated proficient in three competencies and females in the remaining three. However, the difference was only significant in 'drawing and labelling the internal parts of a root', in which females performed better.

TABLE 6.20: PERCENTAGE OF TEACHERS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'SOIL'

COMPETENCIES	MALE	FEMALE	ALL
Stating the causes of soil erosion.	66.7	77.0	70.2
Explaining the effect of certain factors on the quality of soil.	32.0	27.3	31.1
Describing an experiment to show the presence of micro organisms in a soil sample.	27.1	25.6	26.6
Drawing and explaining the nitrogen cycle.	23.3	17.3	22.5
Describing the role of essential elements in a culture solution.	3.2	2.2	3.1

Over two thirds of the teachers (70.2%) were able to state the causes of soil erosion, while only about a third (31.1%) could explain the effect of certain factors on the quality of soil. Just over a quarter of the teachers could describe an experiment to show the presence of micro organisms in a soil sample, and merely 3.1% were able to describe the role of essential elements in a culture solution. Gender difference in performance existed, with more males rated proficient in most of the competencies, though the differences were not significant. Conversely, significantly more females than males were rated proficient in 'stating the causes of soil erosion.'

6.3.5 ACHIEVEMENT OF TEACHERS BY AGE

The achievement of teachers in the three subjects by age is described in this section. Table 6.21 shows the mean scores of teachers by age.

TABLE 6.21: MEAN SCORES (PERCENTAGE) OF TEACHERS BY AGE

AGE GROUP (YEARS)	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	SE	Mean	SE	Mean	SE
20 – 29	82.2	0.57	81.3	0.65	60.5	1.00
30 – 39	80.4	1.28	83.4	0.79	63.7	1.19
40 – 49	82.2	0.91	83.6	0.89	63.8	1.30
50 and above	81.1	2.87	82.9	1.68	56.2	6.80

In English Language, the teachers' mean score first declined slightly with increase in age and then increased and decreased again. In Mathematics and Biology, the means increased with age and dropped for the teachers aged 50 years and above. However, the difference was only significant in Biology for age groups 40 – 49 years and 50 years and above.

Table 6.22 gives the percentages of teachers rated proficient in the three subjects, by age group.

TABLE 6.22: PERCENTAGES OF TEACHERS RATED PROFICIENT BY AGE GROUP

AGE GROUP	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
20 – 29	74.9	69.1	15.9
30 – 39	66.3	73.1	19.2
40 – 49	70.1	80.9	20.0
50 and above	60.4	69.4	27.4

The proportion of teachers rated proficient in English Language first declined with age from 74.9% at age 20 – 29 years to 66.3% for the 30 – 39 year olds. Then it increased again and finally decreased. For Mathematics and Biology the percentage of teachers rated proficient increased with age, though it dropped for Mathematics at age 50 years and above. The variations were not significant.

6.3.6 ACHIEVEMENT OF TEACHERS BY THE HIGHEST TEACHING QUALIFICATION

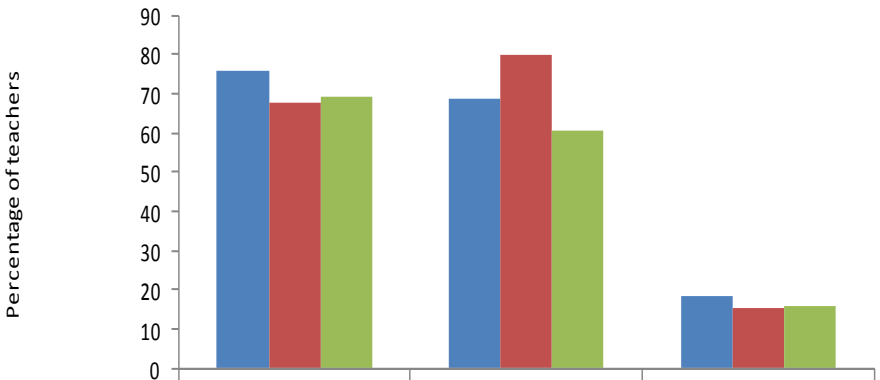
The achievement of teachers by the highest teaching qualification is presented in this section. The mean scores of teachers by the highest teaching qualification are given in Table 6.25. Due to the small numbers of teachers with certain qualifications, for the discussion in this section, Masters and Bachelors in Education were combined into one group - Degree in Education. Likewise, Grade V (Primary) and Grade III were included in the category 'others'.

TABLE 6.23 MEAN SCORES (PERCENTAGE) OF TEACHERS BY THE HIGHEST TEACHING QUALIFICATION

HIGHEST TEACHING QUALIFICATION	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	SE	Mean	SE	Mean	SE
Degree in Education	82.3	0.92	81.3	1.44	61.0	1.86
Grade V (Secondary)	81.6	0.70	82.4	1.10	62.0	0.82
Others	81.3	1.12	79.4	1.30	54.5	3.72

The mean scores of the teachers did not differ significantly by the highest teaching qualification. However, it was pleasing to note that the mean scores of teachers with the recommended teaching qualifications were slightly higher than the others'. Figure 6.07 shows the percentage of teachers rated proficient by the highest teaching qualification.

FIGURE 6.07: PERCENTAGE OF TEACHERS RATED PROFICIENT BY THE HIGHEST TEACHING QUALIFICATION



	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
Degree in Education	75.9	68.9	18.6
Grade V Secondary	68.0	80.1	15.2
Others	69.5	60.7	15.9

The performance of teachers of various teaching qualifications differed across subjects. Whereas in English Language and Biology, slightly more degree holders were rated proficient compared to the other categories; in Mathematics, the greatest proportions of teachers with proficient rating comprised the Grade V (Secondary) holders, followed by degree holders and then the 'others'.

Nonetheless, it was only the difference in the performance of the Mathematics teachers with Grade V (Secondary) and 'others' that was significant.

6.3.7 ACHIEVEMENT OF TEACHERS BY TEACHING EXPERIENCE

The achievement of teachers by teaching experience is presented in this section. The mean scores of teachers by teaching experience are given in Table 6.24.

TABLE 6.24 MEAN SCORES (PERCENTAGE) OF TEACHERS BY TEACHING EXPERIENCE

TEACHING EXPERIENCE (YEARS)	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	SE	Mean	SE	Mean	SE
1 – 5	82.4	0.60	80.4	0.85	60.8	0.93
6 – 10	79.6	1.44	84.2	0.84	62.1	1.56
11 – 15	82.3	1.95	85.2	1.30	66.5	1.10
16 – 20	81.7	0.74	82.8	1.62	58.1	6.24
Over 20	81.9	2.62	82.2	1.86	62.3	8.13

There were no significant differences in the mean scores of teachers of different teaching experiences. The percentage of teachers rated proficient by teaching experience is shown in Table 6.25.

TABLE 6.25 PERCENTAGES OF TEACHERS RATED PROFICIENT BY TEACHING EXPERIENCE

TEACHING EXPERIENCE (years)	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
1 – 5	75.9	67.6	16.5
6 – 10	59.9	78.3	13.2
11 – 15	70.4	86.9	18.1
16 – 20	79.2	63.3	2.9
Over 20	76.3	64.9	49.3

In English Language and Biology, the percentage of teachers rated proficient decreased between teaching experience of 1-5 and 6-10 years and thereafter, it increased. For Mathematics teachers, the proportion rated proficient increased for the first 15 years of teaching and then declined. However the differences were not significant.

6.3.8 ACHIEVEMENT OF TEACHERS BY SCHOOL OWNERSHIP

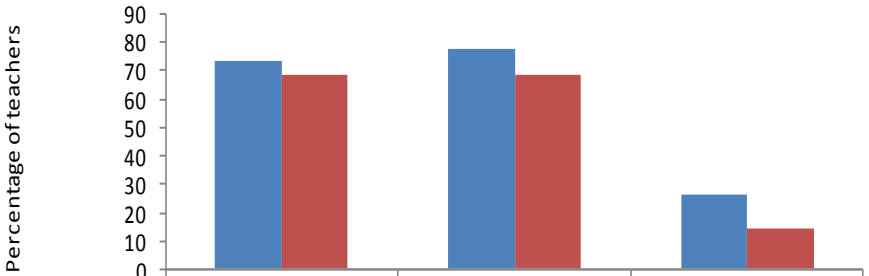
This section presents the achievement of teachers in the three subjects by school ownership. The mean scores of teachers by school ownership are presented in Table 6.26.

TABLE 6.26: MEAN SCORES (PERCENTAGE) OF TEACHERS BY SCHOOL OWNERSHIP

SCHOOL OWNERSHIP	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	SE	Mean	SE	Mean	SE
Government	80.1	0.93	83.2	0.70	64.4	0.78
Private	79.1	1.17	80.2	0.97	57.0	1.41

The teachers' mean scores in English Language were nearly the same in the two types of schools. In Mathematics and Biology, teachers in government schools obtained means which were higher than for those in private schools, with a significant difference in Biology. Figure 6.09 gives the percentage of teachers rated proficient by school ownership.

FIGURE 6.08: PERCENTAGES OF TEACHERS RATED PROFICIENT BY SCHOOL OWNERSHIP



	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
GOVERNMENT	72.9	77.6	26.0
PRIVATE	68.5	68.5	14.2

Teachers in government schools performed at a higher level in each subject in comparison to their counterparts in private schools. The difference increased in moving from English Language to Mathematics and then Biology. While the proportions of the teachers in government and private schools rated proficient in English Language were 72.9% and 68.5 respectively, the corresponding figures for Biology were 26.0% and 14.2%. The difference in the performance of the teachers in the two categories of schools in Biology was significant.

6.3.9 ACHIEVEMENT OF TEACHERS BY SCHOOL USE STATUS

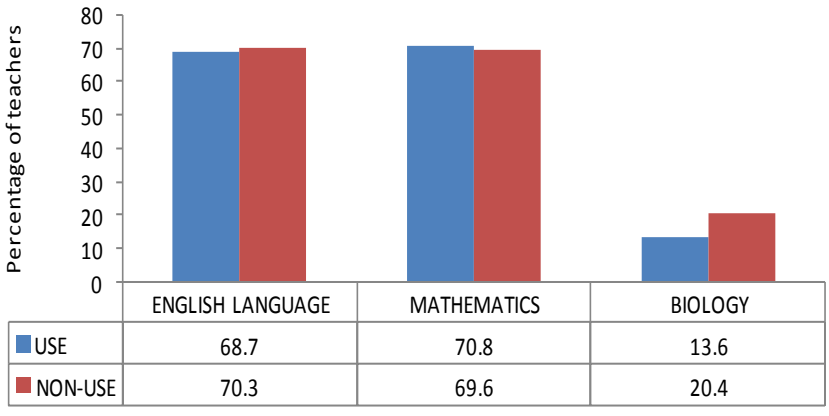
The achievement of teachers by school USE status is presented in this section. The mean scores of teachers are presented in Table 6.27.

TABLE 6.27: MEAN SCORES (PERCENTAGE) OF TEACHERS BY SCHOOL USE STATUS

SCHOOL USE STATUS	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	SE	Mean	SE	Mean	SE
USE	79.1	1.11	80.0	1.15	59.0	1.12
Non–USE	79.5	1.66	81.9	1.02	57.9	2.18

In each subject, the mean score of teachers from USE schools did not differ significantly from that of their colleagues in non-USE schools. For instance, in Biology (where there was the biggest gap), the respective means of teachers in USE and non-USE schools were 59.0% and 57.9%. The percentage of teachers rated proficient by school USE status are given in Figure 6.09.

FIGURE 6.09 PERCENTAGE OF TEACHERS RATED PROFICIENT BY SCHOOL USE STATUS



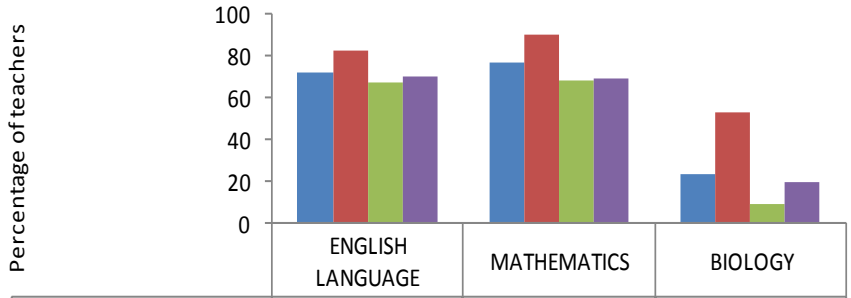
	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
USE	68.7	70.8	13.6
NON-USE	70.3	69.6	20.4

For each subject, there was no significant difference in the performance of teachers from USE and non-USE schools. However, the gap was widest in Biology, where the respective proportions of teachers in USE and non-USE schools rated proficient were 13.6% and 20.4%.

6.3.10 ACHIEVEMENT OF TEACHERS BY SCHOOL OWNERSHIP AND USE STATUS

In this section, the achievement of teachers in each of the three subjects according to school ownership and USE status is examined. The percentage of teachers rated proficient by school ownership and USE status are given in Figure 6.10.

FIGURE 6.10: PERCENTAGES OF TEACHERS RATED PROFICIENT BY SCHOOL OWNERSHIP AND USE STATUS



	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
GOVERNMENT USE	72.1	76.6	23.7
GOVERNMENT Non-USE	82.0	90.0	53.0
PRIVATE USE (PPP)	67.1	68.0	8.7
PRIVATE Non-USE	69.9	68.9	19.2

In each subject, teachers in government non-USE schools performed best, followed by those in government USE schools then private non-USE and finally private USE schools. For example, 82.0% of the teachers in government non-USE schools were proficient in English Language compared to 72.1% of those in government USE schools. The corresponding figures for private non-USE and USE schools were 69.9% and 67.1% of teachers. For schools of a particular ownership, the difference in the performance of teachers in USE and non-USE schools was greater for government than private schools. Among the subjects, the variation in the performance of teachers from the different school types was widest in Biology and least in English Language.

6.3.11 ACHIEVEMENT OF TEACHERS BY SCHOOL PROGRAM

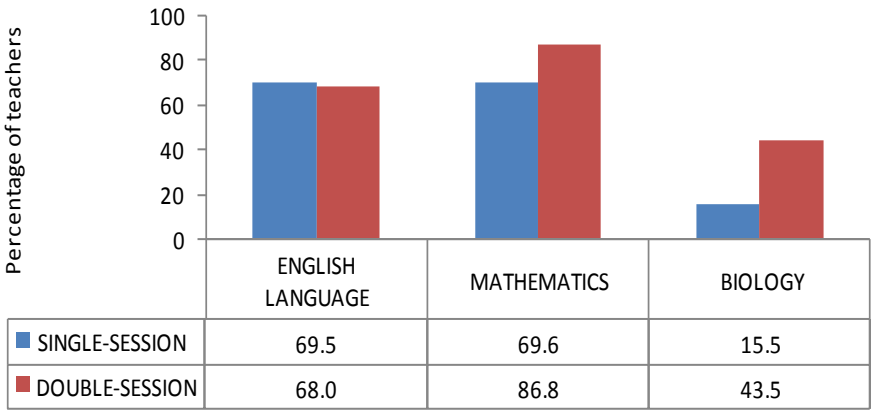
This section describes the achievement of teachers in various subjects by school program. Table 6.28 shows the mean scores of teachers by school program.

TABLE 6.28 MEAN SCORES (PERCENTAGE) OF TEACHERS BY SCHOOL PROGRAM

SCHOOL PROGRAM	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	SE	Mean	SE	Mean	SE
Single-session	79.2	0.99	80.6	0.82	58.1	1.18
Double-session	80.7	1.71	85.9	0.77	69.0	1.01

In English Language, the mean scores of teachers in single-session and double-session schools were comparable. However, in the other two subjects, teachers in double-session schools had significantly higher means than their counterparts in single-session schools. The difference in the mean scores in Biology of 58.1% and 69.0% for single-session and double-session schools respectively was the widest. The percentages of teachers rated proficient by school program are shown in Figure 6.11.

FIGURE 6.11: PERCENTAGE OF TEACHERS RATED PROFICIENT BY SCHOOL PROGRAM



Nearly equal proportions of teachers in single-session and double-session schools were rated proficient in English Language: 69.5% and 68.0% respectively. On the contrary, in Mathematics and Biology, teachers in double-session schools performed significantly better than those in single-session schools. The difference was wider in Biology.

6.3.12 ACHIEVEMENT OF TEACHERS BY SCHOOL LOCATION

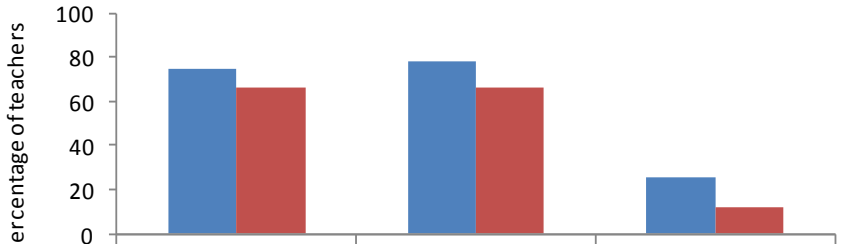
The performance of teachers by school location is described in this section. Table 6.29 shows the mean score of Teachers by school location.

TABLE 6.29: MEAN SCORES (PERCENTAGE) OF TEACHERS BY SCHOOL LOCATION

SCHOOL LOCATION	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	SE	Mean	SE	Mean	SE
Urban	80.1	1.67	80.3	2.00	59.1	2.39
Rural	78.8	1.67	81.1	0.59	58.2	1.21

In each subject, there was no significant difference in the mean scores of teachers in urban and rural schools. Figure 6.12 shows the percentages of teachers rated proficient by school location.

FIGURE 6.12: PERCENTAGE OF TEACHERS RATED PROFICIENT BY SCHOOL LOCATION



	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
URBAN	74.6	78.1	25.2
RURAL	66.7	66.2	12.0

In each subject, more teachers in urban schools were rated proficient, compared to those in the rural schools. For instance, the respective proportions of teachers in urban and rural school who reached the defined proficiency level in Biology were 25.2% and 12.0%. Furthermore, the gap increased in moving from English Language to Mathematics and then Biology.

6.3.13 ACHIEVEMENT OF TEACHERS BY ZONE

The percentages of teachers who were rated proficient in each subject are shown in Table 6.30.

TABLE 6.30: THE PERCENTAGE OF TEACHERS RATED PROFICIENT BY ZONE

REGION	ZONE	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
CENTRAL	Central I	74	69	15
	Central II	75	62	6
	Central III	58	67	16
EAST	Far East	46	96	19
	Mid East I	46	65	4
	Mid East II	78	60	19
	Near East	71	77	19
NORTH	Mid North I	51	79	15
	Mid North II	56	89	40
	North East	75	39	2
	West Nile	65	64	20
WEST	Far West	81	88	10
	Mid West	70	71	15
	North West	67	80	12
	South West	67	64	14
	Kampala	82	81	49
	Uganda	69	70	17

The performance of teachers from the different zones varied widely, with the largest variation in Mathematics, followed by Biology and then English Language. In Mathematics, almost all the teachers (96%) from Far East were rated proficient, as opposed to only 39% in North East. In Biology, the proportions ranged from a paltry 2% in North East to 49% in Kampala; and from 46% in Far East and Mid East I to 82% in Kampala for English Language. In most zones, teachers of English Language and Mathematics demonstrated mastery of the subject matter. Only two zones: Far East and Mid East I had less than a half of the teachers rated proficient in English Language. Similarly, in Mathematics, it was only North East with less than a half of the teachers rated proficient. In contrast, in Biology, there was no zone with at least 50% of the teachers rated proficient. Indeed, apart from Kampala and Mid North II, no other zone had at least 40% of the teachers rated proficient.

6.3.14 CONCLUSION

ENGLISH LANGUAGE

Teachers' performance in the three skill areas of English Language was as follows:

In Reading Comprehension, teachers were more competent in answering questions that required direct responses from the text, rather than those which demanded evaluation of the information and then using it in a different context.

In Writing, the majority of teachers wrote well sequenced compositions, using the correct format and grammar and indicated the titles appropriately. However, not many wrote compositions that were relevant and impressive.

In Grammar, while most of the teachers could ably use adverbs and nouns, few exhibited similar skills in using structures and adjectives.

MATHEMATICS

Among the topics that were assessed in Mathematics, teachers exhibited best performance in 'Measures'. The majority also performed well in 'Transformations and functions' as well as

'Numerical concepts.' However, very few demonstrated sufficient skills in 'Geometry', especially measurement and construction; and in 'Set theory', particularly mapping.
Teachers were competent in the mechanical aspects, such as, performing the basic operations on numbers, than in applying these concepts to solve problems in novel situations, for example, applying the concept of LCM to determine the concurrent points of two events of different frequencies.

BIOLOGY

Teachers' best performance in Biology was in the topic 'Insects'. However, very few teachers were competent in answering questions in 'Soil' and 'Classification of living things'. On the whole, teachers' performance was better in questions which called for recall of facts, in comparison to those which required analytical thinking and practical skills.

Chapter 7

ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY BY TEACHER FACTORS

7.1 INTRODUCTION

In this chapter a description of the relationship between student level of achievement and teacher factors is given. The following factors are considered: teacher gender, age, highest teaching qualification and teaching experience.

7.2 STUDENT ACHIEVEMENT BY TEACHER GENDER

This section describes the performance of students in English Language, Mathematics and Biology by teacher gender. The mean scores are provided first, then the percentages of students rated proficient by teacher gender and student gender is given separately for each subject in sub-sections 7.2.1, 7.2.2 and 7.2.3. The mean scores of students by the teachers' gender are given in the Table 7.01.

TABLE 7.01 MEAN SCORES (PERCENTAGE) OF STUDENTS BY TEACHER GENDER

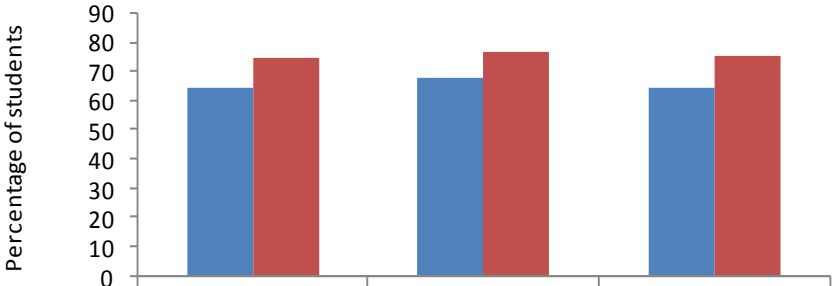
TEACHERS' GENDER	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	S E	Mean	S E	Mean	S E
MALE	48.6	0.91	35.7	0.55	25.1	0.34
FEMALE	51.0	1.05	40.0	1.97	26.3	1.12

In each of the subjects, the mean score of students taught by females was higher than for those who had male teachers. The difference was significant in Mathematics.

7.2.1 STUDENTS' ACHIEVEMENT IN ENGLISH LANGUAGE BY TEACHER GENDER

The percentage of students rated proficient in English Language by teacher and student gender are given in Figure 7.01.

FIURE 7.01: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE BY TEACHER AND STUDENT GENDER

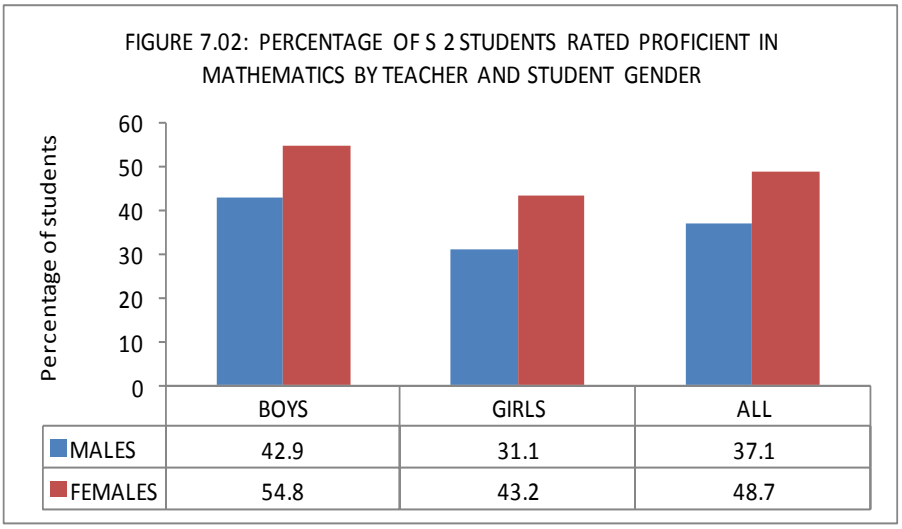


	BOYS	GIRLS	ALL
MALES	64.5	67.7	64.5
FEMALES	74.8	76.3	75.4

In English Language, significantly more students taught by female teachers (75.4%) were rated proficient, in comparison to 64.5% taught by males. In addition, both boys and girls taught by female teachers performed better than those whose teachers were males.

7.2.2 STUDENTS' ACHIEVEMENT IN MATHEMATICS BY TEACHER GENDER

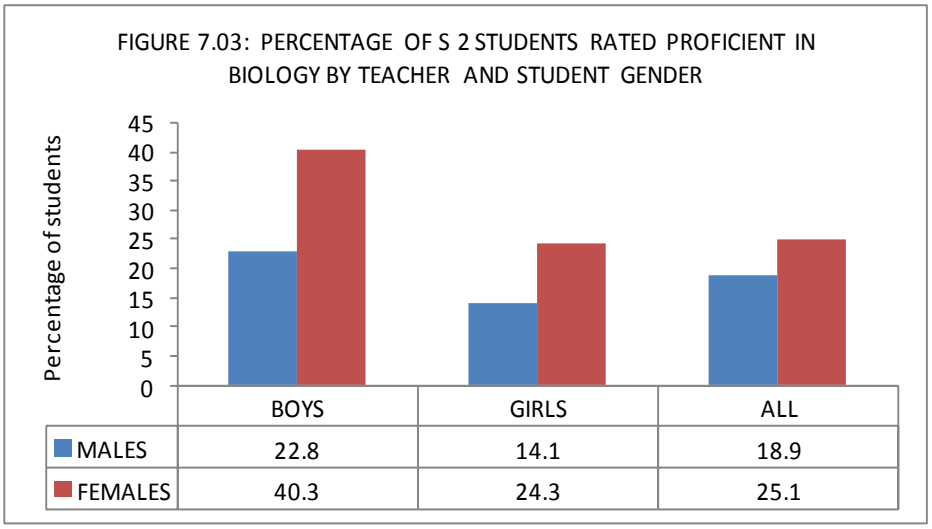
Figure 7.02 shows the percentage of students rated proficient in Mathematics by teacher and student gender.



Students taught by female teachers performed significantly better in Mathematics than those taught by male teachers. Just over a third of the students (37.1%) whose teachers were males reached the desired proficiency, compared to nearly a half (48.7%) of those taught by female teachers. Similarly, boys and girls taught by female teachers performed significantly better than their counterparts with male teachers.

7.2.3 STUDENTS' ACHIEVEMENT IN BIOLOGY BY TEACHER GENDER

The percentage of students rated proficient in Biology by teacher gender are given in Figure 7.03



The proportion of students, taught by male teachers, who reached the defined proficiency level was significantly less than that of students whose teachers were females: 18.9% versus 25.1%. In addition, both boys and girls taught by females, performed significantly better than those taught by males. The difference in the performance of boys taught by either gender was very wide.

7.3 STUDENTS ACHIEVEMENT BY TEACHERS' AGE

This section presents the achievement of students in various subjects by teachers' age. The mean scores and percentages of students rated proficient by teachers' age are given in Tables 7.02 and 7.03 respectively.

TABLE 7.02: MEAN SCORES (PERCENTAGE) OF STUDENTS BY TEACHERS' AGE

TEACHERS' AGE GROUP (years)	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	S E	Mean	S E	Mean	S E
20-29	49.1	0.93	35.8	0.74	25.1	1.00
30-39	49.3	1.52	36.2	0.99	25.1	1.19
40-49	51.2	1.66	37.5	1.41	26.2	1.30
50 and above	49.7	2.75	36.9	4.98	26.1	6.80

Generally the mean scores of students increased in the leap from younger to older teachers, but the differences were insignificant. The highest mean in each case was at teachers' age 40-49 years. Table 7.03 shows the percentage of students rated proficient by teachers' age.

TABLE 7.03: PERCENTAGE OF STUDENTS RATED PROFICIENT BY TEACHERS' AGE

TEACHER AGE GROUP (YEARS)	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
20 – 29	67.2	38.3	19.0
30 – 39	65.0	37.9	19.3
40 – 49	69.3	40.3	23.6
50 and above	67.2	36.3	20.2

For each subject, the students taught by teachers aged 40 – 49 years had the highest proportion with the desired rating. The proportion then tapered off for the students whose teachers were below 40 years and those who had teachers aged 50 years and above.

7.4 STUDENT ACHIEVEMENT BY TEACHERS' HIGHEST TEACHING QUALIFICATION

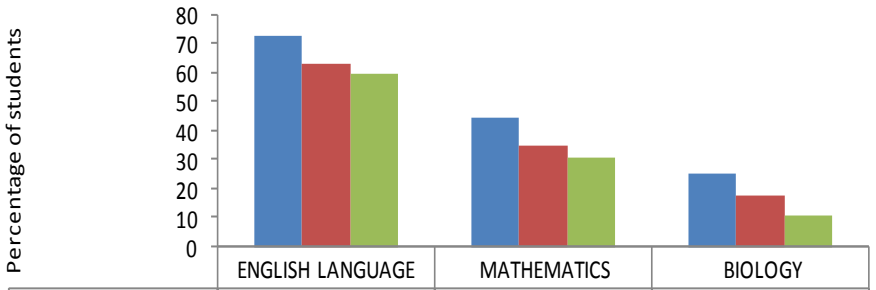
The performance of students according to the teachers' highest qualification is described in this section. Table 7.04 shows the mean scores of students by teachers' highest teaching qualification.

TABLE 7.04 MEAN SCORES PERCENTAGE OF STUDENTS BY TEACHERS' HIGHEST TEACHING QUALIFICATION

TEACHERS' HIGHEST TEACHING QUALIFICATION	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	S E	Mean	S E	Mean	S E
Degree in Education	52.2	1.06	39.1	0.93	26.6	0.83
Grade V (Secondary)	47.8	1.04	34.6	0.72	24.8	0.37
Others	46.4	2.22	32.2	1.19	22.3	0.56

In all the subjects, students taught by teachers with a Degree in Education had the highest mean scores, followed by those whose teachers held Grade V (Secondary) Teaching Certificate. The students taught by the 'others', which comprised mainly teachers not trained to teach at secondary level, had the lowest mean scores. The differences in the mean scores of students who had teachers with a degree and those with grade V teachers were significant for Mathematics and English Language. Figure 7.04 presents the percentage of students rated proficient by teachers' highest teaching qualification.

FIGURE 7.04: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT BY TEACHERS' HIGHEST TEACHING QUALIFICATION



	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
Degree in Education	72.9	44.6	25.1
Grade V	63.0	35.0	17.7
Others	59.5	30.6	10.7

The percentages of students rated proficient increased with a rise in the grade of the teacher's teaching qualification. Moreover, the least percentage of students rated proficient was of those with unqualified teachers- 'others'.

7.5 STUDENT ACHIEVEMENT BY TEACHERS' TEACHING EXPERIENCE

The mean scores of students by teachers' teaching experience are shown in Table 7.05

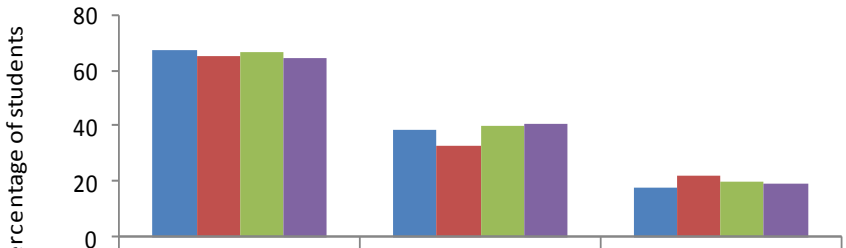
TABLE 7.05 MEAN SCORES (PERCENTAGE) OF STUDENTS BY TEACHERS' TEACHING EXPERIENCE

TEACHING EXPERIENCE (years)	ENGLISH LANGUAGE		MATHEMATICS		BIOLOGY	
	Mean	S E	Mean	S E	Mean	S E
1-5	49.6	0.97	36.1	0.74	24.8	0.43
6-10	48.6	1.67	34.1	1.22	25.9	0.97
11-15	49.6	2.17	37.1	1.63	24.9	0.82
16-20	50.2	3.79	34.7	1.99	27.0	1.81
Over 20	48.0	2.07	38.8	4.64	26.4	1.49

For each of the subjects, there were few teachers with teaching experience of over 20 years and there were also few teachers of English Language and Mathematics with teaching experience of 16-20 years. This makes it difficult to make meaningful comparisons based on the achievement of students taught by these categories of teachers. On the whole, there were non-significant variations in the mean scores of students rated proficient with teachers' teaching experience.

The percentage of students rated proficient by teacher's teaching experience is shown in Figure 7.05

FIGURE 7.05: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT BY TEACHERS' TEACHING EXPERIENCE



	ENGLISH LANGUAGE	MATHEMATICS	BIOLOGY
1-5	67.1	38.6	18.2
6-10	64.8	32.6	21.9
11-20	66.2	39.8	19.7
Over 20	64.3	40.5	19.5

The pattern of student performance by teacher's teaching experience varied across subjects. In English Language and Mathematics, performance levels first dropped and then rose for students whose teachers had a teaching experience of 11 – 20 years. Thereafter, it dropped again for English Language, while it remained almost constant for Mathematics. However, for Biology, the performance level of students first increased, then dropped and remained almost constant.

7.6 CONCLUSION

Of the four teacher factors: gender, age, teacher qualification and teaching experience, only two had impact on students' achievement: gender and teaching qualification.

In all the subjects, the students who had female teachers performed better than those whose teachers were males. Similarly, students with teachers who hold a Degree in Education performed best, followed by those taught by Grade V (Secondary) teachers, in comparison to the students whose teachers had other qualifications. It is worth noting that the students with better results are those taught by teachers with the recommended teaching qualifications.

Chapter 8

CHALLENGES FACED BY SECONDARY SCHOOLS

8.1 INTRODUCTION

To corroborate, the NAPE findings of 2011, headteachers of selected secondary schools in the sample were interviewed on a one to one basis. In the interview, each headteacher was asked to give the main challenges that the school had faced in a period of about one year prior to the survey. The challenges were divided into two categories: challenges in administration and management; and in the teaching-learning process.

This chapter presents the views of the headteachers about the major challenges their schools faced. Firstly the distribution of the headteachers who participated in the survey is made. Secondly, the percentages of schools that faced various challenges in administration and management is described; followed by the percentages that faced various challenges in pedagogy. The description of the challenges is made for all the schools and also by school ownership and USE status.

8.2 DISTRIBUTION OF HEADTEACHERS

In this section, the distribution of the headteachers according to district and region is given. Table 8.01 shows the distribution of the headteachers by district and region.

TABLE 8.01: THE DISTRIBUTION OF HEADTEACHERS BY DISTRICT AND ZONE

REGION	DISTRICT
Central [16 (17.2%)]	Butambala (4), Masaka (4), Mityana (4), Mukono (4)
East [26 (28.0%)]	Jinja (6), Kaberamaido (3), Katakwi (3), Mbale (5), Namutumba (4),Tororo (5).
North [25 (26.9%)]	Apac (4), Arua (6), Gulu (4), Lira (4), Moyo (3), Nebbi (4).
West [19 (20.4%)]	Hoima (4), Kabarole (3), Kyenjojo (4), Ntungamo (4), Rukungiri (4).
Kampala [7 (7.5%)]	Kampala (7).
Uganda [93 (100%)]	

In all, there were 92 secondary schools, selected from 22 districts, whose headteachers were interviewed. These schools were selected in such a way that would allow for a fair regional representation. Of the 92 schools, 63 (68.5%) were government schools and 29 (31.5%) private.

8.3 CHALLENGES IN SCHOOL ADMINISTRATION AND MANAGEMENT

In this section a description of the major challenges in administration and management, as reported by headteachers, is given. Table 8.02 shows the percentage of schools according to the major challenges faced in administration and management.

TABLE 8.02: THE PERCENTAGE OF SCHOOLS THAT FACED CHALLENGES IN ADMINISTRATION AND MANAGEMENT BY OWNERSHIP AND USE STATUS

CHALLENGES	GOVERNMENT		PRIVATE		TOTAL
	USE	Non-USE	USE	Non-USE	
• Funds/grants are inadequate and remittance delay.	89.5	50.0	53.3	71.4	78.3
• Late-coming and absenteeism by teachers and students.	56.1	33.3	13.3	14.3	41.3
• Inadequate staff houses/accommodation leading to teachers living far away.	37.0	16.7	66.7	14.3	34.7
• Shortage of qualified teachers.	33.3	-	33.3	28.6	32.4
• Poor and delayed payment of teachers' salaries.	28.0	33.3	33.3	35.7	30.4
• High student enrolment.	33.3	-	-	14.3	29.6
• Inadequate/poor infrastructure.	33.3	-	-	21.4	26.8
• No lunch for students and teachers.	26.3	-	20.0	-	25.0
• Teachers not on government payroll.	12.3	50.0	-	-	15.9
• Poor fees payment.	5.3	66.7	26.7	42.8	13.5
• Indiscipline among students and teachers.	7.0	50.0	-	14.3	11.7
• Others	15.0	-	-	-	9.8
• High student dropout rate.	7.0	16.7	-	7.1	8.8

The most predominant challenge the schools reportedly faced was the delay in the release of funds/grants by government and private providers, which funds were also not enough. This was reported by 78.3% of the schools. Late coming and absenteeism among teachers and students was reported by 41.3 % of the headteachers. This was followed by inadequate staff houses/accommodation (34.7%), shortage of qualified teachers (32.4%), poor and delayed

payment of teachers (30.4%), high student enrolment (29.6%) and poor infrastructure (26.8%) in that order.

The government USE schools were affected most by the late release of funds, with up to 89.5% of them citing so, while the government non-USE schools mentioned it as the second main challenge and gave poor fees payment as the main challenge. The second main challenge government USE faced was late-coming and absenteeism by the teachers and students. Whereas a half of the government non-USE schools cited teachers not being on the government payroll and indiscipline among students and teachers as other major challenges they faced in administration, only about 1 in 10 in government USE schools did so.

In addition, a small number of headteachers from the government USE schools cited the following challenges: Parents not willing to contribute to the education of their children, pregnancies among girls and high cost of living/inflation, while their colleagues from government non-USE schools reported inadequate furniture, water problem and ineffective Board.

On the other hand, 66.7% of the private USE schools reported inadequate staff houses/accommodation as the major challenge they faced, while 71.4% of the private non-USE schools said it was late release of funds.

8.4 CHALLENGES IN PEDAGOGY

A description of the major challenges in pedagogy faced by schools is given in this section. Table 8.03 shows the percentages of schools, by school ownership, and challenges they reportedly faced in pedagogy .

TABLE 8.03: THE PERCENTAGE OF SCHOOLS THAT FACED CHALLENGES IN PEDAGOGY BY OWNERSHIP AND USE STATUS

CHALLENGES	GOVERNMENT		PRIVATE		
	USE	NON-USE	USE	NON-USE	TOTAL
• Inadequate science facilities.	59.6	66.7	60.0	50.0	58.7
• Inadequate instructional materials.	52.6	66.7	66.7	35.7	53.3
• Inadequate or lack of library facilities	17.5	16.7	40.0	21.4	21.7
• Students not keen on education.	26.3	-	-	-	16.3
• Poor quality of students admitted from primary schools.	15.8	-	13.3	14.3	15.1
• Teachers do not prepare schemes and lesson plans.	10.5	-	-	14.3	11.3

The main challenge in pedagogy that schools faced was inadequate science facilities. Overall 58.7% cited it. In fact all the school types, except private USE schools, stated it as the major challenge. The second major challenge, mentioned by 53.3% of the headteachers, was inadequate instructional materials, which is closely related to the first challenge. From the headteachers' reports, the challenge of shortage of teaching materials was more prominent in government schools and private USE schools (where Government is in partnership with the private providers).

Whereas a small proportion of government USE schools (15.8%) reported that they admitted poor quality students, none of the government non-USE schools said so.

Apart from these, some of the challenges the schools faced, particularly among the government USE school, included students not keen on education and teachers not preparing schemes and lesson plans.

8.5 CONCLUSION

The major challenges in administration and management that the schools faced were delay in the release of funds, late-coming and absenteeism by teachers and students. The government USE and private non-USE schools were most affected by the late release of the funds while government USE schools were also affected by late-coming and absenteeism among students and teachers. In pedagogy, the schools reported inadequate science facilities and instructional materials as the biggest challenge they faced. Although all the school categories were affected by shortage of science facilities, government non-USE were the most affected.

Chapter 9

CONCLUSIONS, DISCUSSIONS AND RECOMMENDATIONS

9.1 INTRODUCTION

In this chapter, the main findings are presented together with the probable reasons for the performance pattern as well as the recommended action to be taken to address the weaknesses. The chapter is divided into three sections. The first section deals with the achievement of students; the second, the achievement of teachers and the third section presents the conclusions on the achievement of students by teacher factors: gender, age, the highest teaching qualification and teaching experience.

9.2 ACHIEVEMENT OF STUDENTS

9.2.1 OVERALL LEVEL OF ACHIEVEMENT OF STUDENTS

Results : About two thirds of the students (66.4%) reached the desired level of proficiency in English Language; just over a third (36.4%) did so in Mathematics. A much smaller proportion (19.6%) attained a similar rating in Biology.

Reasons: High student enrolment in secondary schools is most likely to affect student achievement in Mathematics and Biology more than English Language, as these subjects require closer and more frequent individual monitoring of student performance.

Recommendation: Provide the necessary requirements, such as teachers, classrooms in order to reduce class sizes.

9.2.2 Achievement of Students in Selected Competencies of English Language

Results :

Students were able to:

- Read texts and answer questions which required responses obtained directly from the texts.
- Write a composition and a formal letter using the correct format.
- Use articles and prepositions correctly to make sentences.

Students had difficulty in

- Reading a passage and deriving contextual meaning of words and phrases and making predictions based on the theme of the story.
- Writing well sequenced and relevant compositions and conversations.
- Using nouns, pronouns and adverbs correctly.

Reasons **:**

- Limited variety of reading materials.
- Insufficient space, room and time, as some schools lack libraries. In addition, day scholars may not have space, time and lighting at home to enable them read after school. Schools mentioned shortage of instructional materials and library facilities as the major challenges they had. Limited practice in composition writing, as it is difficult to assess.
- Poorly developed creative and imaginative writing skills, due to teachers' deficiency in the skills to do so. (Teachers' results Table 6.06).
- Poor reading culture for both teachers and students.

Recommendations **:**

- Provide a variety of reading materials.
- Guide students on how to prepare personal timetables, so as to be able to do part of their school work before going home.
- Train students to compose and write different texts.
- Ensure regular practice in writing the different kinds of compositions.

9.2.3 Achievement of Students in Selected Competencies of Mathematics

Results :

Students were able to:

- Perform the four basic operations on whole and decimal numbers.
- Draw circles accurately.
- Measure lengths and angles accurately.
- Solve problems involving shopping.

Students had difficulty in:

- Using the concept of LCM in novel situations.
- Correcting a number to a specified number of decimal places.
- Showing a direction on a compass bearing.
- Calculating the number of sides of a regular polygon.
- Drawing parallel lines.
- Computing the circumference of a circle.
- Interpreting a pie chart.
- Drawing graphs of linear functions.
- Representing a relationship using the correct set symbols and identifying types of mapping.
- Interpreting speed-time graphs and writing the equation of a line for a given set of points.
- Determining the images of points under multiple reflections.

***Reasons*:**

- Shortage of qualified Mathematics teachers. Schools also cited this as a major challenge (Table 8.02)
- Teaching in an abstract manner, without relating concepts to everyday life experiences.
- Assessing students using mainly items that test low order thinking skills (LOTS) other than those needing higher order thinking skills (HOTS).
- Shortage of textbooks.
- Inadequate practice by students.
- Teaching theoretically without geometrical illustrations.

Recommendations:

- Devise a strategy to train, recruit and retain Mathematics teachers in all schools.
- Provide regular in-service training for teachers, especially on how to teach and prepare assessment in a way that fosters the development of HOTS.
- Teach in a manner that makes Mathematics an interesting subject to students.
- Strengthen Mathematics clubs in schools.

9.2.4 Achievement of S 2 Students in Selected Competencies of Biology

Results:

Students were able to:

- State the characteristics of living things.
- Label the parts of a flowering plant and of a microscope.

Students had difficulty in:

- Constructing identification keys.
- Classifying organisms into their taxonomic groups.
- Describing how living things can be collected.
- Describing an experiment to show the presence of micro organisms in a soil sample.

- Identifying specialized cells.
- Drawing and explaining the nitrogen cycle.

Reasons:

- Shortage of qualified and competent Biology teachers. Only 16.6% of the Biology teachers were rated proficient. (Figure 6.06).
- Teaching and learning theoretically–no laboratories in some schools. This was the major challenge in pedagogy reported by schools. (Table 8.03).
- Lack of experimental gardens in some schools.
- Inadequate apparatus and reagents.
- Use of only written and not practical assessment during teaching and preparing assessment that tests mainly LOTS.
- Inability of teachers to use the environment as a teaching resource and to improvise from the available materials.

Recommendations:

- Devise a strategy to popularize Biology to students in secondary schools and encourage student teachers to offer it as one of their teaching subjects.
- Use the environment as the basic laboratory for Biology.
- Set up experimental gardens.
- Provide the basic apparatus and equipment for Biology.
- Regularly organise workshops to train teachers on assessment.

9.2.5 ACHIEVEMENT OF STUDENTS BY GENDER

Results:

- Girls were slightly better than boys in English Language.
- Boys were significantly better than girls in Biology and Mathematics.

Reason:

- Few role models for girls. For example, during the survey, it was found that 39.6% of the teachers of English Language were females, while only 8.7% and 19.7% of the teachers of Mathematics and Biology respectively were females.

Recommendations:

- Devise a mechanism to interest girls in Mathematics and Sciences.
- Use affirmative action, in order to increase the number of female student teachers in teacher training institutions.

9.2.6 ACHIEVEMENT OF STUDENTS BY AGE

Results:

Younger students of 14 years and below performed better than the others.

Reasons:

- Older students may have distractors to their studies, such as relationships with the opposite sex.
- Some of the older students may have learning difficulties, which could have caused a delay in their studies in the first place.

Recommendations

- Encourage parents to send their children to school at the recommended age.
- Disseminate findings from studies, such as NAPE, to the community, so that they get to know the variables which affect students' learning and achievement.

9.2.7 ACHIEVEMENT BY SCHOOL OWNERSHIP AND USE STATUS

Results:

- Government Non-USE schools performed best, followed by private non-USE, government USE, then private USE (PPP) , with the greatest performance difference in Biology followed by Mathematics. Teachers' performance nearly followed a similar trend (Figure 6.10). Girls were affected more than the boys. In fact, in Biology, only about one percent of the girls from private USE schools were rated proficient, compared to about a fifth of the girls in private non-USE schools. In government schools, a tenth of the girls in USE schools were proficient, as opposed to about two thirds of those in non-USE schools.

Reasons:

- Most of the government non-USE schools are well established schools with more stable and reliable teaching staff and reputable cultures.
- Government non-USE schools admit students with better PLE grades.
- Many non-USE schools are boarding, thus making supervision and monitoring easier.
- Distracters to learning, such as videos, in the mainly day USE schools, lead to high teacher and student absenteeism. Indeed, absenteeism was reported as a key challenge, especially in USE schools (Table 8.02).
- Enrolment is higher in USE schools. Headteachers in USE schools indicated it as a challenge (Table 8.02).
- The resources provided cannot match the robust increase in the enrolments in USE schools, plus the increasing number of private providers entering into partnership with government.
- Most of the private USE schools are in rural areas, and indeed they entered into partnership with government as a survival strategy.

- Many USE schools lack the basic necessities for teaching, especially science subjects. They reported this as a challenge (Table 8.03).
- A rather negative attitude to learning of many students in USE schools. About a quarter of the government USE schools, cited this as a challenge (Table 8.03).

Recommendations:

- Tighten school rules and regulations so as to reduce on absenteeism.
- Timely release of funds to USE schools to enable them acquire teaching materials.
- Reduce on student: teacher ratio.
- Continue providing the necessary infrastructure and facilities in all schools, particularly in the USE schools.
- Ensure regular and close monitoring of the learners' performance by the parents, especially in USE schools, where parents have almost abdicated their roles; as reported by the headteachers (Table 8.02)
- Guide and counsel students on the need to stay in school and learn.

9.2.8 ACHIEVEMENT OF STUDENTS BY SCHOOL PROGRAM

Results:

- Achievement levels were slightly higher in single-session schools than double-session schools, but the differences were not significant.

Reasons:

- Students in double-session schools have less time on task.
- Management and supervision in double-session schools is hard, as there are very many students.
- Limited space for private study at school but since most of the double session schools are in urban areas, students may have lighting at home so can study after school.

Recommendations:

- Train students to develop the habit of having time for personal study.
- Encourage students to utilize the time when they do not have a lesson for private study.
- Encourage group work by assigning projects to be done in groups.
- Deploy more teachers in double-session schools and provide for their accommodation in the school, so that they are readily available to supervise the students.

9.2.9 ACHIEVEMENT OF STUDENTS BY SCHOOL LOCATION

Result:

- Students in urban schools performed better than those in schools in the rural areas, but the difference was significant only in English Language.

Reasons:

- There is more exposure to reading materials in urban areas.
- Urban areas have social amenities, for instance, lighting, which the rural areas lack.
- English is used more in urban areas, both in and outside the schools.

Recommendations:

- Provide sufficient reading materials to all schools.
- Encourage parents to buy books for their children.
- Encourage students in rural areas to do most of their personal study in the school.

9.2.10 ACHIEVEMENT OF STUDENTS BY ZONE

- Three zones: Kampala, South West and Far West had higher achievement levels in all subjects, while Mid East I and Central II had lower achievement levels. Teachers from Mid East I also performed at relatively low levels in all the subjects.
- No zone had at least a half of the students rated proficient in Biology.

Reasons:

- Achievement level may be low in Mid East I (Bududa, Bukwo, Bulambuli, Kapchorwa, Kween, Manafwa, Mbale and Sironko) because it is at the border with Kenya. Perhaps the activities which take place at the border distract students from studies, leading to high rates of absenteeism. The zone is also composed mainly of new districts and some of the districts have suffered from natural disasters, such as land slides, in the recent past.

Recommendations:

- Find ways of attracting and retaining teachers in difficult parts of the country.
- Encourage the community to monitor children's learning to ensure regular school attendance.

9.2.11 ACHIEVEMENT OF STUDENTS IN 2008-2011

Results:

- Over the years 2008-2011, the students' achievement levels in all the three subjects dropped.

  This is reflected by the reduction in the percentage of students rated proficient in each subject. Between the last two years, the decline in the performance in English Language was not substantial. However, in Mathematics, the proportion of students rated proficient has been decreasing

by about 10 points every year. On the other hand, the difference in the performance of students in Biology has widened in subsequent years. In 2008, the proportion of students rated proficient was 36.7%. This was almost the same with the figure of 2009 of 36.3%, which dropped slightly to 30.4% in 2010. This year, 2011, it has dropped further to merely 19.6%.

Reasons:

- Increased number of USE schools leading to:
  - Shortage of qualified full time teachers, especially for science and Mathematics. The schools confirmed this (Table 8.02). One school in Apac, reported having no full time teacher for Mathematics and only one teacher for Biology and Chemistry for the whole school. (S 1 – 4).
  - Large class sizes, making it difficult to teach practicals. In some cases, the class size is as big as 150 students. This was also reported by headteachers (Table 8.02).
  - Inadequate facilities, especially for teaching and learning science. This was the major challenge in pedagogy reported by schools. (Table 8.03).

- Global economic crisis, which led to a rise in the cost of many commodities; fuel, food stuff and even scholastic materials. A number of families could hardly afford more than one meal a day. Schools reported that students and teachers had no lunch (Table 8.02).
- Natural disasters: land slides, floods and lightning. These disrupted the flow of school programes, as some students and teachers were not able to access schools and others were displaced. Lack of accommodation for teachers in most schools made the situation worse.

- Unreliable electricity (load shedding) could have made it difficult for some students to do their homework properly.

- The political campaigns which preceded the national elections of 2011 probably affected the school operations. Perhaps teachers were involved in the campaigns and in the preparation and organization for the polls in their areas.

Maybe students were also attracted to political rallies, especially by the music blaring from loud speakers. The public holidays on voting days and the celebrations that followed; all could have led to loss in time on task.

- Sudden increase in the number of districts, from 87 in 2010 to 112 in 2011; an increase of 29%. Many of the new districts could have faced challenges in service delivery.

Recommendation:

- Continue and expedite the provision of the necessary infrastructure and facilities in all the districts.

- Reduce the student-teacher ratio by training and recruiting more teachers.

- Release the USE funds on time to allow schools to plan how to effectively use it.

9.3 ACHIEVEMENT OF TEACHERS

9.3.1 OVERALL LEVEL OF TEACHERS' ACHIEVEMENT

Teachers performed well in English Language and Mathematics, with about 7 in 10 of them rated proficient in each subject. However, in Biology, only 16.6% of the teachers were rated proficient.

9.3.2 ACHIEVEMENT OF TEACHERS BY SKILL AREAS AND COMPETENCIES

Results:

In English Language, teachers were able to:

- Read texts and answer questions that required direct responses from the texts.
- Write well sequenced compositions, using the correct format and grammar and indicating the titles appropriately.
- Use adverbs, nouns, prepositions and tenses correctly in sentences.

Teachers had difficulty in:

- Reading a text and answering questions which required evaluation of information from the text and then using it in a different context.
- Writing compositions that are relevant and impressive.
- Using adjectives and given structures correctly to make sentences.

In Mathematics; teachers performed well in 'Measures', 'Transformations and functions' and 'Numerical concepts'. They also performed well in the mechanical aspects, such as, performing the basic operations on numbers.

Teachers had difficulty in:

- Geometry, especially measurement.
- Set theory, particularly mapping.
- Applying concepts to solve problems in novel situations, for example, applying the concept of LCM to determine the concurrent points of two events of different frequencies.

In Biology; teachers performed well in 'Insects', and in answering questions which called for recall of facts.

Teachers had difficulty in:

- 'Soil' and 'Classification of living things'.
- Answering questions which required analytical thinking and practical skills.

Reasons:

- Teachers themselves could have been taught using a curriculum that did not promote the development of critical thinking skills.
- Lack of reading culture among the teachers.
- Limited time for self study, as the teachers are usually busy, either teaching or engaged in generating additional income.
- Insufficient skills in assessment techniques.

Recommendations:

- Revise the teacher training curricula to make them more relevant to the needs of the country.
- Train and recruit more teachers, especially for Mathematics and Science, so as to allow time for professional development.
- Train teachers in assessment techniques.

9.3.3 ACHIEVEMENT OF TEACHERS BY GENDER

Result:

- Although slightly more female teachers were rated proficient in English Language, and the reverse occurred in Mathematics and Biology, the differences were not significant.

Reason:

- The teachers could have taken their particular subject because of interest and talent, regardless of their gender.

Recommendation:

- Teachers should encourage each other and students to refrain from gender stereotyping.

9.3.4 ACHIEVEMENT OF TEACHERS BY AGE

Result:

- There was no significant variation in the performance of teachers with age.

9.3.5 ACHIEVEMENT OF TEACHERS BY THE HIGHEST TEACHING QUALIFICATION

Results:

- There was no difference in the performance of teachers with a Degree in Education and those with Grade V (Secondary). However, these teachers performed slightly better than those with other qualifications, such as Grade V (Primary) Teaching Certificate and degrees in fields other than education.

Reasons:

- Since the tests were based on S 2 curriculum, both graduate and grade V teachers could have had equal mastery level of the subject matter.
- Teachers without the recommended qualifications may not have studied the subjects beyond secondary school, hence had limited knowledge in the subject matter.

Recommendation:

- Ensure that only teachers with appropriate teaching qualifications teach in schools.

9.3.6 ACHIEVEMENT OF TEACHERS BY TEACHING EXPERIENCE

Result:

- There was no difference in the performance of teachers of different teaching experiences.

Reason:

- It is not the length of teaching experience per se that matters, but the professional experiences that one gets in the course of service.

Recommendation:

- Ensure that there is opportunity for regular in-service professional development for teachers.

9.3.7 ACHIEVEMENT OF TEACHERS BY SCHOOL OWNERSHIP AND USE STATUS

Results:

- In each subject, teachers in government non-USE schools performed best, followed by those in government USE school, then private non-USE and finally, private USE schools. In fact, it was only in the government non-USE schools that over a half of the Biology teachers were rated proficient in the subject. Students' performance almost followed a similar trend (Figure 5.06)

Reasons:

- Many of the government non-USE schools are well established and provide a conducive environment for studying. They also have more qualified stable staffing. They are also mainly boarding schools and usually have the necessary social amenities, as well as teachers' quarters, hence the teachers can easily access library facilities.

- Government non-USE schools admit students with good grades in national examinations. This provides a challenge for the teachers to keep abreast with new knowledge and changes in the subject.
- Government non-USE schools do not severely face the challenges of shortage of qualified teachers, high student enrolment, inadequate infrastructure and lack of lunch for students and teachers, which were reported by the other categories of schools (Table 8.02). Hence teachers have enough time to prepare, teach and assess the students. In the process, they also learn.

Recommendation:

- Address the challenges that are currently faced by USE schools.

9.3.8 ACHIEVEMENT OF TEACHERS BY SCHOOL PROGRAM

Result:

- There was no difference in the performance of teachers in single and double session schools in English Language. However, in Mathematics and Biology, teachers in double session schools performed significantly better than those in single session schools.

Reasons:

- Since most of the double session schools are in urban areas, maybe the teachers are more exposed and have more facilities.
- Perhaps the relatively weak performance of the teachers in the private USE schools, which are mainly single session schools, could have lowered the overall performance level of the teachers in such schools.

Recommendation:

- Ensure that all the schools meet the minimum quality standards.

9.3.9 ACHIEVEMENT OF TEACHERS BY SCHOOL LOCATION

Result:

- In each subject, more teachers in urban schools were rated proficient, compared to those in rural schools, and the gap increased in moving from English Language to Mathematics and then Biology.

Reasons:

- Some urban centres have public libraries and resource centres which can be used by the teachers.
- There is more exposure to information in urban areas, for example, internet, newspapers and televisions.
- Teachers in rural schools tend to engage in other activities e.g. farming that interfere with their preparation.

Recommendation:

- Provide the necessary reference materials for all teachers.
- Frequent supervision especially in rural schools.

9.3.10 ACHIEVEMENT OF TEACHERS BY ZONE

Results:

- Only two zones: Far East (Teso sub region) and Mid East I (formerly Bugisu), had less than a half of the teachers rated proficient in English Language.
- In Mathematics, only North East had less than a half of the teachers rated proficient.
- In Biology, no zone had at least a half of the teachers rated proficient. Apart from Kampala and Mid North II, no other zone had at least 40% of the teachers rated proficient.

Reason:

- Some zones are hard to reach, and qualified teachers, especially the ones on high demand do not want to teach in the schools in such zones.

Recommendation:

- Devise strategies to attract and retain teachers in all the zones.

9.4 ACHIEVEMENT OF STUDENTS BY TEACHER FACTORS

Results:

- Of the teacher factors: gender, age, teaching qualification and teaching experience, only two had impact on students' achievement: gender and teaching qualification.
- In all the subjects, the students who had female teachers performed better than those whose teachers were males.

- Students with teachers who hold a Degree in Education performed best, followed by those taught by Grade V (Secondary) teachers, and then those whose teachers had other qualifications. It is worth noting that the students with better results were those taught by teachers with the recommended teaching qualifications.

Reasons:

- Females have the motherly patience, which may enable them to patiently teach even slow learners.
- Teachers with higher teaching qualifications may be more confident in teaching, because they have a more in-depth knowledge of the contents.
- The effect of teachers' age and teaching experience on student achievement most likely depends on the professional development the teacher has had in the course of his/her service.

Recommendation:

- Encourage more females to join the teaching profession.
- Create opportunities in the schools for teachers to learn from each other.
- Ensure that each teacher training curriculum covers sufficient subject matter.
- Encourage teachers to advance in the profession.

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