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

NATIONAL ASSESSMENT OF PROGRESS IN EDUCATION
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ACRONYMS AND ABBREVIATIONS

Ark	Absolute Returns for Kids
BOG	Board of Governors
BTVET	Business, Technical and Vocational Education and Training
DCs	District Coordinators
DEO	District Education Officer
DES	Directorate of Education Standards
DIS	District Inspector of Schools
DTE	Diploma in Teacher Education
EFA	Education For All
EMIS	Education Management Information System
EPRC	Education Policy Review Commission
ESC	Education Service Commission
ESSAPR	The Education and Sports Sector Annual Performance Reports
ESSP	Education Sector Strategic Plan
HOTs	Higher Order Thinking Skills
IMU	Instruction Materials Unit
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
NTCs	National Teachers' Colleges.
Peas	Promoting Equality in African Schools
PGDE	Post Graduate Diploma in Education
PLE	Primary Leaving Examination
PPP	Public Private Partnership
PTA	Parents Teachers' Association
S 2	Senior Two
S/E	Standard Error
SESEMAT	Secondary Science and Mathematics Teachers' Programme
SMCs	School Management Committees
TLs	Team Leaders
UACE	Uganda Advanced Certificate of Education
UCE	Uganda Certificate of Education
UNEB	Uganda National Examinations Board
UPE	Universal Primary Education
UPPET	Universal Post Primary Education and Training
USE	Universal Secondary Education
ZCs	Zonal Coordinators

A WORD FROM THE MINISTER

The International Commitment on Education are due for evaluation in 2015. Uganda being part of this commitment, it has continued to direct more funds into the Education Sector to ensure excellence so that measurable learning outcomes are achieved by all students at all levels.

The Ministry of Education and Sports continues to focus on realising educational access, equity, quality, efficiency and effectiveness in the education sector. It has also tackled other cross cutting issues like Special Needs Education (SNE), Guidance and Counselling, Physical Education and Sports, among others. All these initiatives draw us to realising the International commitment.

The Education and Sports Sector Annual Performance report (FY 2013/14) reported great improvement at the secondary education sub sector. Several interventions have been undertaken, and these include construction of additional classrooms at both USE and Non-USE schools, provision of instructional materials, including promotion of the use of digital science and ICT as a support strategy to the teaching and learning process, training of secondary school teachers and curriculumn review for lower secondary (first phase completed), among others.

National Assessment of Progress in Education (NAPE) conducts annual assessment at S 2 level, in English Language, Mathematics and Biology. The findings of NAPE help us to determine the impact of several interventions introduced in the eduction system, in addition to determining the achievement levels of the students.

This seventh annual publication of NAPE at the secondary level presents the major findings in the 2014 survey and the recommendations to ensure improvements in the education system. As Ministry of Education and Sports, we are very appreciative of the findings of NAPE.

I hope that you will find this report valuable. At the very least, it should provide a solid base from which to make informed decisions that could eventually lead to better policies and more effective implementation of identified educational quality enhancement initiatives.

Hon. Major (Rtd) Alupo Jessica Rose Epel, (MP)
Minister of Education and Sports.

FOREWORD

The regular national assessment of the performance of the education system has in the recent years become a key element in the education process in many countries of the world.

Uganda is one of such countries which, through conducting National Assessment of Progress in Education (NAPE) monitors the achievement levels of learners on annual basis. This programme has been ongoing for the last eighteen years.

NAPE conducts annual assessment whose findings benefit all categories of stakeholders in education including the learners, parents, teachers, policy makers and the government in general. This publication of the NAPE findings is the seventh since the inception of NAPE at the secondary school level in the year 2008. Each category of stakeholders is expected to use the findings to devise strategies for the improvement of the quality of learning.

I wish to remind the reader that the format of the report differs from that of academic researchers, due to the wide range of intended users: from parents and the learners to politicians and academicians.

It is my hope that all stakeholders embrace the report.

M. B. B. Bukenya
EXECUTIVE SECRETARY

EXECUTIVE SUMMARY

The major purpose of 2014 NAPE Assessment was to examine the performance of students in English Language, Mathematics and Biology in relation to teachers' input towards realization of the S 2 curriculum goals.

The sample at the national level comprised 524 government and private secondary schools selected from 112 districts of Uganda. The total sample of students was 19,529. Of these, 10,329 (52.89%) were boys and 9,200 (47.11%) were girls.

A total of 1,781 students of S 2 were interviewed from 378 of the surveyed schools. The survey aimed at relating students' achievement level with other factors like school factors, family involvement and teacher development interventions. Common school-level background information of the students was obtained from their Headteachers.

Overall level of achievement

The percentage of students rated proficient were nearly a half (49.3%) for English Language, 41.5% for Mathematics and about a fifth (20.5%) for Biology.

Achievement by gender

Girls and boys performed at nearly the same level in English Language. However, the boys were significantly better than the girls in Mathematics and Biology.

Achievement by age

The proportions of students reaching the desired proficiency levels in all the three subjects decreased with age from 13 year-olds to 18+ year-olds. The proportions of boys reaching the desired proficiency level were significantly higher than the girls' in each age category.

Achievement by school ownership and USE status

Government Non-USE schools performed best, followed by private Non-USE, Government USE and then Private USE (PPP'). Performance difference was greatest in Biology; followed by Mathematics and English Language. Less than a third of students in Private USE schools were rated proficient in Biology and Mathematics.

Achievement by school programme

Achievement levels were higher in single-session than double session schools. Performance difference was greatest in Biology, followed by Mathematics and then English Language.

Achievement by school location

There were more students from the urban schools that were rated proficient compared to those from the rural schools. In both of the school locations, boys' performance was better than the girls'.

Achievement by zone

South West, Kampala and North East had higher achievement levels in all subjects. Zones in the Eastern region, North West and Mid West registered fewer students rated proficient in all subject areas.

Achievement by school factors, family involvement and teacher development interventions

Results showed that textbooks availability and use enhances learning achievement. Therefore, barriers such as fear of students to lose textbooks and unproductive restriction to access the textbooks need to be addressed.

It is theoretically expected that students who receive assessment feedback on their performance end up performing better. However, weak association was established. It is likely that the quality of score and feedback provision strategy are wanting.

The results again showed that parental involvement in student learning through visits, provision of lunch while at school, financial support (fees) to complement the inadequate USE funds as well as provision of learning materials substantially facilitate learning. In this regard, realistic and coherent messages on parental involvement must reach the parents and all the other stakeholders.

Students whose Biology teachers ever attended Cyber space training and those whose Mathematics teachers ever attended SESEMAT training performed better than those students whose teachers did not attend these trainings.

Chapter 1

INTRODUCTION

1.1 BACKGROUND

Uganda is located in the eastern region of Africa and lies 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. Uganda is about 1200m above sea level. Its land area is 241,550.7 square kilometers, of which 41,743.2 square kilometres is open water and swamps[1]. Uganda's climate is favourable for agriculture. It is generally tropical in nature but differs markedly from one region to another[2].

The country is land locked, bordered by Kenya to the East, the Democratic Republic of Congo to the West, Tanzania to the South, Rwanda to the South West and Republic of Southern Sudan to the North. The country is vastly 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 students 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. Uganda is administratively divided into 112 districts. The districts are administered by Local Governments under the supervision of the Central Government's Ministry of Local Government.

Uganda with a population density of 126 per square kilometer has a fast growing population at a rate of 3.3%; increasing from 24.2 million in 2002 to the estimated figure of 35.4 million people by mid of 2013[3]. About a half of the population is below 15 years of age, which creates a high level of child dependence. The high rate of population growth affects the country's efforts 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 at lower primary in the rural areas, while English is taught as a subject. However, English is the medium of instruction at upper primary and institutions of higher learning. Kiswahili is also taught in some primary and secondary schools.

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

[1] Uganda Bureau of Statistics, 2013 Statistical Abstract, Pg 1 http://www.ubos.org

[2] Teacher Issues In Uganda: A diagnosis for shared Vision on issues and the designing of a feasible, indigenous and effective teachers policy.

http://www.education.go.ug/files/downloads/TISSA%20Uganda%20Full%20Report_24%20August%202013%20edited%20version%20moses.pdf

[3] Uganda Bureau of Statistics, 2013 Statistical Abstract, Pg 8 http://www.ubos.org

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, Kinyarwanda.
	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	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, Lugbarati, 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.

1.2 EDUCATION IN UGANDA

Education is the process of handing-down or acquiring skills and value systems to be able to provide solutions to present and future challenges for purposes of living a happy life. Uganda with an educational system modeled on the selective system of England has always prided itself in the quality of its education. Upper-middle class families in Kenya, Sudan and Tanzania attest to this every year by sending their children to Uganda to be educated[4]. The system of formal education in Uganda has a structure of 7 years of primary education, 6 years of secondary education (divided into 4 years of lower secondary education and 2 years of upper secondary education), and 3 to 5 years of post- secondary education[5]. Primary education is still

[4] Is it goodbye to Universal Primary education in Uganda? Thursday, February 23, 2012.

http://ritchiesinuganda.blogspot.com/2012/02/is-it-goodbye-to-universal-primary.html

[5] Review of education policy in Uganda: working paper submitted by Ojijo to the Young Leaders Think tank for policy alternatives-Uganda, February 2012, Page 2.

largely considered the first level of formal education by ordinary people since government has not established any pre-primary school for children[6].

Uganda committed to the international initiative of Education for All (EFA) first launched in Jomtien, Thailand in 1990, to bring benefits of education to "every citizen in every society[7]. 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. Uganda has made serious strides towards implementation of EFA goals and objectives; adoption of the sector-wide approach to funding education in order to maximize benefits, decentralization of governance and management of education; adoption of free Universal Primary Education (UPE) in 1997, Functional Adult Literacy in 2001 and the Universal Secondary Education (USE) in 2007; expansion of infrastructure in schools; introduction of affirmative action towards the education of the girl child and vulnerable groups; promotion of private-public partnerships; and promotion of guidance and counselling in schools[8].

To improve the quality of education in schools, Government and its development partners have put in place a number of Quality Enhancement Initiatives (QEI). 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 have been provided to the Directorate of Education Standards (DES) for supervision and monitoring of the teaching-learning process. Recruitment of more teachers and in-service training programmes are some of the other quality improvement initiatives.

1.3 NATIONAL ASSESSMENT OF PROGRESS IN EDUCATION

Uganda is one of the few African countries with a functional national assessment system[9]. 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 at S 2 in 2008 and since then, it has been conducted annually in the same class.

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http://www.slideshare.net/ojijop/review-of-education-policy-in-uganda

[6] Status of Implementation of the ECD Policy in Uganda, Page 6

http://www.education.go.ug/files/downloads/Early%20Childhood%20Development %20Policy%20Review.pdf

[7] Count Down To 2015: Is Uganda On Track? Assessment Of Progress To Attainment Of Efa Goals In Uganda, page 1

www.education.go.ug/files/downloads/ASSESSMENT OF PROGRESS ON EFA GOAL.pdf

[8] Count Down To 2015: Is Uganda On Track? Assessment Of Progress To Attainment Of EFA Goals In Uganda, Pg 1

11 www.education.go.ug/files/downloads/ASSESSMENT OF PROGRESS ON EFA GOAL.pdf,

1.3.1 OBJECTIVES OF NAPE

The main objectives of NAPE are to:

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

1.4 THE IMPACT OF NAPE ON THE EDUCATION SYSTEM IN UGANDA

Since its inception in 1996, NAPE has published reports with findings which have been used in different ways by different stakeholders and organizations to foster the development of education in the country. NAPE findings and recommendations have helped policy makers and stake holders in education to come up with strategies to help improve classroom instruction. A case in point is the intervention in the area of Local Languages by Literacy and Adult Basic Education (LABE) in some districts in the North and West Nile region. Ark-Peas on the other side is using the recommendations to identify areas to set up schools that provide affordable quality secondary education in the remotest areas of the country. At school level, during feedback seminars, UNEB through NAPE has advised schools to come together and plan for short term training programmes in assessment for learning. Indeed, through this arrangement, assessment for learning workshops were organized and held at Bishop Wills Core PTC and others in different districts in Central, North and West Nile zones in 2012 and 2013.

1.5 THE 2014 NAPE STUDY

This volume presents the results of the 2014 NAPE survey. The objectives of the study are presented in this chapter. 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 achievement in Mathematics in Chapter 4 and Biology in Chapter 5. In Chapter 6, a presentation on the involvement of parents in the learning process of their children visa-viz achievement in English Language, Mathematics and Biology is made. Finally, the conclusions, discussions and recommendations are given in Chapter 7.

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 2014 survey had the following objectives:

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

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

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

4. To compare achievement of students from 2008 to 2014.

5. To examine the relationship between achievement of students in English Language, Mathematics and Biology and school factors, family involvement and teacher professional development interventions.

6. To determine the effect of teacher Cyberspace and SESEMAT training on student achievement in English Language, Mathematics and Biology.

Chapter 2

SURVEY PROCEDURES

2.1 INTRODUCTION

This chapter gives a description of the survey design. In particular, it details 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 TESTS

There were written tests of English Language, Mathematics 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), Makerere University, Kyambogo University and Uganda National Examinations Board (UNEB). The tests consisted of restricted and free response items. The composition of the tests is 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 comprehension	Passage	10	36
	Dialogue	8	
	Report	10	
	Poetry	8	
Writing	Conversation	10	34
	Formal letter	12	
	Composition	12	
Grammar	Tenses	5	30
	Punctuation	4	
	Structural patterns	7	
	Articles and words of quantity	4	
	Parts of speech	10	
Total			100

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

TOPICAL AREA	ABILITY LEVEL			Total (Weight)
	Basic	Adequate	Advanced	
Set theory, probability, relations and mappings	4	3	3	10
Numerical concepts (including estimation, number patterns and sequences)	8	9	9	26
Cartesian coordinates and graphs	1	8	2	11
Geometry	7	1	6	14
Measures	5	6	6	17
Transformations and functions	5	3	4	12
Statistics	3	5	5	13
Total	33	35	35	103

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	3	3		6
Classification	3	7	6	16
Microscopes and hand lenses	5	5		10
Animal and plant cells	5	4		9
External features and internal structures of flowering plants	9	14	10	33
External features, life cycles and economic importance of insects	3	7	5	15
Soil	9	11	11	31
Total	37	51	32	120

2.2.2 INTERVIEW SCHEDULE FOR S 2 STUDENTS

There was an interview schedule for 1,781 (9.1%) students of S 2 from 378 (72.1%) of the schools visited. This required them to provide information on selected home and school factors which included boarding status, textbooks availability and use, parental involvement. Common school-level background information of the students and teacher development interventions was obtained from their Head teachers.

2.3 SURVEY DESIGN

2.3.1 SURVEY POPULATION

The target population consisted of students in S 2 in all the secondary schools (both government and private) in Uganda in July 2014.

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, schools were selected from each

of the districts in the zone. Hence, the sample consisted of schools from all the 112 districts of Uganda. At the second stage, a random sample of 30 students from single session and 100 students from double session schools was selected from among those who were present in the school on the day of the survey. All the double session schools were included in the sample.

2.3.3 SELECTION OF SCHOOLS

A list of secondary schools from the Education Management Information System (EMIS, 2013), showing the total school enrolment and the number of S 2 students constituted 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, Kaabong, Kotido, Napak and Ntoroko could not raise the required minimum number of schools, so all their schools were included in the sample.

Like in the previous surveys, Kampala district was considered as a separate zone 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 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 random sample of 30[10] 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 would have raised the accuracy level only by a negligible amount, and yet the cost of instrument production and administration would have gone much higher. Secondly, most secondary school classrooms in Uganda take up to about 30 test takers sitting in appropriately spaced manner, with one test administrator effectively supervising them.

2.3.5 SAMPLE SIZE

The national sample consisted of 524 schools, which was 18.46% of the schools in Uganda, and 19,529 students, representing 6.39% of the S 2 students in the country.

Of the 524 schools, 282 (53.8%) were government and 242 (46.2%) private schools. The total number of schools in the urban and rural areas was 149 (28.4%) and 375 (71.6%), respectively.

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

[10] In schools for the Deaf and Blind all the S 2 students were included in the sample. A random sample of 100 students was selected from each of the double session schools.

TABLE 2.04: NUMBER OF SCHOOLS IN THE SAMPLE; IN THE DISTRICTS, ZONES AND REGIONS

REGION	ZONE	DISTRICTS
Central [133 ; 801]	Central I (69; 402)	Buikwe (9; 43[+]), Butambala (5; 25), Buvuma (2; 4), Gomba (3; 14), Kayunga (6; 39), Mpigi (8; 39), Mukono (13; 58), Wakiso[*] (23; 180)
	Central II (35; 213)	Kiboga (3; 18), Kyankwanzi (3; 16), Luwero (10; 64), Mityana (6; 36), Mubende (5; 36), Nakaseke (4; 22), Nakasongola (4; 21)
	Central III (29; 186)	Bukomansimbi (3; 12), Kalangala (2; 3), Kalungu (3; 32), Lwengo (3; 24), Lyantonde (3; 10), Masaka (6; 36) , Rakai (5; 41), Sembabule (4; 28)
East [145 ; 706]	Far East (25; 121)	Amuria (3; 17), Bukedea (3; 13), Kaberamaido (3; 15), Katakwi (3; 10), Kumi (3; 9), Ngora (2; 12), Serere (3; 18), Soroti[*] (5; 27)
	Mid East I (37; 156)	Bududa (3; 9), Bukwo (3; 10), Bulambuli (3; 15), Kapchorwa (4; 12), Kween (3; 14), Manafwa (6; 25), Mbale[*] (9; 50), Sironko (6; 21)
	Mid East II (30; 164)	Budaka (3; 15), Busia (6; 32), Butaleja (4; 20), Kibuku (3;18), Pallisa (4; 31), Tororo (10; 48)
	Near East (54; 265)	Bugiri (7; 26), Buyende (3; 17), Iganga (9; 46), Jinja (10; 44), Kaliro (3; 16), Kamuli (8; 36), Luuka (3; 26), Mayuge (4; 30), Namayingo (3; 8), Namutumba (4; 16)
North [98 ; 385]	Mid North I (27; 99)	Alebtong (3; 10), Amolatar (3; 10), Apac (3; 11), Dokolo (3; 7), Kole (3; 14), Lira[*] (6; 29), Otuke (3; 6), Oyam (3; 12)
	Mid North II (22; 97)	Agago (3; 11), Amuru (3; 8), Gulu (4; 36), Kitgum (3; 21), Lamwo (3; 4), Nwoya (3; 6), Pader (3; 11)
	North East (18; 22)	Abim (3; 4), Amudat (1; 1), Kaabong (3; 3), Kotido (2; 2), Moroto (3; 5), Nakapiripirit (3; 4), Napak (3, 3)
	West Nile (31; 167)	Adjumani (3; 12), Arua (8; 60), Koboko (3; 16), Maracha (3; 13), Moyo (3; 13), Nebbi (4; 23), Yumbe (4; 17), Zombo (3; 13)
West [130 ; 821]	Far West (29; 173)	Kabale (12; 70), Kanungu (5; 35), Kisoro (4; 25), Rukungiri (8; 43)
	Mid West (32; 192)	Bundibugyo (3; 12), Kabarole (7; 38), Kamwenge (3; 30), Kasese (10; 70), Kyegegwa (3; 13), Kyenjojo (4; 27), Ntoroko (2; 2)
	North West (24; 146)	Buliisa (3; 6), Hoima (6; 32), Kibaale (8; 63), Kiryandongo (2; 23), Masindi (5; 22)
	South West (45; 310)	Buhweju (3; 12), Bushenyi (7; 37), Ibanda (4; 41), Isingiro (3; 34), Kiruhura (3; 18), Mbarara (9; 49), Mitooma (3; 28), Ntungamo (7; 48), Rubirizi (3; 13), Sheema (3; 30)
Kampala	Kampala	Kampala (17; 126)
Uganda	(524; 2,839)	

[+] First figure in the brackets is the number of schools in the sample and the second is the number of registered schools in the zone or district (Ministry of Education and Sports 2013 EMIS).

[*] 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 in the achieved sample according to gender, age, school USE status, programme, 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, Percentage)		GIRLS (N, Percentage)		ALL (N, Percentage)	
13	80	(0.77)	110	(1.20)	190	(0.97)
14	721	(6.98)	1,147	(12.47)	1,868	(9.57)
15	1,777	(17.20)	2,437	(26.49)	4,214	(21.58)
16	3,192	(30.90)	3,372	(36.65)	6,564	(33.61)
17	2,629	(25.45)	1,539	(16.73)	4,168	(21.34)
18	1,310	(12.68)	469	(5.10)	1,779	(9.11)
18+[β]	620	(6.00)	126	(1.37)	746	(3.82)
Total	10,329	(52.89)	9,200	(47.11)	19,529	(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, Percentage)		GIRLS (N, Percentage)		ALL (N, Percentage)	
USE	8,483	(82.13)	7,271	(79.03)	15,754	(80.67)
Non – USE	1,846	(17.87)	1,929	(20.97)	3,775	(19.33)
Total	10,329	(52.89)	9,200	(47.11)	19,529	(100.00)

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

SCHOOL OWNERSHIP	BOYS (N, Percentage)		GIRLS (N, Percentage)		ALL (N, Percentage)	
Government	6,737	(65.22)	5,750	(62.50)	12,487	(63.94)
Private	3,592	(34.78)	3,450	(37.50)	7,042	(36.06)
Total	10,329	(52.89)	9,200	(47.11)	19,529	(100.00)

[β] Above 18 years old.

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, Percentage)		GIRLS (N, Percentage)		ALL (N, Percentage)	
GOVERNMENT	USE	6,492	(96.36)	5,437	(94.56)	11,929	(95.53)
	Non-USE	245	(3.64)	313	(5.44)	558	(4.47)
	Total	6,737	(53.95)	5,750	(46.05)	12,487	(100.0)
PRIVATE	USE	1,991	(55.43)	1,834	(53.16)	3,825	(54.32)
	Non-USE	1,601	(44.57)	1,616	(46.84)	3,217	(45.68)
	Total	3,592	(51.01)	3,450	(48.99)	7,042	(100.0)

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

SCHOOL PROGRAMME	BOYS (N, Percentage)		GIRLS (N, Percentage)		ALL (N, Percentage)	
Single – session	7,095	(68.69)	6,707	(72.90)	13,802	(70.67)
Double – session	3,234	(31.31)	2,493	(27.10)	5,727	(29.33)
Total	10,329	(52.89)	9,200	(47.11)	19,529	(100.00)

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

SCHOOL LOCATION	BOYS (N, Percentage)		GIRLS (N, Percentage)		ALL (N, Percentage)	
Urban	3,387	(32.79)	2,970	(32.28)	6,357	(32.55)
Rural	6,942	(67.21)	6,230	(67.72)	13,172	(67.45)
Total	10,329	(52.89)	9,200	(47.11)	19,529	(100.00)

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

REGION	ZONE	BOYS (N, Percentage)		GIRLS (N, Percentage)		ALL (N, Percentage)	
Central	Central I	1,140	(11.04)	1,205	(13.10)	2,345	(12.01)
	Central II	659	(6.38)	660	(7.17)	1,319	(6.75)
	Central III	400	(3.87)	542	(5.89)	942	(4.82)
East	Far East	549	(5.32)	451	(4.90)	1,000	(5.12)
	Mid East I	668	(6.47)	640	(6.96)	1,308	(6.70)
	Mid East II	878	(8.50)	665	(7.23)	1,543	(7.90)
	Near East	1,272	(12.31)	1,077	(11.71)	2,349	(12.03)
Kampala	Kampala	390	(3.78)	400	(4.35)	790	(4.05)
North	Mid North I	496	(4.80)	346	(3.76)	842	(4.31)
	Mid North II	522	(5.05)	313	(3.40)	835	(4.28)
	North East	344	(3.33)	245	(2.66)	589	(3.02)
	West Nile	613	(5.93)	424	(4.61)	1,037	(5.31)
West	Far West	405	(3.92)	438	(4.76)	843	(4.32)
	Mid West	727	(7.04)	677	(7.36)	1,404	(7.19)
	North West	587	(5.68)	454	(4.93)	1,041	(5.33)
	South West	679	(6.57)	663	(7.21)	1,342	(6.87)
Uganda		10,329	(52.89)	9,200	(47.11)	19,529	(100.00)

2.3.7 SURVEY WEIGHTS

Survey weights for the data were computed in order to make adjustments for the estimates. This was done by making adjustments for the probability of being sampled, non-response as well as post stratification. 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 744 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. The training was guided by a Test Administrator's Manual (2014), which detailed the procedures that were to be followed. The officers discussed fully what was outlined in the Manual, which included, among others, how to obtain a random sample of students and how to conduct the tests as well as the timetable for each day of assessment. Each TL was given a copy of the Manual to use in the field.

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 test administrators under the supervision of the TL conducted assessments in the school they had been allocated for two consecutive days, following a timetable.

2.5 SCORING, DATA MANAGEMENT AND QUALITY ASSURANCE

The tests were scored by secondary school teachers at a central venue in Kampala. As an additional quality assurance measure, the scored tests were checked by a team of checkers before being forwarded for data entry. The checkers focused on discrepancies such as unmarked pieces of work and out-of-the-range scores awarded.

The test scores were captured using EpiDATA (version 3.02) from a central computer laboratory set up in Kampala. The double entry system, where two different data entrants capture scores from the same scripts, was implemented to ensure the reliability of the scores captured. It is more effective in reducing data entry errors than entering the data just once.

Data coding and editing system was used to check data for omissions and consistency, on all data collection forms, and where necessary, make adjustments. In this way, the data became more complete, consistent, or readable and hence, ready for analysis.

2.6 STATISTICAL DATA ANALYSIS

Data analysis was done using the STATA (version 13.0) statistical package. The 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 competence of a subject was determined. Finally, performance was analyzed by students' gender and age, school USE status, programme, ownership, location and zone. Additionally, performance was analyzed by school factors, parent involvement and teacher professional development interventions.

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. The detailed description of the categorization of the competencies, by performance levels, is given in section 2 of Chapters 3, 4 and 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 the achievement of S 2 students in English Language. First, the competencies assessed in the test are described. This is followed by the overall mean scores and the proportions of students reaching different levels of proficiency and then the description of proportions of students rated proficient in the different language sub-skills and their competencies. Lastly, the mean scores and percentages of students rated proficient are given according to gender, age, school ownership, USE status, programme, location and zone.

3.2 DESCRIPTION OF THE COMPETENCIES ASSESSED BY PROFICIENCY LEVELS

The description of the various competencies assessed in the English Language test is given below.

NOTE: A student at a given proficiency level is assumed to have mastered all the competencies specified at his/her own level in addition to 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 spelling, punctuation, sentence construction and tenses • Write a conversation, but makes errors in content and format	• Write a well sequenced composition, but makes a few errors in spelling, punctuation and tenses • Write a conversation, but with a few errors in the format	• Write a coherent composition, relevant to the topic with correct spelling, punctuation and tenses • *Write a conversation with the correct speakers, content, format and other attributes*
	• Write a formal letter with some errors in the format, punctuation, spelling and sentence construction	• Write a formal letter, but makes some errors in the format	• 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	• Identify the past continuous tense • Use most parts of speech correctly • Use the past continuous tense correctly	• Identify the future tense • Use the past continuous and future tenses correctly • Use parts of speech correctly

Skill Area	COMPETENCIES BY PERFORMANCE LEVELS		
	BASIC LEVEL	ADEQUATE LEVEL	ADVANCED LEVEL
Grammar (Cont.)	• Use a few punctuation marks and capital letters correctly	• Use most punctuation marks and capital letters correctly	• Use punctuation marks and capital letters correctly
	• Use a few familiar structures correctly • Use a few words of quantity and articles correctly	• Use most structures correctly • Use most words of quantity and articles correctly	• Use given structures correctly

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 48.3%; standard error (S.E 0.99). The mean scores of boys and girls were nearly the same at 48.5% (S.E: 1.18) and 48.1% (S.E 0.88), respectively. 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 LEVELS OF PROFICIENCY IN ENGLISH LANGUAGE, BY GENDER

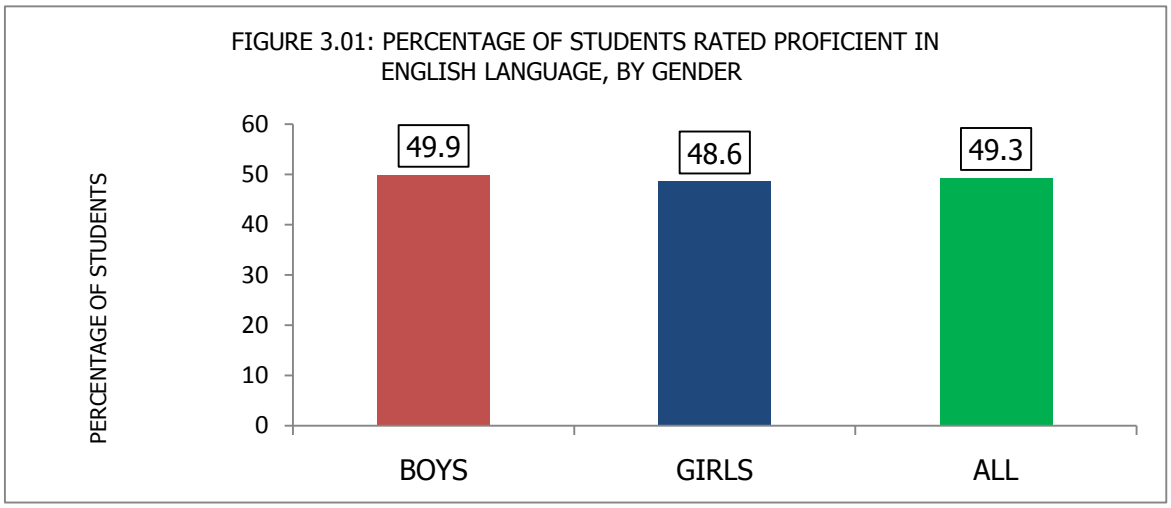
PROFICIENCY LEVELS	BOYS	GIRLS	ALL
Advanced	6.6	6.8	6.8
Adequate	43.2	41.7	42.5
Basic	50.1	51.3	50.7

The proportion of students who were categorized as 'Advanced' was 6.8%. This is the group of students who had exhibited complete mastery of the competencies specified for the S 2 level in English Language.

A total of 42.5% of the students reached the 'Adequate' level of proficiency. These students reached the minimum desired level of proficiency in English Language.

Lastly, 50.7% of the students were rated 'Basic'. This category comprises students who demonstrated ability only in the basic skills of English Language. They performed below their class level.

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



Overall, 49.3% of the students were rated proficient in English Language: 49.9% boys and 48.6% girls; indicating that the boys performed slightly better than the girls, though the difference was not significant.

3.4 ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE BY SKILL AREAS

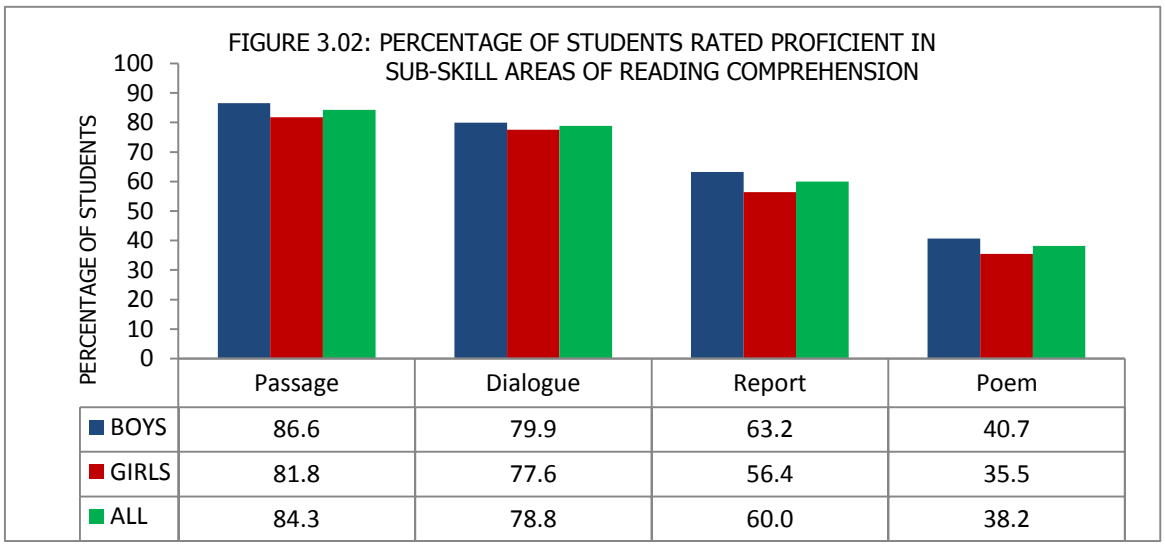
The achievement of students in the sub-skill areas and competencies of Reading Comprehension, Writing and Grammar is presented in this section.

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

The achievement of students in the sub-skill areas and competencies of Reading Comprehension is presented in this sub-section. The flags against the competencies in the tables were each assigned one of the colours; 'Green', 'Yellow', or 'Red', where: 'Green' represents competencies 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 level. Lastly, 'Red' signifies the competencies in which less than a half of the students acquired the desired rating.

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

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



	Passage	Dialogue	Report	Poem
BOYS	86.6	79.9	63.2	40.7
GIRLS	81.8	77.6	56.4	35.5
ALL	84.3	78.8	60.0	38.2

The achievement of students in the different sub-skill areas of Reading Comprehension varied. While 84.3% of the students were rated proficient in 'reading a passage', only 38.2% were rated proficient in 'reading a poem'. The boys performed significantly better than the girls in almost all sub-skill areas of reading a passage.

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

	COMPETENCIES	BOYS	GIRLS	ALL
	Passage			
a	Reading a passage and selecting appropriate information directly from the text to answer questions	79.5	71.9	75.9
b	Reading a passage and making inferences on the basis of the information in the text	47.6	46.5	47
c	Reading a passage and making conclusions by reasoning based on the message in the text	42.4	35.3	39
	Notice			
a	Reading a notice and answering questions which require direct responses from the text	77.5	76.5	77
b	Reading a notice and answering questions which require forming own opinion	42.2	40.9	41.5
c	Reading a notice and making conclusions by reasoning based on the information in the text	21.3	16.3	18.9
	Poem			
a	Reading a poem and answering questions which require direct responses from the text	56.2	54.5	55.4
b	Reading a poem and deriving contextual meaning of a phrase	37.2	33.2	35.3
c	Reading a poem and making conclusions by reasoning based on the information in the text	29.4	24.9	27.3

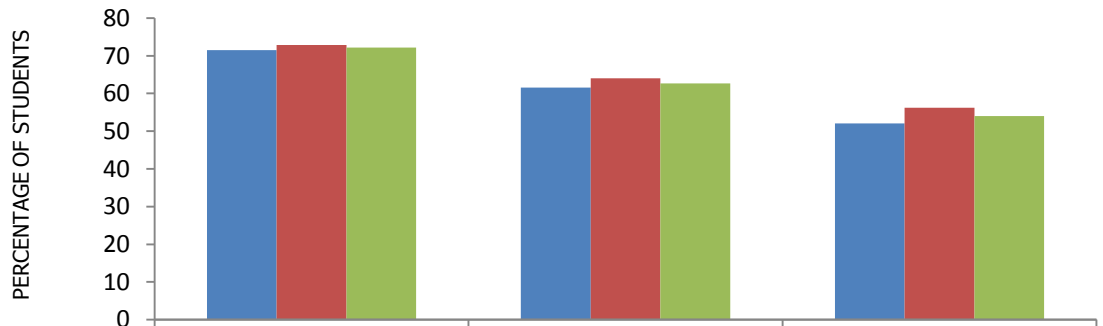
Students' proficiency was higher in competencies which were assessing recall of knowledge. Such questions required them to pick responses directly from the text. Indeed 75.9%, 77.0% and 55.4% were rated proficient on such items about the passage, notice and poem, respectively.

For all texts, less than a half of the students were rated proficient on items that assessed higher order thinking skills, for instance, deriving contextual meaning, making inferences or conclusions and forming own opinion. The boys performed better than the girls in all competencies.

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

The achievement of students in the sub-skill areas and competencies of Writing is presented in this sub-section. Figure 3.03 shows percentages 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



	Formal letter	Conversation	Composition
BOYS	71.5	61.6	52.1
GIRLS	72.9	64.0	56.2
ALL	72.2	62.7	54.0

Nearly three quarters of the students, 72.2%, were rated proficient in 'writing a formal letter', while 62.7% were rated so in 'writing a conversation'. Slightly more than a half, 54%, of the students were rated proficient in 'writing a composition'. Although the gender differences in performance were not significant, the girls performed slightly better than the boys in all the three sub-skill areas of writing.

TABLE 3.03: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF WRITING

COMPETENCIES		BOYS	GIRLS	ALL
Formal Letter				
a	Writer's Address	89.8	90.3	90.0
b	Date	84.1	84.7	84.4
c	Addressee's Address	58.7	55.7	57.3
d	Salutation	63.5	64.9	64.2
e	Subject	50.3	46.3	48.4
f	Content	75.8	76.2	75.9
g	Signing off	50.5	52.8	51.6
h	Signature	67.1	66.7	66.9
i	Name in capital letters	61.5	65.5	63.5
j	Format	19.8	20.9	20.3
Composition				
a	Title	27.4	27.9	27.6
b	Content	79.5	83.7	81.5
c	Punctuation and spelling	30.1	31.6	30.8
d	Legibility	80.3	86.7	83.4
e	Format	67.3	70.6	68.9
f	Impression	25.1	27.4	26.2

Over three quarters of the students could write a formal letter with a writer's address (90%), date (84.4%) and relevant content (75.9%). The students who could write a formal letter using the correct format were less than a quarter (20.3%).

Similarly, more than three quarters of the students wrote compositions which were legible (83.4%) and with relevant content (81.5%). However, less than a third of the students 30.8%, 27.6%, 26.2% were able to: write with the correct punctuation and spelling, give the correct title to the composition and write impressive compositions, respectively.

3.4.3 Achievement of Students in the Competencies of Grammar

This sub-section is a presentation of students' achievement in the competencies of Grammar. The percentages of students rated proficient in the competencies of Grammar are shown in Table 3.04.

TABLE 3.04: PERCENTAGE OF STUDENTS RATED PROFICIENT IN THE COMPETENCIES OF GRAMMAR

COMPETENCIES	BOYS	GIRLS	ALL
Using nouns	93.0	93.6	93.3
Using prepositions	87.1	86.8	86.9
Using the correct tenses	82.0	81.1	81.6
Using given sentence structures	60.0	60.6	60.3
Using adjectives	59.2	58.2	58.8
Using articles	45.3	40.7	43.1
Using adverbs	38.6	36.3	37.5
Applying the correct punctuation	36.1	34.9	35.5
Using pronouns	35.6	32.6	34.1
Writing conditional sentences	12.4	14.7	13.5

Over three quarters of the students were able to 'use nouns' (93.3%), 'use prepositions' (86.9%) and 'use the correct tense' (81.6%). Only a smaller proportion of 13.5% were able to 'write conditional sentences'.

3.5 ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE BY STUDENTS' AGE AND GENDER

This section is a presentation of the S 2 students' achievement in English Language by age and gender. The mean scores of students in English Language by age and gender are shown in Table 3.05.

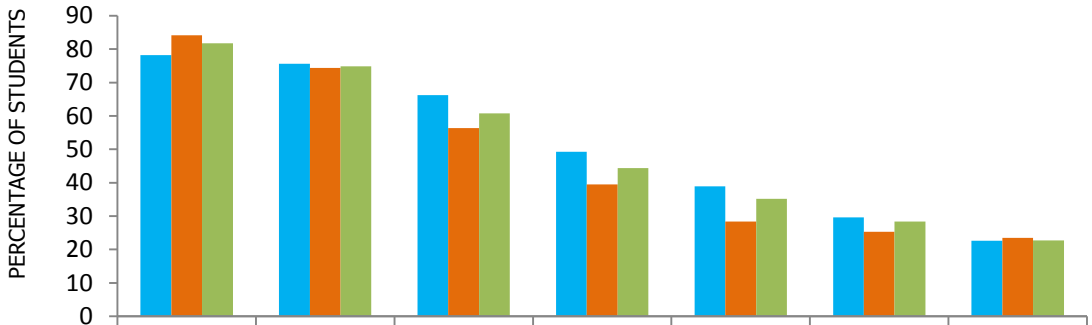
TABLE 3.05: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY STUDENTS' AGE AND GENDER

AGE (years)	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
13	59.8	6.02	64.8	5.84	62.9	5.81
14	59.3	2.64	58.5	2.20	58.8	2.32
15	54.5	2.14	50.7	0.68	52.4	1.10
16	48.3	0.72	44.5	0.50	46.4	0.51
17	44.3	0.56	40.8	0.64	43.1	0.49
18	40.3	0.63	38.6	1.03	39.9	0.56
18+	38.0	0.88	37.1	1.62	37.9	0.79

The mean scores of S 2 students in English Language declined with age from 62.9% for the 13 year-olds to 46.4% for the 16 year-olds students; and 37.9% for the students who were over 18 year-olds. Apart from the 13 year-olds, the boys obtained a higher mean score than the girls in each age category.

Figure 3.04 shows the proportion of S 2 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



	13	14	15	16	17	18	18+
BOYS	78.2	75.6	66.2	49.3	38.9	29.6	22.6
GIRLS	84.2	74.4	56.4	39.5	28.4	25.3	23.5
ALL	81.8	74.9	60.8	44.4	35.2	28.4	22.7

AGE (Years)

The proportion of S 2 students rated proficient in English Language declined with age from 81.8% at age 13 years to 22.7% for students above 18 years of age. There was significant gender difference in achievement at age 13 years with girls (84.2%) performing better than the boys (78.2%). Similarly, at age 15, 16 and 17, there were remarkable gender differences in performance with boys: 66.2%, 49.3% and 38.9% performing better than the girls: 56.4%, 39.5% and 28.4%, respectively.

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

This section is a presentation of the S 2 students' achievement in English Language by school ownership, USE status and gender. First, is a description of the achievement of students in English Language by school ownership and gender. This is followed by the achievement of students in English Language by school USE status and gender.

3.6.1 Achievement of S 2 Students in English Language by School Ownership and Gender

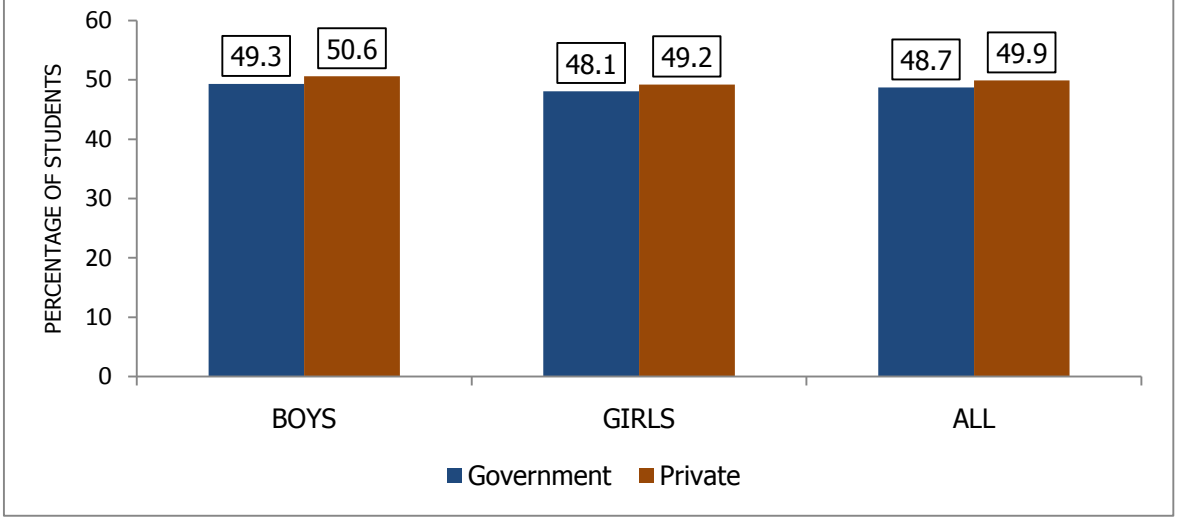
The achievement of students in English Language by school ownership and gender is described in this sub-section. Table 3.06 shows the mean scores of students in English Language by school ownership and gender.

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	2.12	48.70	1.58	48.6	1.81
Private	48.4	0.81	47.50	0.75	47.9	0.70

The mean scores of students in government schools (48.6%) and private schools (47.9%) were nearly the same. There were no significant gender differences. Figure 3.05 presents the proportion of students rated proficient in English Language by school ownership and gender.

FIGURE 3.05: PERCENTAGE OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, BY SCHOOL OWNERSHIP AND GENDER



The achievement of students in the government and private schools was nearly the same with 48.7% and 49.9% respectively rated proficient. There were no significant gender differences in performance in each category of school ownership.

3.6.2 Achievement of S 2 Students in English Language by USE Status and Gender

The achievement of S 2 students in English Language by school USE status and gender is described in this sub-section. Table 3.07 shows the mean scores of students in English Language by school USE status and gender.

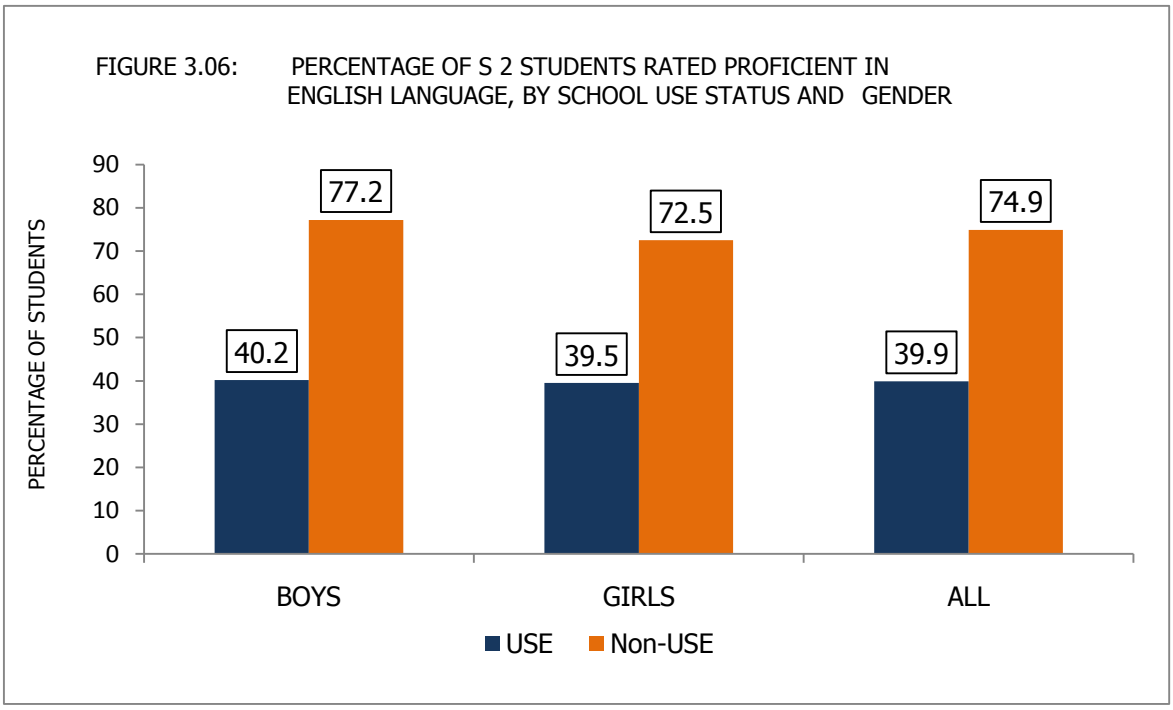
TABLE 3.07: MEAN SCORES (PERCENTAGE) OF STUDENTS IN ENGLISH LANGUAGE BY SCHOOL USE STATUS AND GENDER

SCHOOL USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
USE	44.6	0.51	44.6	0.53	44.6	0.48
Non-USE	59.7	2.65	57.5	2.12	58.7	2.35

The mean scores of students in English Language by school USE status varied. Students in USE schools scored a mean of 44.6%, whilst those in the Non-USE schools scored a mean of 58.7%. There were no significant gender differences in mean scores for students in each category of USE status.

Figure 3.06 presents the proportions of S 2 students rated proficient in English Language by school USE status.

FIGURE 3.06: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, BY SCHOOL USE STATUS AND GENDER



Nearly three quarters of the students (74.9%) in Non-USE schools reached the desired proficiency level in English Language. On the other hand, just less than a half of students (39.9%) in the USE schools reached a similar level of proficiency. Significantly more boys than girls were rated proficient in the Non-USE schools.

3.6.3 Achievement of S 2 Students in English Language by School Ownership, USE Status and Gender

The achievement of S 2 students in English Language by school ownership and USE status is described in this sub-section. Table 3.08 shows the mean scores of students in English Language by school ownership and USE status.

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

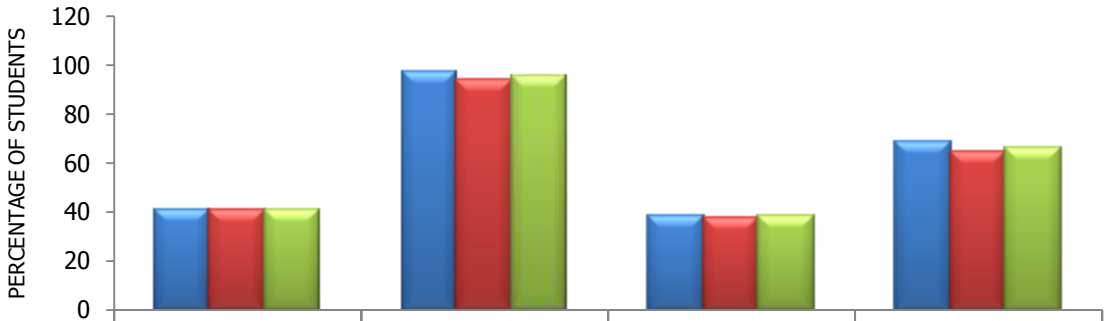
SCHOOL OWNERSHIP AND USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government USE	44.9	0.62	45.2	0.68	45.1	0.60
Government Non-USE	70.1	1.44	69.7	2.07	69.9	1.72
Private USE[α]	43.9	0.91	43.4	0.85	43.7	0.82
Private Non-USE	55.2	0.99	52.9	1.03	54.1	0.87

Students in Non-USE schools had higher mean score of 69.9% and 54.1% for Government and Private Non-USE schools, respectively; with the Government Non-USE students scoring significantly higher than the Private Non-USE students. The Government and Private USE students obtained means of 45.1% and 43.7%, respectively which were not significantly different. There were no significant gender differences in mean scores across all school categories.

[α] Commonly referred to as PPP: Public-Private Partnership.

Figure 3.07 presents the proportions of S 2 students rated proficient in English Language by school ownership and USE status.

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	41.2	96.9	38.5	68.5
GIRLS	40.5	93.8	37.8	64.6
ALL	40.9	95.5	38.2	66.5

Nearly all the students (95.5%) in the Government Non-USE schools were rated proficient in English Language. About two thirds of the students (66.5%) in the Private Non-USE schools obtained a similar rating. On the other hand, 40.9% of the students from Government USE schools and 38.2% from the Private USE schools reached the desired proficiency level. There were significant gender differences in the performance of students in the Government Non-USE schools with more boys than girls rated proficient.

3.7 ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE BY SCHOOL PROGRAMME AND GENDER

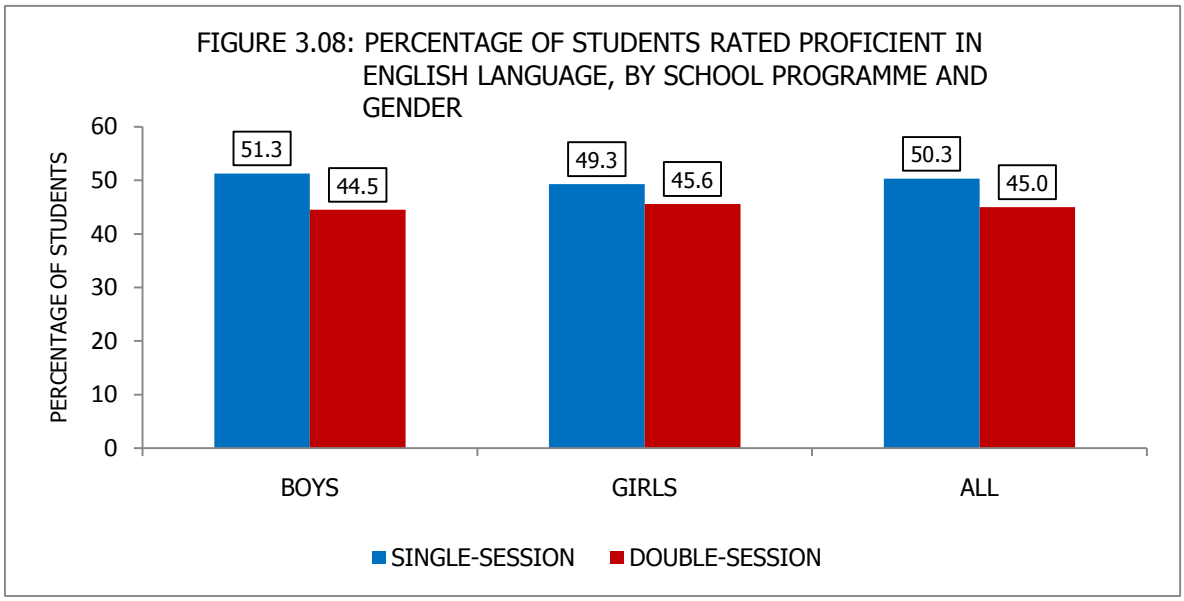
The achievement of S 2 students in English Language by school programme and gender is presented in this section. Table 3.09 shows the mean scores of students in English Language by school programme and gender.

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

SCHOOL PROGRAMME	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Single-session	49.2	1.45	48.5	1.06	48.8	1.21
Double-session	46.0	1.12	46.5	1.12	46.2	1.08

The mean score of students from single-session schools was 48.8%, whilst that of students from double-session schools was 46.2%. There were no significant gender differences in mean scores for students in either programme.

Figure 3.08 presents the proportion of S 2 students reaching the defined proficiency level in English Language by school programme.



About a half of the students (50.3%) in the single-session schools were rated proficient in English Language, while less than a half (45.0%) in the double-session schools reached a similar rating. There were no significant gender differences in performance of students under each programme.

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

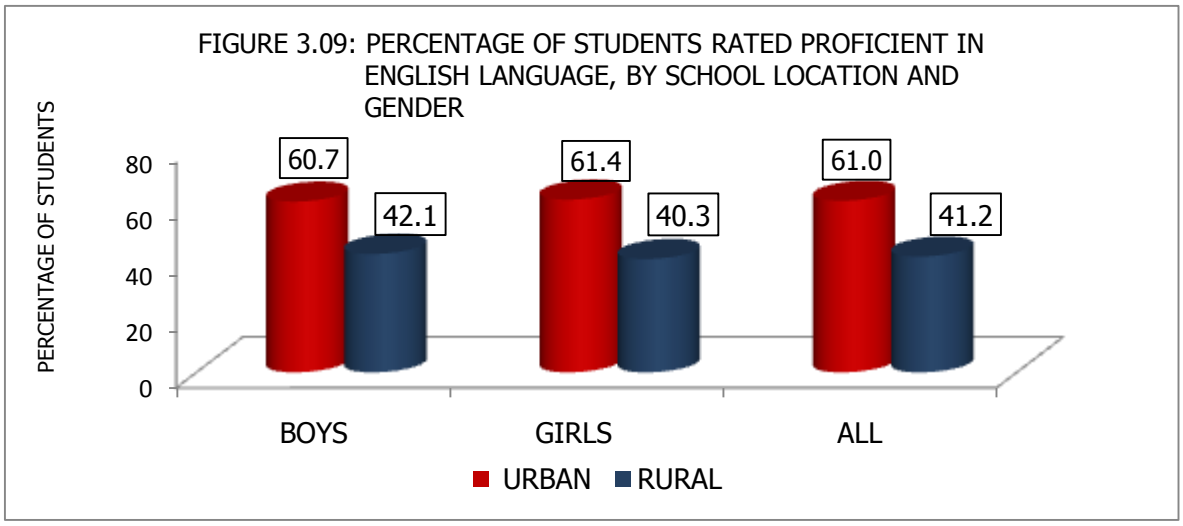
The achievement of S 2 students in English Language by school location and gender is described in this section. Table 3.10 shows the mean scores of students in English Language by school location and gender.

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	52.8	2.41	52.9	1.80	52.9	2.06
RURAL	45.5	0.63	44.9	0.64	45.2	0.55

The mean score of students in the urban schools was 52.9%, while students in the rural schools obtained a mean score of 45.2%. There were no significant gender differences in mean scores in either school location.

Figure 3.09 shows the proportion of students rated proficient in English Language by school location and gender.



Nearly three quarters (61%) of the students from the urban schools were rated proficient in English Language, while only 41.2% from the rural schools reached the same level. There were no significant gender differences in performance in either school location.

3.9 ACHIEVEMENT OF S 2 STUDENTS IN ENGLISH LANGUAGE BY ZONE AND GENDER

The achievement of S 2 students in English Language by zone is presented in this section. Table 3.11 shows the mean scores of students in English Language by zone and gender.

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

REGION	ZONE	BOYS		GIRLS		ALL	
		Mean	S.E	Mean	S.E	Mean	S.E
Central	Central I	51.2	1.87	50.9	1.66	51.1	1.57
	Central II	43.5	1.67	44.4	1.45	43.9	1.45
	Central III	43.0	2.79	40.7	1.44	41.6	1.89
East	Far East	48.3	2.18	47.9	2.12	48.1	2.13
	Mid East I	44.7	1.94	46.5	2.12	45.6	2.00
	Mid East II	41.4	1.53	43.5	1.33	42.3	1.37
	Near East	42.7	1.34	42.0	1.41	42.4	1.22
Kampala	Kampala	64.1	6.70	63.2	5.17	63.7	5.93
North	Mid North I	48.6	1.84	47.9	4.74	48.3	2.17
	Mid North II	46.1	1.81	47.5	3.60	46.6	2.45
	North East	53.2	2.13	51.4	3.35	52.3	1.91
	West Nile	46.5	1.74	47.3	2.61	46.8	1.78
West	Far West	48.8	2.05	47.8	2.83	48.3	2.04
	Mid West	44.6	2.04	45.8	3.57	45.2	2.30
	North West	47.7	2.50	49.3	1.50	48.5	1.91
	South West	53.5	3.04	48.9	1.89	51.3	1.98
Uganda		48.5	1.18	48.1	0.88	48.3	0.99

Students from schools in Kampala, North East, South West and Central I obtained high mean scores: 63.7%, 52.3%, 51.3% and 51.1%, respectively. The rest of the zones had their students obtaining mean scores below 50% with the lowest being 41.6% for Central III. There was significant gender difference in mean scores in the South West zone with boys registering a higher mean (53.5%) than the girls' 48.9%.

Table 3.12 shows the proportion of S 2 students rated proficient in English Language by zone and gender.

TABLE 3.12: PERCENTAGE OF S 2 STUDENTS REACHING THE DESIRED LEVEL OF PROFICIENCY IN ENGLISH LANGUAGE BY ZONE AND GENDER

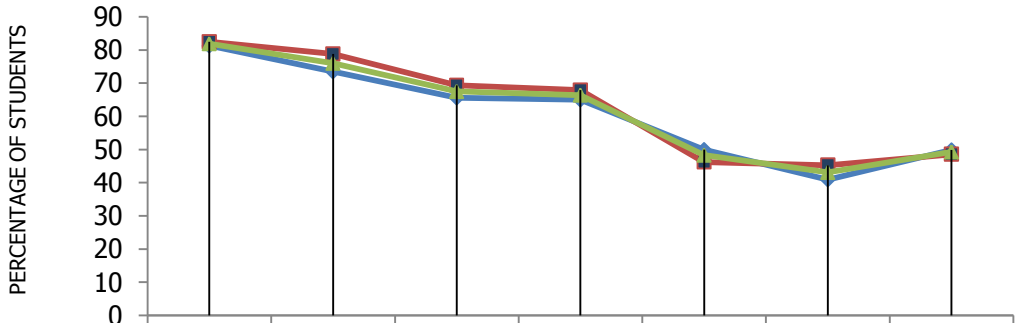
REGION	ZONE	BOYS	GIRLS	ALL
Central	Central I	57.3	56.1	56.7
	Central II	37.3	38.6	37.9
	Central III	40.9	31.6	35.6
East	Far East	48.6	46.4	47.5
	Mid East I	39.7	43.6	41.6
	Mid East II	30.5	36.2	32.9
	Near East	36.0	34.9	35.5
Kampala	Kampala	87.5	85.0	86.3
North	Mid North I	50.6	44.8	48.1
	Mid North II	43.9	47.8	45.4
	North East	63.1	58.6	60.9
	West Nile	45.5	49.3	47.1
West	Far West	50.4	46.2	48.2
	Mid West	39.5	41.9	40.7
	North West	49.2	54.1	51.4
	South West	60.8	49.9	55.7
Uganda		49.9	48.6	49.3

At least more than a half of the students in the zones of Kampala (86.3%), North East (60.9%), Central I (56.7%), South West (55.7%) and North West (51.4%) were rated proficient in English Language. Central III registered the least percentage of students, 35.6%, rated proficient in English Language. Significantly more girls than boys were rated proficient in English Language in the zones of Mid East II and North West, while the reverse occurred in the zones of Central III, Mid North I, North East and Far West.

3.10 ACHIEVEMENT OF STUDENTS IN ENGLISH LANGUAGE OVER THE YEARS 2008 – 2014

A description of the trend of the achievement of students over the years 2008 – 2014 is given in this section. Figure 3.10 is a presentation of the percentages of students reaching the minimum desired level of proficiency in English Language over the years 2008 – 2014.

FIGURE 3.10: PROPORTION OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE: 2008 - 2014



	2008	2009	2010	2011	2012	2013	2014
BOYS	81.3	73.5	65.6	65	50	40.9	49.9
GIRLS	82.5	78.8	69.4	67.9	46.3	45.3	48.6
ALL	81.9	76	67.5	66.4	48.3	43.1	49.3

The proportion of students rated proficient in English Language dropped from 81.9% in 2008 to 43.1% in 2013. In 2014, the proportion went up by about six points to 49.3%.

3.11 CONCLUSION

Among the three skill areas i.e. Reading Comprehension, Writing and Grammar, students performed best in Reading Comprehension. Under Reading Comprehension the students' achievement was best in 'reading a passage' and 'reading a conversation'. The students ably responded to questions of recall nature compared to those requiring use or application of knowledge or facts. They had difficulty in forming their own opinion or making inferences using information in the texts they read. The students exhibited lack of skill in reading and comprehending poetry texts.

Among the sub-skills of writing, the students performed best in 'letter writing' and 'writing a conversation'. The students are still lacking the appropriate creative and imaginative skills required in composition writing.

Grammar is the catalyst of languages and general language communication. Whereas the students could ably use certain aspects of grammar such as nouns and prepositions, they had difficulty applying the correct punctuation, using the correct adverbs and writing conditional sentences.

Generally, the girls performed better in all the three sub-skill areas of writing: formal letter, conversation and composition. On the other hand, the boys did better in all the sub-skill areas of reading comprehension including: passage, dialogue, report and poem.

Chapter 4

ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS

4.1 INTRODUCTION

This chapter presents the achievement of S 2 students in Mathematics. First, the competencies assessed in the test are described. This is followed by a presentation of the overall mean scores, then the proportions of students attaining various proficiency levels in different topical areas and their competencies. Finally the percentages of students reaching at or above the threshold of proficiency are given by gender, age, school ownership and school USE status, school programme, location and zone

4.2 DESCRIPTION OF THE COMPETENCIES ASSESSED BY PROFICIENCY LEVELS

The matrix below outlines the competencies assessed in the test.

NOTE: A student at a given proficiency level is assumed to have mastered all the competencies specified at his/her level in addition to those below his/her level.

COMPETENCIES BY PERFORMANCE LEVELS

TOPIC	BASIC LEVEL	ADEQUATE LEVEL	ADVANCED LEVEL
SET THEORY, RELATION AND MAPPING	A student is able to: • List members of a set • State the type of mapping • Show a described relation in a domain – range diagram	A student is able to: • Describe a listed set • Complete a diagram showing a relation	A student is able to: • Apply the knowledge of sets in novel situation
NUMERICAL CONCEPTS	• Perform the basic operations on whole numbers • List multiples of a number • Convert a fraction into a number	• Perform the basic operations on decimal numbers • Find the HCF of two numbers • Round off a number to a specified number of decimal places • Complete a sequence	• Find the sum of a series • Apply HCF in novel situation
CARTESIAN COORDINATES AND GRAPHS		• Show a region represented by an inequality • Find the equation of a line passing through a set of points	• Interpret a distance – time graph • Draw a line graph whose equation is stated
GEOMETRY	• Measure an angle • Measure a length • Name the side of a right angled triangle opposite the stated acute angle	• Construct a line parallel to a given line • Draw a line of symmetry in a regular shape	• Construct a triangle whose dimensions are stated

COMPETENCIES BY PERFORMANCE LEVELS

TOPIC	BASIC LEVEL	ADEQUATE LEVEL	ADVANCED LEVEL
TRANSFORMATIONS AND FUNCTIONS	• Work out values of linear functions • State the equation of a mirror line • Plot a point on the coordinate axes		• Find the coordinates of the image of a point under reflection • Draw the graph of a stated function
MEASURES		• Carry out currency conversion • Compute the perimeter of a regular shape • Perform household budgeting • Find the surface area of a sphere • Solve a discount problem • Compute the time for an activity • Compute simple interest rate • Find the number of sides of a regular polygon	
STATISTICS	• Compute the mean of ungrouped data	• Interpret a frequency table	• Draw a pie-chart • Interpret a bar graph

4.3 OVERALL LEVEL OF ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS

In this section, the overall level of achievement of S 2 students in Mathematics is presented.

The mean score was 39.3% with a standard error (S.E.) of 0.81. The boys and girls obtained mean scores of 42.0% (S.E 0.97) and 36.3% (S.E. 0.70), respectively. The boys obtained a significantly higher mean score than the girls.

Table 4.01 shows the percentage of students reaching at or above the proficiency thresholds in Mathematics.

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

PROFICIENCY LEVELS	BOYS	GIRLS	ALL
Advanced	2.86	0.63	1.8
Adequate	45.8	33.1	39.7
Basic	51.4	66.3	58.5

Less than 2% of the students (1.8%) were rated 'Advanced' in Mathematics. These were the students who had not only mastered the Mathematical concepts in S 2 but had also displayed

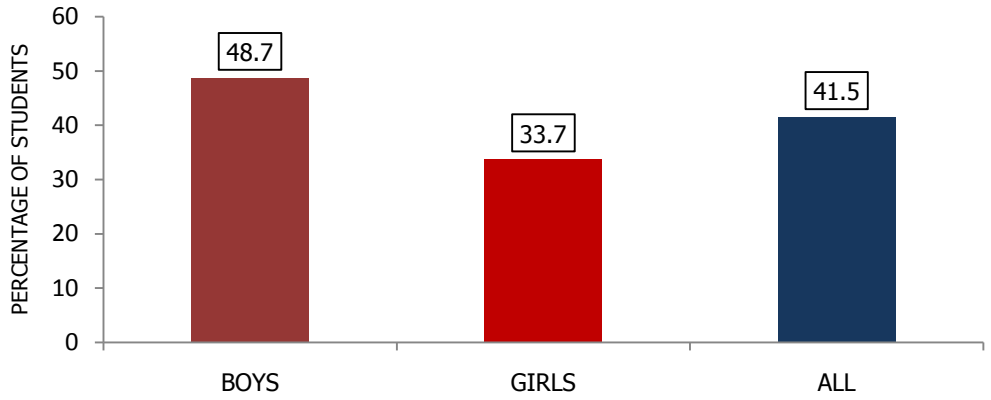
the associated skills. For example they could apply the concept of the H.C.F in novel situations as well as interpret graphs.

The second category of students rated 'Adequate' comprised 39.7%. These are students who demonstrated a fair mastery of Mathematical skills and associated concepts. For example they could not only find the H.C.F of two numbers but also show a region represented by an inequality.

The last category of students rated 'Basic" comprised 58.5%. These were the students with partial understanding of Mathematical concepts and little display of the associated skills. For instance, they could list the multiples of a number as well as measure an angle or given length.

Figure 4.01 shows the percentage of S 2 students rated proficient in Mathematics by Gender.

FIGURE 4.01: PERCENTAGE OF STUDENTS RATED PROFICIENT IN MATHEMATICS, BY GENDER

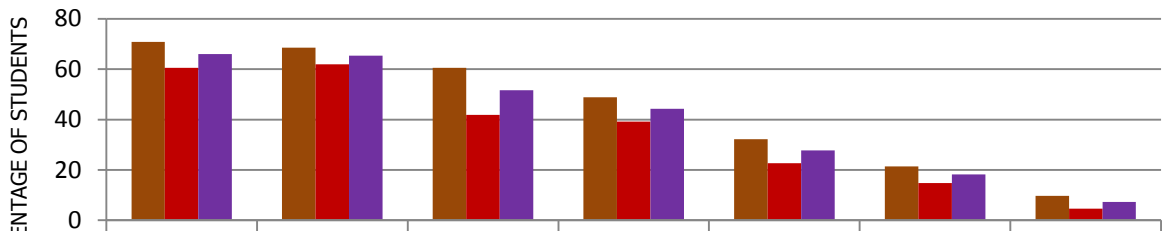


Less than a half of the students (41.5%) reached or exceeded the minimum proficiency level in Mathematics. The proportion of boys rated proficient in Mathematics was significantly higher than that of the girls.

4.4 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY TOPICAL AREAS

This section describes the achievement of students in the main topical areas of Mathematics. Figure 4.02 shows the percentages of students rated proficient in various topics of Mathematics.

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



	Numerical concepts	Statistics	Measures	Geometry	Set Theory	Transformations and Functions	Cartesian Coordinates
BOYS	70.8	68.5	60.5	48.8	32.2	21.4	9.7
GIRLS	60.6	62	41.8	39.2	22.6	14.8	4.6
ALL	66.0	65.4	51.6	44.2	27.7	18.2	7.2

Nearly two thirds of the students (66.0%) attained the desired proficiency level in the topic of 'Numerical Concepts'. This was the most well done topic, followed by 'Statistics' in which 65.4% of the students attained the required proficiency level. About a half of the students were rated proficient in 'Measures' and 'Geometry'.

The topics where students exhibited most difficulty were 'Cartesian Coordinates' and 'Transformations' in which the proportions of students attaining the desired proficiency were 7.2% and 18.2%, respectively. In all the topical areas of Mathematics, more boys than girls were rated proficient.

4.5 ACHIEVEMENT OF STUDENTS IN SELECTED COMPETENCIES OF MATHEMATICS

In this section, the achievement of students in the selected competencies of Mathematics grouped by topical areas is presented.

The flags against the competencies in the tables were each assigned one of the colours 'Green', 'Yellow', or 'Red', where 'Green' represents competencies in which at least three quarters of the students are rated proficient. 'Yellow' represents competencies in which at least half, but less than three quarters of the students attained the desired rating. Lastly, 'Red' denotes the competencies in which less than a half of the students met or exceeded the minimum desired proficiency. Tables 4.02 – 4.08 show the proportions of students rated proficient in the competencies of Mathematics grouped in topical areas.

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

COMPETENCIES	BOYS	GIRLS	ALL
Operation on numbers	98.1	97.0	97.6
Subtracts a 3-digit number from a 3-digit number	95.9	93.9	95.0
Completes a sequence	93.6	92.4	93.0
Finds the HCF of numbers	64.3	57.3	61.0
Converts a decimal to fraction and vice versa	46.2	37.3	42.1
Finds multiples and factors of numbers	41.2	33.0	37.3
Corrects a number to a specified decimal place	13.8	8.9	11.4
Uses the concept of HCF in novel situations	13.0	7.9	10.6
Finds the sum of a series	2.3	1.3	1.8

'Operation on numbers' was performed best in the topic of 'Numerical Concepts' where the proportion of students at or above the threshold proficiency was 97.6%. Within the sub-topic of 'Operation on numbers', best performance was exhibited in the concept of subtraction, followed by multiplication and lastly division where the respective proportions of students attaining the desired rating were 95%, 86.2% and 56.2% (*Not shown in Table 4.02*).

Whereas over 9 in 10 students were able to complete a sequence, less than 2% could find the sum of a series. Further, whereas nearly two thirds of the students (61.0%) could find the HCF of two numbers, just 10.6% demonstrated competence in applying the same concept (HCF) in a novel situation.

More boys than girls reached the desired proficiency level in all the competencies of 'Numerical concepts'.

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

COMPETENCIES	BOYS	GIRLS	ALL
Interpretes a bar graph	84.5	81.7	83.2
Interpretes a frequency table.	84.7	76.9	81.0
Computes the mean of un-grouped data.	57.0	58.5	57.7
Draws a pie chart	40.8	32.4	36.8

Whereas over 80% of the students could interpret a bar graph and a frequency table, a smaller proportion (36.8%) were able to represent information on a pie chart. The girls performed better than boys in computing the mean of ungrouped data.

TABLE 4.04: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'MEASURES'

COMPETENCY	BOYS	GIRLS	ALL
Solves problems involving shopping	78.6	69.5	74.3
Computes the time to carryout an activity	78.0	63.2	71.0
Computes the perimeter of a triangle	71.7	62.2	67.2
Carries out currency conversions	56.4	37.5	47.4
Computes the area of a given shape	46.7	38.1	43.6
Computes simple interest	23.2	16.3	19.9
Solves a discount problem	23.4	13.4	18.6

While nearly 3 in 4 students could solve problems involving shopping, over two thirds of the students could compute the perimeter of a triangle and the time to carry out an activity. However, fewer than 20% of the students demonstrated competence in solving a discount problem and computing a simple interest rate of a business transaction. The difference between the proportions of boys and girls attaining the desired rating was significant with more boys than girls rated proficient.

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

COMPETENCIES	BOYS	GIRLS	ALL
Measures lengths accurately	76.8	72.5	74.7
Draws a line of symmery	67.2	66.3	66.7
Constructs a triangle	53.6	46.5	50.2
Measures angles accurately	48.7	34.5	41.9
Finds the number of sides of a regular polygon	6.7	3.9	5.4
Identifies a side adjacent to a given angle	4.1	2.4	3.3

About three in four students were able to measure the length of a given line. This was the best done competence in the topic of 'Measures'.

At least between a half and two thirds of the students could construct a triangle and draw a line of symmetry of an equilateral triangle. Less than 10% of the students were able to compute the number of sides of a regular polygon as well as identify a side of a right angled triangle adjacent to one of its named angles. More boys than girls were rated proficient.

TABLE 4.06: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'SET – THEORY'

COMPETENCIES	BOYS	GIRLS	ALL
Applies set theory in novel situations	67.5	60.5	64.2
Reprets a relationship using set symbols	64.1	60.3	62.3
Identifies a type of mapping	22.4	19.6	21.1
Completes a diagram showing a relation	23.8	15.1	19.7
Describes a set	3.0	1.2	2.2

Whereas over a half of the students could represent a relationship using set symbols and apply set theory in real life situation, fewer than 25% of the students attained the desired rating in other competencies of 'Set Theory'. More boys than girls were rated proficient in all competencies of 'Set Theory'.

TABLE 4.07: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'TRANSFORMATIONS AND FUNCTIONS'

COMPETENCIES	BOYS	GIRLS	ALL
Works out values of a linear function	69.7	65.5	67.7
Draws a graph of linear functions	10.8	6.9	8.9
States the equation of a mirror line	1.5	0.6	1.1

In the topic of 'Transformations and Functions', the students performed best in the competence of 'working out values of a linear function' where over two thirds (67.7%) were rated proficient. However, much difficulty was demonstrated in the competencies of 'drawing graphs of linear functions' and 'stating the equation of a mirror line'; where 8.9% and 1.1% of the students were rated proficient, respectively.

The proportion of boys rated proficient was significantly higher than that of the girls in all the competencies of 'Transformations and Functions'.

TABLE 4.08: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'CARTESIAN COORDINATES AND GRAPHS'

COMPETENCIES	BOYS	GIRLS	ALL
Interprets simple distance-time graphs	37.0	22.3	30.0
Draws a straight line	21.0	16.1	18.7
Shades unwanted region	17.2	14.8	16.1
Finds equation of a straight line passing through 3 points	8.1	4.3	6.3

Whereas nearly 1 in 3 students could interpret a simple distance – time graph, fewer than 20% of the students could draw a straight line, shade the unwanted region of a graph and find the equation of a straight line passing through three points.

More boys than girls were rated proficient in 'Cartesian Coordinates and Graphs'.

4.6 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY AGE AND GENDER

In this section, an outline of the achievement of S 2 students in Mathematics by age and gender is presented. Table 4.09 shows the mean scores of students in Mathematics by age and gender.

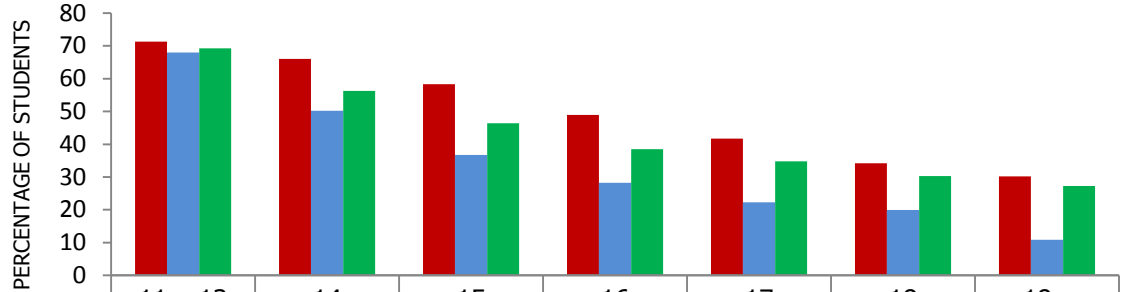
TABLE 4.09: MEAN SCORES (PERCENTAGE) OF STUDENTS IN MATHEMATICS BY AGE AND GENDER

AGE (years)	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
13	48.5	4.41	47.5	5.17	47.9	4.78
14	47.9	1.45	41.9	2.12	44.2	1.80
15	45.8	2.00	37.3	0.59	41.1	1.16
16	42.2	0.94	34.5	0.40	38.3	0.57
17	39.5	0.51	32.5	0.46	37.0	0.41
18	36.6	0.54	30.4	0.80	34.9	0.47
18^{+}	35.7	0.74	27.7	1.24	34.5	0.66

The mean scores of students in Mathematics decreased with age from 47.9% for the 13 year-olds to 34.5% for the 18+ year-olds. In each age category, the boys performed significantly better than the girls.

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	71.3	66	58.3	48.9	41.7	34.2	30.2
GIRLS	68	50.2	36.7	28.2	22.3	19.9	10.8
ALL	69.3	56.3	46.4	38.5	34.8	30.3	27.3

The proportion of students rated proficient decreased with age from 69.3% for the 13 year-olds to 27.3% for those above 18 years. The proportions of boys reaching the desired proficiency level were significantly higher than the girls' in each age category.

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

This section is a presentation of the performance of S 2 students in Mathematics by school ownership and USE status. First, a description of the achievement of students by school ownership and gender is presented. This is followed by the achievement of students in Mathematics by school USE status and gender.

4.7.1 Achievement of S 2 Students in Mathematics by School Ownership

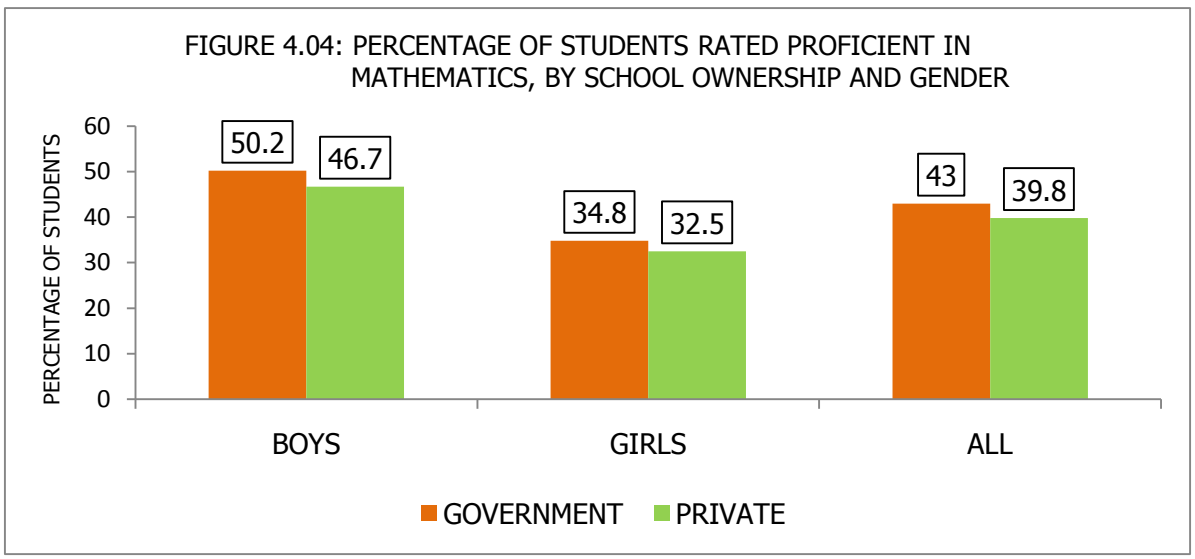
In this sub-section, a presentation of the performance of students in Mathematics by school ownership and gender is made. Table 4.10 shows mean scores of students in Mathematics by school ownership and gender.

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	42.8	1.68	37.1	1.21	40.1	1.41
Private	41.0	0.67	35.4	0.59	38.3	0.57

The students from government and private schools obtained mean scores of 40.1% and 38.3%, respectively, showing a slightly better performance by government schools. The boys did significantly better than the girls in each type of school ownership.

Figure 4.04 shows the proportion of students rated proficient in Mathematics by school ownership and gender.



The difference in the proportions of students rated proficient in Mathematics by school ownership is significant. More students from the government schools attained the desired rating than those from the private schools; within each school setup, more boys than girls were rated proficient.

4.7.2 Achievement of S 2 Students in Mathematics by School USE Status

This sub-section makes a description of the achievement of students by school USE status and gender. Table 4.11 shows the mean scores of students in Mathematics by school USE status and gender.

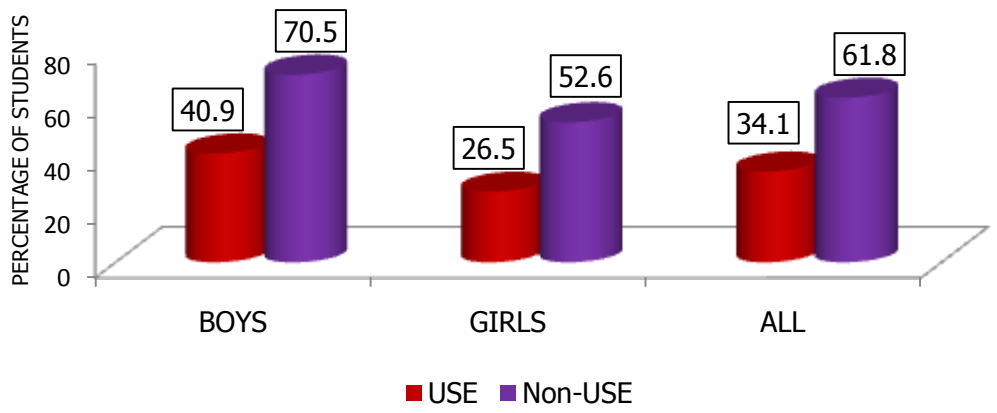
TABLE 4.11: MEAN SCORES (PERCENTAGE) OF STUDENTS IN MATHEMATICS BY SCHOOL USE STATUS AND GENDER

SCHOOL USE STATUS	BOYS		GIRLS		ALL	
	Mean	SE	Mean	SE	Mean	SE
USE	39.0	0.43	33.9	0.41	36.6	0.39
Non-USE	50.4	2.39	42.6	1.82	46.6	2.09

Students from Non-USE schools obtained a mean score which was 10 points above that of their counter parts from USE schools. In either school status, the boys obtained a significantly higher mean score than the girls.

Figure 4.05 shows the proportions of students rated proficient in Mathematics by school USE status and gender.

FIGURE 4.05: PERCENTAGE OF S 2 STUDENTS RATED PROFICIENT IN MATHEMATICS, BY SCHOOL USE STATUS AND GENDER



The percentage of students attaining the desired proficiency levels in Non-USE schools was almost double that of students from USE schools who attained a similar rating. The proportion of boys rated proficient in Mathematics by USE status was significantly higher than that of girls in either school category.

4.7.3 Achievement of S 2 Students in Mathematics by School Ownership and USE Status

In this sub-section, an outline of students' performance in Mathematics by school ownership, USE status and gender is given. Table 4.12 shows the mean scores of students in Mathematics by school ownership, USE status and gender.

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

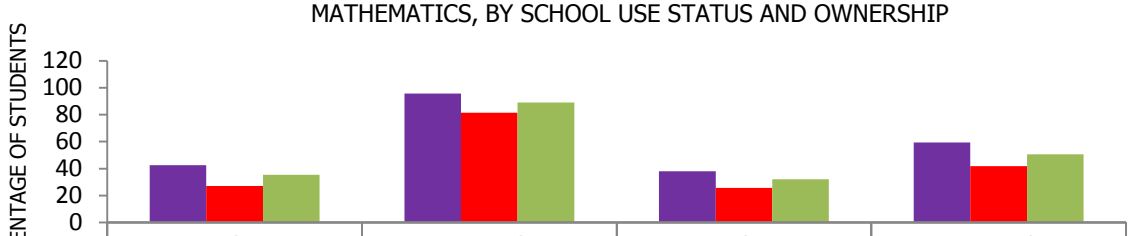
SCHOOL OWNERSHIP AND USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government USE	39.7	0.52	34.4	0.49	37.2	0.45
Government non-USE	61.1	3.48	53.1	1.81	57.4	2.26
Private USE[α]	37.9	0.78	32.9	0.74	35.5	0.73
Private Non-USE	45.7	0.95	38.7	0.84	42.2	0.80

The mean score of students (57.4%) from government Non-USE schools was significantly higher than that of their counter parts (37.2%) from government USE schools.

Similarly, students from the private Non-USE schools obtained a mean score (42.2%) that was significantly higher than that of their counter parts (35.5%) from the private USE schools. In all school categories, boys' mean scores were higher than those of the girls.

Figure 4.06 shows the percentages of S 2 boys and girls rated proficient in Mathematics by school ownership, USE status and gender.

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	42.5	95.7	38.1	59.4
GIRLS	27.1	81.5	25.6	41.8
ALL	35.3	89.2	32.1	50.6

Nearly 9 in 10 students from the government Non-USE schools attained the desired proficiency in Mathematics as compared to only 35.3% of the students from government USE schools who attained a similar rating.

Whereas a half of the students from private Non-USE schools were proficient in Mathematics, only 32.1% attained a similar rating from private USE schools. More boys than girls attained the desired proficiency levels in each school type.

4.8 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY SCHOOL PROGRAMME

This section presents the performance of students in Mathematics by school programme and gender. Table 4.13 shows the proportions of boys and girls rated proficient in Mathematics by school programme and gender.

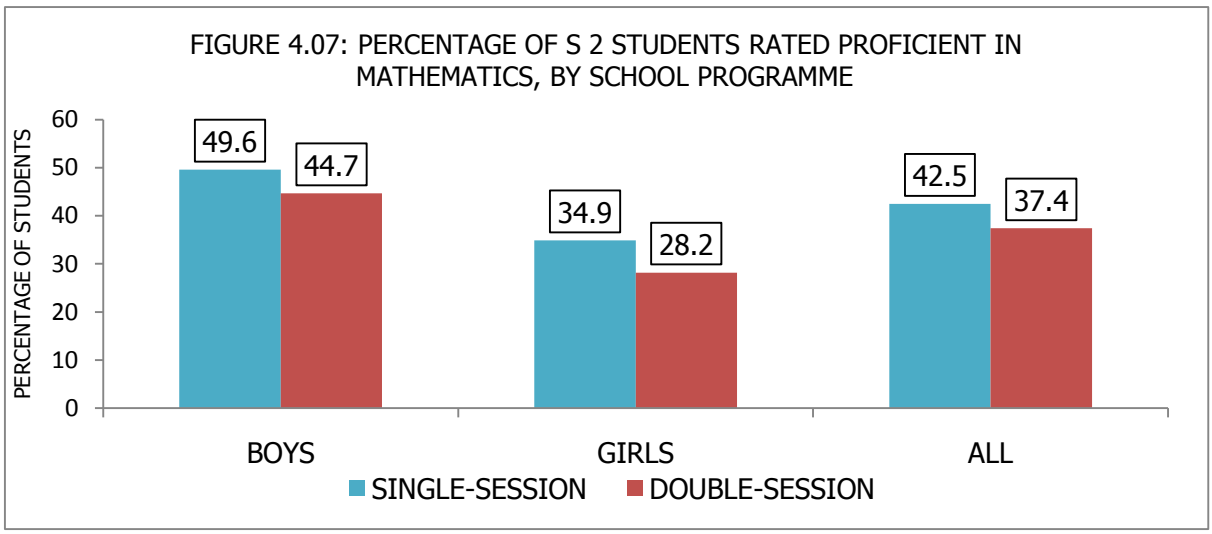
[α] Commonly referred to as PPP –Public-Private Partnership.

TABLE 4.13: MEAN SCORES (PERCENTAGE) OF STUDENTS IN MATHEMATICS BY SCHOOL PROGRAMME

SCHOOL PROGRAMME	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Single-session	42.4	1.20	36.6	0.84	39.6	0.99
Double-session	40.6	0.90	34.9	0.81	38.1	0.82

The mean scores of students from single session and double session schools were 39.6% and 38.1%, respectively; showing that students from single session schools performed slightly better than those from double session schools. In either school programme, the boys obtained higher mean scores than the girls.

Figure 4.07 shows the proportions of students rated proficient in Mathematics by school programme and gender.



More students (42.5%) from single session schools than those (37.4%) from double-session schools attained the desired rating in Mathematics. The number of boys reaching the desired proficiency out numbered that of the girls within each school programme.

4.9 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY SCHOOL LOCATION AND GENDER

In this section, a description of the achievement of students in Mathematics by school location and gender is given. Table 4.14 shows the mean scores of S 2 students in Mathematics by school location and gender.

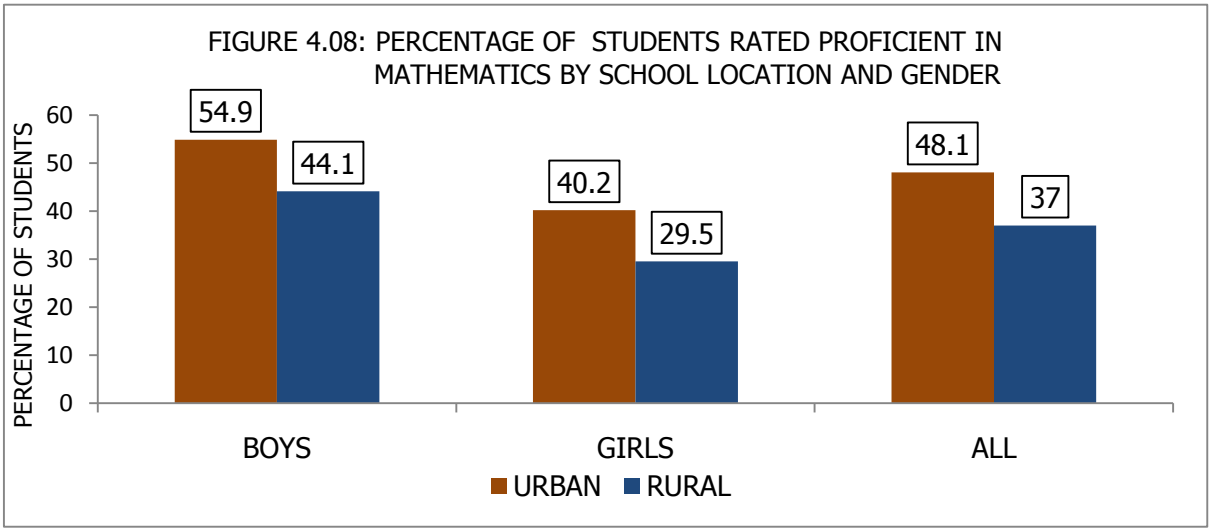
TABLE 4.14: MEAN SCORES (PERCENTAGE) OF STUDENTS IN MATHEMATICS BY SCHOOL LOCATION AND GENDER

SCHOOL LOCATION	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
URBAN	44.6	2.10	38.2	1.56	41.6	1.80
RURAL	40.2	0.50	35.0	0.50	37.7	0.44

The students from urban and rural schools obtained mean scores of 41.6% and 37.7%, respectively, revealing that students from urban schools performed better than those from rural schools.

The boys in either school location obtained higher mean scores than the girls in the same setting. Figure 4.08 shows the proportion of students attaining the desired rating in Mathematics by school location and gender.

FIGURE 4.08: PERCENTAGE OF STUDENTS RATED PROFICIENT IN MATHEMATICS BY SCHOOL LOCATION AND GENDER



There was a significant difference between the percentage of students attaining the desired proficiency in Mathematics in the rural schools and the urban ones. More students from urban schools were rated proficient than those from rural schools. In either school location, more boys than girls attained the desired proficiency in Mathematics.

4.10 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS BY ZONE AND GENDER

This section presents the achievement of students in Mathematics by zone and gender. Table 4.15 shows the mean scores of students in Mathematics by zone and gender.

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

REGION	ZONE	BOYS		GIRLS		ALL	
		Mean	S.E	Mean	S.E	Mean	S.E
Central	Central I	42.0	1.39	36.2	1.19	38.9	1.17
	Central II	36.9	1.64	33.2	1.56	35.0	1.51
	Central III	38.5	2.13	31.7	0.90	34.7	1.33
East	Far East	39.6	2.68	33.6	2.05	36.8	2.36
	Mid East I	37.3	1.40	32.3	1.77	34.9	1.47
	Mid East II	35.4	0.72	31.6	1.17	33.8	0.75
	Near East	37.5	1.13	32.1	0.82	35.0	0.88
Kampala	Kampala	50.8	6.09	44.4	5.47	47.9	6.07
North	Mid North I	43.5	1.22	36.9	2.98	40.6	1.30
	Mid North II	40.3	1.31	35.3	1.66	38.4	1.23
	North East	44.3	1.24	35.1	3.68	39.9	1.55
	West Nile	42.4	1.05	35.7	1.27	39.6	0.82
West	Far West	43.9	1.88	39.7	2.05	41.8	1.59
	Mid West	39.5	2.41	37.2	3.11	38.3	2.22
	North West	42.3	2.41	39.8	2.41	41.2	2.32
	South West	51.8	4.48	41.0	1.31	46.7	2.74
Uganda		42.0	0.97	36.3	0.70	39.3	0.81

Students from five zones (Far West, Kampala, Mid North I, North West and South West) obtained mean scores of at least 40%. In the rest of the zones, the mean scores of students lay in the range of 34.7% to 39.9%. This indicates that across most zones of the country, the performance levels of the students in Mathematics are comparable. Boys obtained higher mean scores than the girls in all the zones of the country.

Table 4.16 shows the proportion of S 2 students rated proficient in Mathematics, by zone and gender.

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

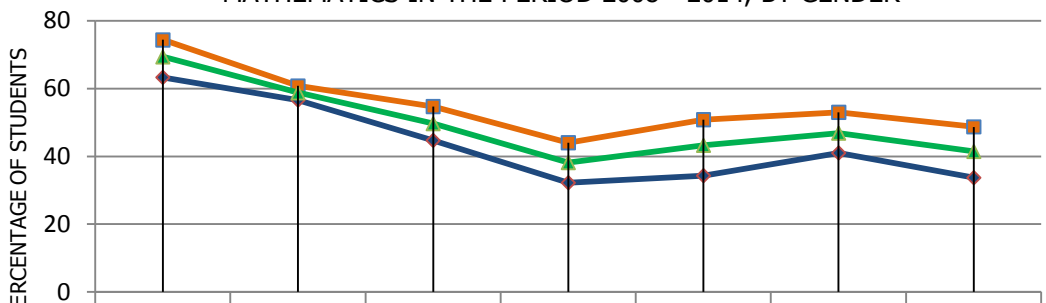
REGION	ZONE	BOYS	GIRLS	ALL
Central	Central I	49.7	34.7	41.9
	Central II	36.4	26.3	31.2
	Central III	39.9	20.5	28.9
East	Far East	42.2	23.3	33.4
	Mid East I	37.2	22.1	29.9
	Mid East II	28.7	19.6	24.8
	Near East	35.2	22.0	29.2
Kampala	Kampala	77.1	57.9	68.3
North	Mid North I	54.1	35.2	45.8
	Mid North II	43.2	28.0	37.3
	North East	54.0	29.5	42.3
	West Nile	51.4	32.7	43.6
West	Far West	5.3	42.2	47.7
	Mid West	41.8	35.2	38.5
	North West	50.2	44.1	47.4
	South West	68.8	47.3	58.7
Uganda		48.6	33.7	41.5

Only two zones; Kampala (68.3%) and South West (58.7%) had at least a half of its students rated proficient in Mathematics. For the rest of the zones, there were fewer than 50% of the students but more than 20% attaining a similar rating. The boys performed significantly better than the girls in all the zones of the country.

4.11 ACHIEVEMENT OF S 2 STUDENTS IN MATHEMATICS OVER THE YEARS: 2008 – 2014

A description of the trend of the achievement of the students over the period 2008 – 2014 is given. Figure 4.09 shows the trends in achievement of S 2 students in Mathematics over a period of seven years.

FIGURE 4.09: PERCENTAGE OF STUDENTS RATED PROFICIENT IN MATHEMATICS IN THE PERIOD 2008 - 2014, BY GENDER



	2008	2009	2010	2011	2012	2013	2014
BOYS	74.4	60.8	54.7	44	50.8	53	48.7
GIRLS	63.3	56.6	44.7	32.2	34.3	41	33.7
ALL	69.4	58.8	49.7	38.2	43.3	46.9	41.5

There was a continued decline in the proportion of S 2 students rated proficient in Mathematics in the period 2008 – 2011. Conversely, proficiency rates increased in the period 2012 – 2013. However, in 2014 the percentage of S 2 students rated proficient in Mathematics dropped by about 5 points to 41.5%. More boys than girls reached the desired level of proficiency.

4.12 CONCLUSIONS

S 2 students demonstrated best performance in the topic of 'Numerical Concepts' where two in every three students were rated proficient. 'Cartesian Coordinates' continues to be a great challenge to the students, since that is the area where students demonstrated the least competence over the years.

In the topic of 'Numerical Concepts', nearly all the students (97.6%) had mastered the four basic operations on numbers. It is important to note that whereas S 2 students (93%) demonstrated competence in 'sequences', they still experience much difficulty in 'computing the sum of a series'.

In the topic of 'Statistics', whereas interpretation of graphs was well understood and articulated by many students (≃80%), 'drawing of pie charts' is still a problem to them.

In the topic of 'Measures', students demonstrated better performance in the competencies of shopping and time management of an activity. However, business related competencies such as computation of discount and simple interest are still inadequately conceptualized, since about 1 in 5 students were rated proficient.

In 'Geometry', S 2 students have attained improved scores in the competencies of 'measurement' and 'drawing', although reports from field officers indicated that learners had to share geometrical instruments during testing.

In 'Set Theory', students (64.2%) performed best in applying sets in novel situations, yet they are not able to describe a set or identify the type of mapping. Scorers did mention that these competencies are not taught by a number of teachers. It is an area of concern.

In 'Transformations and Mapping', the students demonstrated the worst performance simply because there is inadequate use of squared boards during classroom instruction.

Chapter 5

ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY

5.1 INTRODUCTION

This chapter presents the achievement of S 2 students in Biology. Firstly, the competencies assessed in the test are described. This is followed by the overall mean scores and proportions of students reaching various levels of proficiency, and then the description of the percentages of students rated proficient in the different topical areas and competencies. Lastly, the mean scores and proportions of students rated proficient in the topical areas and competencies of Biology are presented by gender and age, school ownership, school USE status, school programme, location and zone.

5.2 DESCRIPTION OF THE COMPETENCIES ASSESSED BY PROFICIENCY LEVELS

The description of the competencies assessed in the test is given below:-

NOTE: A student at a given proficiency level is assumed to have mastered all the competencies specified at his/her level in addition to those below his/her level.

COMPETENCIES BY PERFORMANCE LEVELS		
BASIC LEVEL	ADEQUATE LEVEL	ADVANCED LEVEL
A student is able to: • Give three reasons why Biology is important to a mother • State three characteristics of a living thing (plant) • State one characteristic for each of the three taxonomic groups	A student is able to: • Describe how living things can be collected • Estimate the number of living things in an area	A student is able to: • Classify a living plant into its taxonomic group • Construct an identification key
• Name two types of microscopes • State the functions of parts of a microscope	• Describe how you would care for a microscope • Compute the magnification of a lens	
• Give the meaning of the term 'tissue' • State differences between a plant and animal cell • Identify specialized cells	• Describe the circulatory system in animals	
• Label parts of a flower • State 3 main functions of a root to a plant • Identify the drawn leaf • Name modified stems	• Describe the leave arrangement • Label the internal structure of a root • Explain the functions of parts of a flower • Describe how leaves are modified for their function	• Draw the external structure of a leaf • Draw a longitudinal section of a flower
• Label the external parts of an insect	• Describe the life cycle of a house fly • Explain the economic importance of a bee	• Draw the external features of a housefly

COMPETENCIES BY PERFORMANCE LEVELS		
BASIC LEVEL	ADEQUATE LEVEL	ADVANCED LEVEL
• State the components of a fertile soil • State methods of preventing soil erosion • State the function of micro-organisms in the soil	• Describe an experiment to determine the percentage of water in a soil sample • Describe the importance of nitrogen to plants • Explain how 'leaching' leads to soil infertility	• Draw a diagram of a soil profile • Construct a carbon cycle • Explain the importance of 'soil water' to living things

5.3 OVERALL LEVEL OF ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY

This section describes the overall level of achievement of S 2 students in Biology. The overall mean score was 26.2% with a standard error (S.E) of 0.69. The mean scores of the boys and girls were 28.4% (S.E. 0.85) and 23.8 (S.E. 0.57), respectively; indicating that the boys' performance was better than the girls'.

Table 5.01 shows the proportions of students attaining various levels of proficiency in Biology.

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

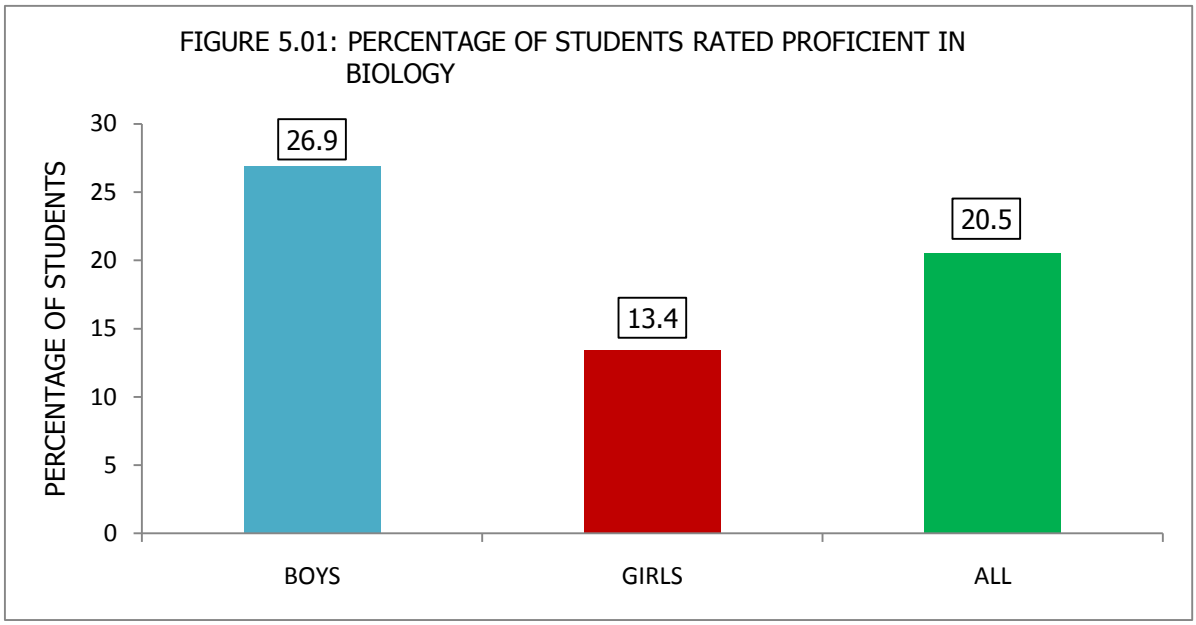
PROFICIENCY LEVELS	BOYS	GIRLS	ALL
Advanced	0.0	0.0	0.0
Adequate	26.9	13.4	20.5
Basic	73.1	86.6	79.5

No student reached the 'Advanced' category. This implies that none of the students demonstrated competence in challenging subject matter, including subject matter knowledge, application of such knowledge to real life situations as well as analytical skills appropriate to the subject matter.

The next proficiency level is the 'Adequate' level, and only 20.5% of the students were rated proficient at this level. These were the students who demonstrated an adequate understanding of the Biological concepts coupled with a satisfactory display of the associated skills. For instance, whereas they were able to 'state the components of a fertile soil', they had difficulty in explaining why 'leaching' leads to soil infertility.

The last category of students was at the 'Basic level'. These constituted majority (79.5%) of the sampled students. They demonstrated minimal academic performance with inconsistent understanding of Biological concepts and skills. For instance, they were able to state reasons why Biology is important to a mother as well as label the external features of a vector.

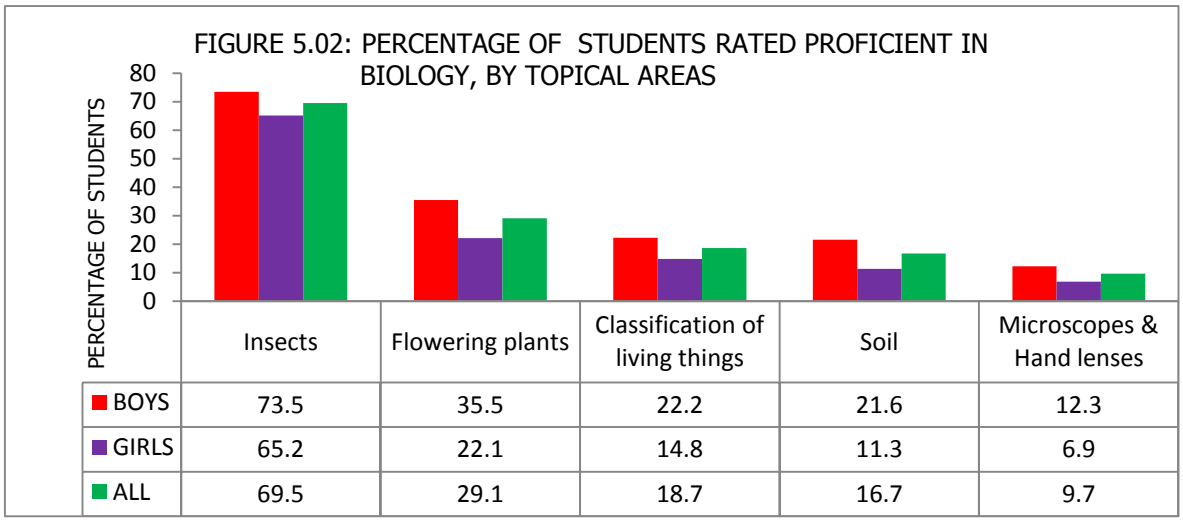
Figure 5.01 shows the percentage of students rated proficient in Biology.



Overall, 20.5% of the S 2 students attained the desired proficiency; i.e. about one in every five students had acquired the minimal knowledge and skills expected at the S 2 level of the national curriculum. The proportion of boys attaining the desired rating was twice that of the girls with a similar rating.

5.4 ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY BY TOPICAL AREAS

This section outlines the performance of students in Biology by topical areas and gender. Figure 5.02 shows the proportions of S 2 boys and girls rated proficient in Biology by topical areas.



	Insects	Flowering plants	Classification of living things	Soil	Microscopes & Hand lenses
BOYS	73.5	35.5	22.2	21.6	12.3
GIRLS	65.2	22.1	14.8	11.3	6.9
ALL	69.5	29.1	18.7	16.7	9.7

Best performance was exhibited in the topic of 'Insects' where 69.5% of the students attained the desired rating, followed by 'Flowering plants' (29.1). In the rest of the topics assessed, fewer than 20% attained the desired rating. The boys performed significantly better than the girls in all the various topical areas.

5.5 ACHIEVEMENT OF S 2 STUDENTS IN THE SELECTED COMPETENCIES OF BIOLOGY

This section describes the performance of S 2 students in selected competencies of Biology. The flags against the competencies in the tables were each assigned one of 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

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 by 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
Explains economic importance of bees	87.3	84.6	86.0
Describes the life cycle of a housefly	80.1	75.0	77.7
Draws and labels the external features of a housefly	68.5	58.8	63.9
Labels the external features of a vector	44.6	37.1	41.0

The majority of students (86.0%) were able to explain the economic importance of bees; as opposed to fewer than 50% who could label parts of the leg of an insect.
Whereas over three-quarters of the students (77.7%) could describe the life cycle of a housefly, a smaller percentage of 63.9% could draw and label its external features. Boys performed better than the girls in all competencies of 'insects'.

TABLE 5.03: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'FLOWERING PLANTS'

COMPETENCIES	BOYS	GIRLS	ALL
States the functions of parts of a plant	87.7	77.8	83.0
Names parts of a flower	78.2	67.6	73.2
Draws and labels external parts of a leaf	46.4	38.6	42.7
Names stem modifications	36.8	32.3	34.7
Identifies a simple digitate leaf	29.3	29.1	29.2
Describes leaf arrangement on a stem	18.4	15.6	17.1
States a leaf modified for a purpose	16.0	11.5	13.9
Explains the functions of the parts of a flower (petals)	12.1	9.5	10.9

Over three-quarters of the students could state the functions of a root to a plant and 73.2% could name parts of a flower. Fewer than 50% of the students demonstrated competence in the rest of the competencies assessed in 'Flowering plants'. Boys performed significantly better than the girls in all competencies in the topic of 'Flowering plants'.

TABLE 5.04 PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'SOIL'

COMPETENCIES	BOYS	GIRLS	ALL
States the components of a fertile soil	82.8	82.0	82.4
Draws a soil profile	62.0	53.4	57.9
States functions of micro organisms in the soil	58.8	51.3	55.3
Describes the importance of nitrogen to plants	31.5	31.3	31.4
Explains the importance of soil air to living organisms	34.5	27.8	31.3
Explains how a named factor affects the quality of soil	18.9	11.4	15.3
Constructs the carbon cycle	5.8	2.6	4.3
Describes an experiment to determine percentage of water in a soil sample	3.4	1.2	2.3

Majority of the students (82.4%) stated the components of a fertile soil, while slightly more than a half of the students drew a soil profile and also stated the functions of micro-organisms in the soil.

Difficulty of the students was exhibited in the competencies of 'constructing a carbon cycle' and 'describing an experiment to determine the percentage of water in a soil sample', where a paltry 4.3% and 2.3%, respectively, were rated proficient. More boys than girls were rated proficient in all the competencies of 'Soil'.

TABLE 5.05: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'CLASSIFICATION OF LIVING THINGS'

COMPETENCIES	BOYS	GIRLS	ALL
Estimates the number of organisms in an area	70.8	68.1	69.5
Explains importance of Biology to a mother	67.0	60.7	64.0
Classifies organisms into their taxonomic groups up to class level	49.4	42.5	46.1
Describes how living things can be collected	12.8	9.6	11.2
Constructes an identification key	5.2	3.5	4.4

About 2 in 3 students (69.5%) were able to 'estimate the number of organisms in an area'. This was the best exhibited competence in 'Classification of Living Things', followed by 'stating the importance of Biology to a mother' in which 64% of the students were rated proficient. Fewer than 15% of the students were rated proficient in 'describing how living things can be collected' as well as 'constructing an identification key'. More boys than girls were rated proficient in all the competencies of 'Classification of living things'.

TABLE 5.06: PERCENTAGE OF STUDENTS RATED PROFICIENT IN SELECTED COMPETENCIES OF 'MICROSCOPES AND HAND LENSES' AND 'PLANT AND ANIMAL CELLS'

COMPETENCIES	BOYS	GIRLS	ALL
Microscopes			
States the functions of parts of a microscope	45.4	30.3	38.2
Names two types of microscopes	41.0	34.0	37.7
Describes the care of hand lenses and microscopes	28.4	24.8	26.7
Computes the magnification of a specimen	11.2	8.5	10.0
Plant and animal cells			
States difference between plant and animal cell	66.7	62.5	64.7
Identifies specialized animal cells	61.8	48.5	55.5
Gives meaning of term 'tissue'	17.0	11.8	14.5

Fewer than 40% of the students reached the desired level of proficiency in all the competencies of Microscope. The lowest performance was exhibited in the competence of 'computing the magnification of a specimen' where 10% of the students attained the desired rating.

Over half of the students were rated proficient in two competencies of 'Plant and animal cells' i.e. 'stating the difference between a plant cell and animal cell' and 'identifying specialized animal cells'. Only 14.5% of the students were rated proficient in the competence of stating the meaning of the term 'tissue'.

5.6 ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY BY AGE AND GENDER

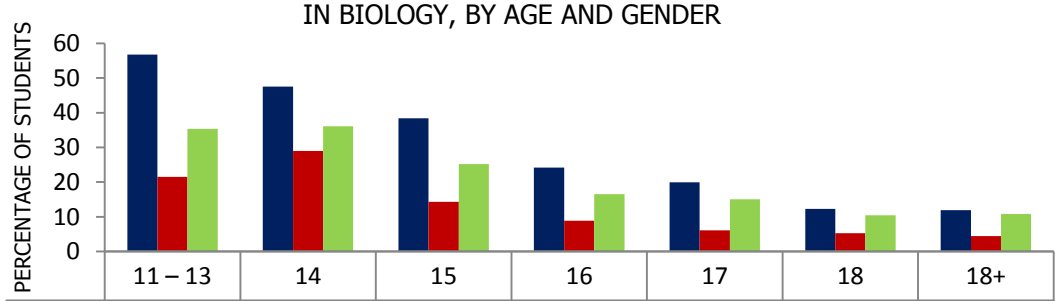
This section presents the performance of S 2 students in Biology by age and gender. Table 5.07 shows the mean scores of students in Biology by age and gender.

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

AGE (years)	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
13	34.9	4.55	31.4	3.87	32.8	4.10
14	33.9	1.68	28.9	1.72	30.8	1.69
15	31.9	1.71	24.6	0.46	27.9	0.98
16	28.2	0.73	22.3	0.34	25.2	0.46
17	26.4	0.40	20.5	0.39	24.3	0.34
18	23.7	0.40	19.5	0.57	22.5	0.35
18^{+}	22.5	0.60	18.2	0.91	21.9	0.52

The mean scores of S 2 students decreased with age from 32.8% for the 13 year-olds, to 21.9% for the 18^{+} year-olds. In each age category, the boys obtained significantly higher mean scores than the girls. Figure 5.03 shows the proportions of students who attained the desired proficiency levels.

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



	11 – 13	14	15	16	17	18	18+
BOYS	56.8	47.5	38.4	24.2	19.9	12.3	11.9
GIRLS	21.5	29	14.3	8.9	6.1	5.3	4.4
ALL	35.4	36.1	25.2	16.5	15	10.4	10.8

AGE (Years)

The percentage of students rated proficient in Biology decreased with age from 36.1% for the 14 year-olds to 10.4% for the 18 year-olds. The proportion of boys attaining the desired proficiency was more than double that of the girls within the same age category, except for the 14 year-olds.

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

In this section, the achievement of students in Biology by school ownership and USE status is presented.

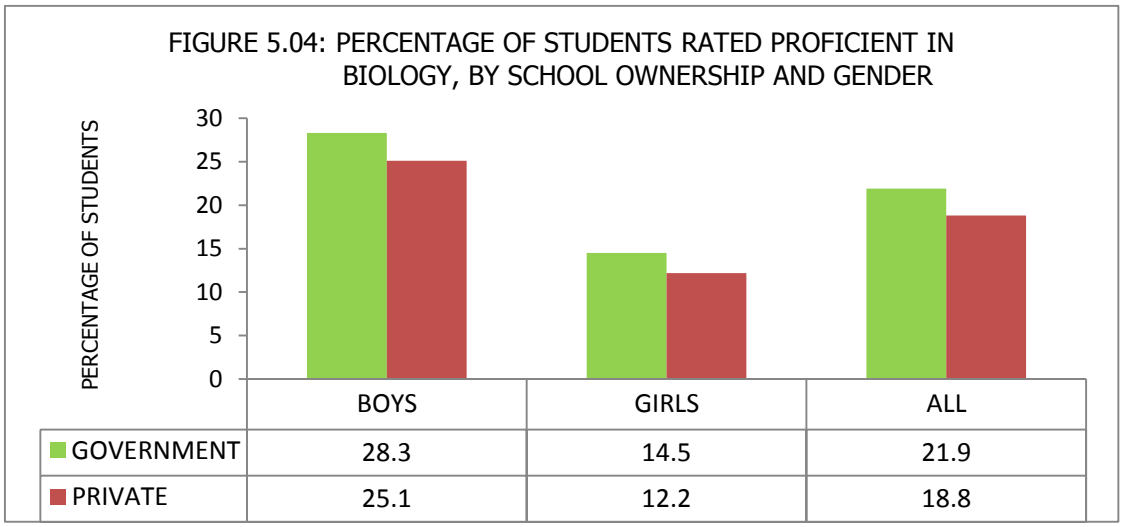
5.7.1 Achievement of S 2 Students in Biology by School Ownership

The performance of S 2 students in Biology by school ownership is presented in this sub-section. 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

OWNERSHIP	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government	28.6	1.51	24.1	1.01	26.5	1.24
Private	28.1	0.56	23.5	0.46	25.9	0.47

The mean scores of students from government and private schools were 26.5% and 25.9% respectively; showing that the achievement of the students from either school ownership were comparable. However, the boys obtained higher mean scores than the girls within the same school ownership. Figure 5.04 shows the percentage of students rated proficient in Biology by school ownership and gender.



More students (21.9%) from the government schools than private schools (18.8%) attained the desired proficiency level in Biology. In either category of school ownership, the proportion of boys attaining the desired rating was significantly higher than the girls'.

5.7.2 Achievement of S 2 Students in Biology by School USE Status

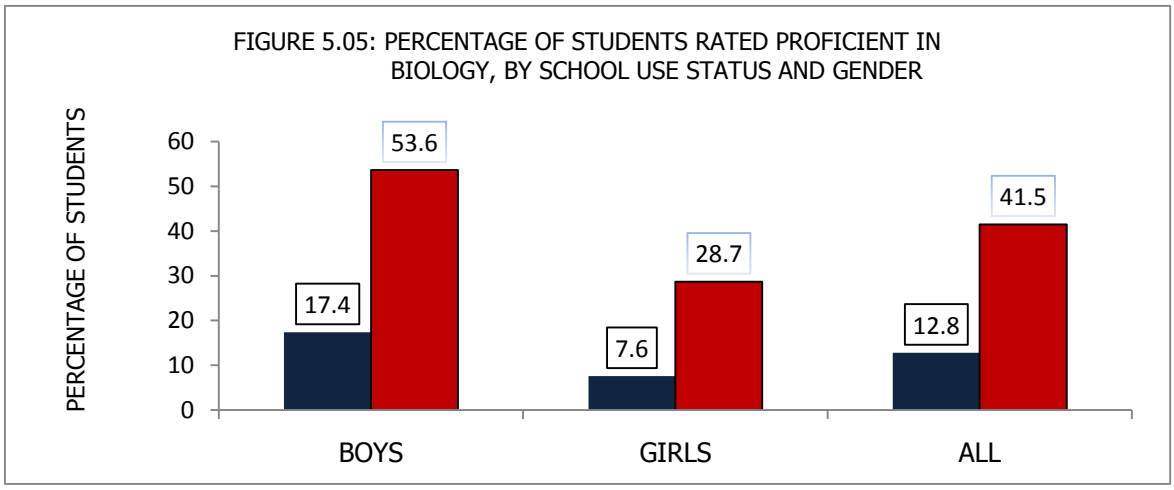
In this sub-section, a description of the performance of S 2 students in Biology by school USE status and gender is given. Table 5.09 shows the mean scores of students in Biology by school USE status and gender.

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

SCHOOL USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
USE	25.6	0.32	21.6	0.32	23.8	0.28
Non-USE	36.2	1.96	29.5	1.39	33.0	1.71

The mean scores of students from USE and Non-USE schools were 23.8% and 33.0%, respectively; indicating that there was a significant difference in the performance of students from either school category.

Figure 5.05 shows the proportions of S 2 students rated proficient in Biology by school USE status and gender.



The percentage of students (41.5%) from Non-USE schools rated proficient in Biology was significantly higher than that of students (12.8) from USE schools. In either school category, significantly more boys than girls were rated proficient.

5.7.3 Achievement of S 2 Students in Biology by School Ownership and USE Status

The performance of S 2 boys and girls in Biology by school ownership, USE status and gender is presented in this sub-section.

Table 5.10 shows the mean scores of students in Biology by school ownership and USE status.

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

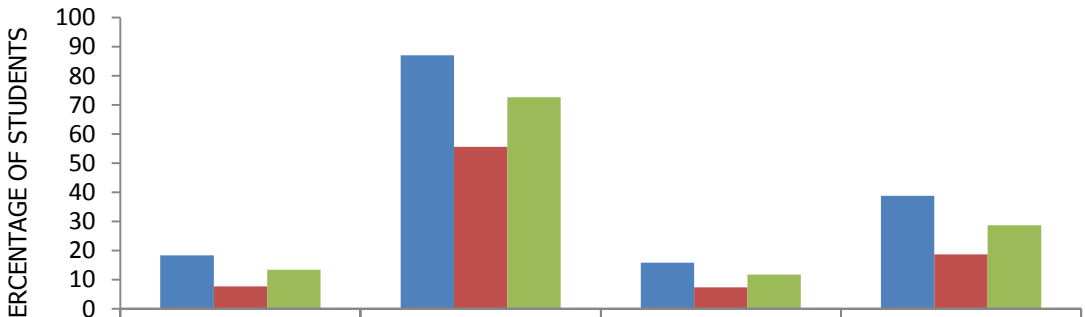
SCHOOL OWNERSHIP AND USE STATUS	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Government USE	25.8	0.35	21.9	0.39	24.0	0.32
Government Non-USE	45.0	1.84	37.6	1.25	41.6	1.49
Private USE*	25.3	0.62	21.3	0.54	23.3	0.55
Private Non-USE	32.3	0.70	26.5	0.65	29.4	0.63

The mean score (41.6%) of students from government Non-USE schools was significantly higher than that of their counterparts (24.0%) from government USE schools. On the other hand, the mean scores of students from private USE and private Non-USE schools were 23.3% and 29.4%, respectively; implying that students from private Non-USE schools performed better than their counter parts from private USE schools. In either school category, the boys performed significantly better than the girls.

Figure 5.06 shows the proportions of S 2 students rated proficient in Biology by school ownership and USE status.

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

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	18.3	87	15.8	38.8
GIRLS	7.7	55.6	7.4	18.7
ALL	13.4	72.6	11.8	28.7

Government Non-USE schools had the highest proportion of S 2 students (72.6%) rated proficient in Biology. This was followed by private Non-USE schools with 28.7% of the students rated proficient. Private USE schools had the least proportion of students (11.8%) attaining the desired proficiency level. More boys than girls were rated proficient in each school category.

5.8 ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY BY SCHOOL PROGRAMME

In this section, the achievement of S 2 students in Biology by school programme is presented. Table 5.11 shows the mean scores of students in Biology by school programme.

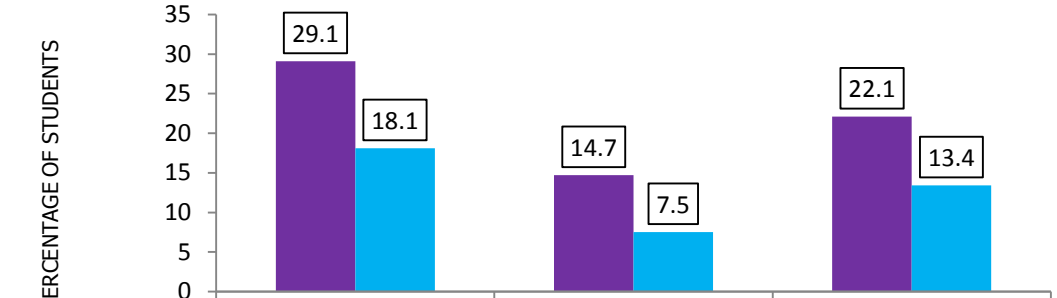
TABLE 5.11: MEAN SCORES (PERCENTAGE) OF STUDENTS IN BIOLOGY BY SCHOOL PROGRAMME AND GENDER

SCHOOL PROGRAMME	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
Single-session	29.0	1.04	24.2	0.68	26.7	0.84
Double-session	26.2	0.60	22.0	0.54	24.3	0.54

The mean scores of students from single-session and double-session schools were 26.7% and 24.3%, respectively. The difference in the mean scores was insignificant. The boys performed significantly better than the girls in each school programme.

Figure 5.07 shows the percentage of students rated proficient in Biology by school programme.

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



	BOYS	GIRLS	ALL
Single-session	29.1	14.7	22.1
Double-session	18.1	7.5	13.4

Students from single-session schools (22.1%) were about 9 points more proficient than students from double-session schools (13.4%). More boys than girls reached the desired minimum proficiency in either school category.

5.9 ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY BY SCHOOL LOCATION

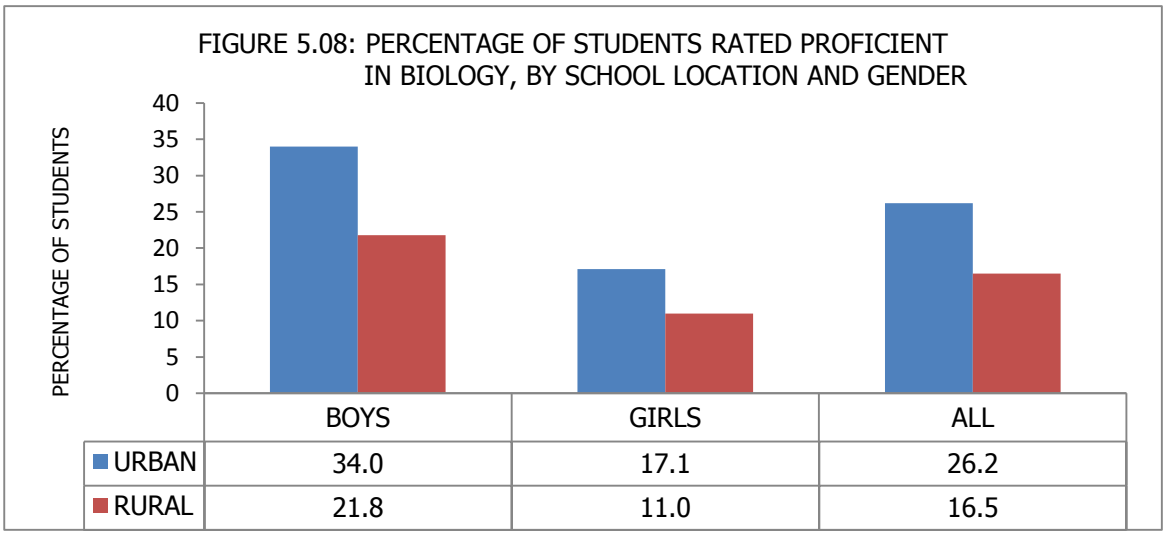
This section describes the performance of S 2 students in Biology by school location and gender. Table 5.12 shows the mean scores of students in Biology by school location and gender.

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

SCHOOL LOCATION	BOYS		GIRLS		ALL	
	Mean	S.E	Mean	S.E	Mean	S.E
URBAN	30.5	1.85	25.2	1.27	28.1	1.56
RURAL	26.9	0.42	22.9	0.41	25.0	0.37

S 2 students from urban and rural schools obtained mean scores of 28.1% and 25.0%, respectively. Whereas the difference in mean scores of boys and girls from urban schools was significant, the difference in mean scores of girls and boys from rural schools was insignificant.

Figure 5.08 shows the proportions of boys and girls attaining the desired rating in Biology by school location and gender.



There were more students from the urban schools (26.2%) than from the rural schools (16.5%) reaching the desired proficiency level in Biology. Likewise, in either school location, the proportions of boys attaining the desired proficiency in Biology were nearly double that of the girls in the same setting.

5.10 ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY BY ZONE AND GENDER

This section describes the achievement of S 2 students in Biology by zone and gender. 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 AND GENDER

REGION	ZONE	BOYS		GIRLS		ALL	
		Mean	S.E	Mean	S.E	Mean	S.E
Central	Central I	28.6	1.18	23.9	1.05	26.1	1.00
	Central II	24.6	1.21	21.7	1.32	23.1	1.19
	Central III	23.9	1.37	19.6	0.94	21.5	1.05
East	Far East	27.7	1.33	22.2	1.19	25.2	1.22
	Mid East I	24.9	1.41	21.3	1.09	23.2	1.19
	Mid East II	23.2	0.76	20.1	0.85	21.9	0.66
	Near East	25.2	1.12	21.3	0.93	23.1	0.93
Kampala	Kampala	36.3	6.21	30.7	4.36	33.7	5.52
North	Mid North I	28.8	0.93	27.1	3.54	28.1	1.45
	Mid North II	28.9	1.57	24.1	2.44	27.1	1.74
	North East	31.7	1.16	23.2	1.69	27.6	1.01
	West Nile	29.8	1.26	24.6	1.42	27.6	1.08
West	Far West	28.3	1.37	25.3	1.58	26.7	1.25
	Mid West	26.0	1.23	23.4	2.24	24.7	1.32
	North West	27.5	1.83	24.5	3.39	26.1	1.53
	South West	34.5	3.39	26.3	6.21	30.6	2.08
Uganda		28.4	0.85	23.8	0.57	26.2	0.69

Kampala and South West were the only zones with students who obtained mean scores of at least 30%. Kampala students obtained the highest mean score (33.7%), followed by South West students with a mean of 30.6%. The students from the rest of the zones obtained mean scores ranging from 21.5% to 28.1%. Boys obtained higher mean scores than the girls from all the zones of the country. Table 5.14 shows the percentage of students rated proficient in Biology by zone and gender.

TABLE 5.14: PERCENTAGE OF STUDENTS RATED PROFICIENT IN BIOLOGY BY ZONE AND GENDER

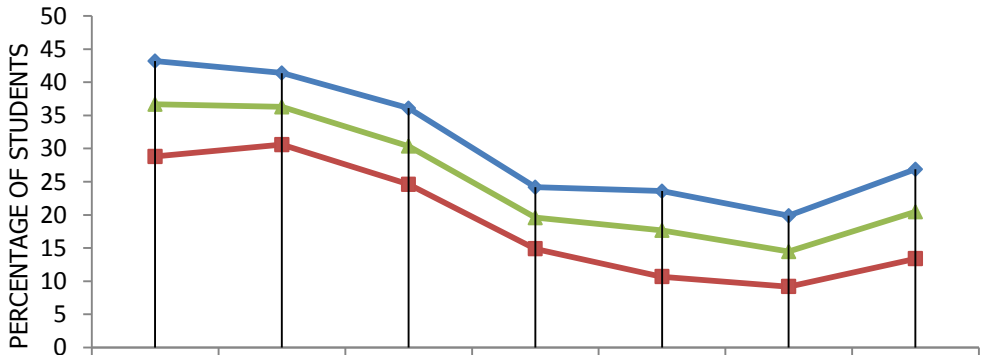
REGION	ZONE	BOYS	GIRLS	ALL
Central	Central I	27.6	13.4	20.2
	Central II	18.7	9.3	13.9
	Central III	15.2	6.3	10.2
East	Far East	21.8	6.8	14.8
	Mid East I	15.1	7.5	11.4
	Mid East II	10.8	6.4	8.9
	Near East	17.7	7.2	12.9
Kampala	Kampala	59.0	31.2	46.3
North	Mid North I	22.8	21.9	22.4
	Mid North II	24.7	13.7	20.5
	North East	34.8	6.8	21.4
	West Nile	28.5	12.7	21.9
West	Far West	24.3	17.9	21.1
	Mid West	18.5	13.5	16.1
	North West	23.4	14.2	19.2
	South West	43.0	17.0	30.9
Uganda		26.9	13.4	20.5

Kampala had the highest percentage of students (46.3%) attaining the desired rating in Biology, followed by South West (30.9%). These were the only two zones where at least 30% of the S 2 students reached the desired proficient level. The rest of the zones had proportions of students rated proficient in Biology ranging from 8.9% to 22.4%. Mid East II (Tororo district) had the least proportion of students (8.9%) attaining the minimum desired proficiency. Boys performed significantly better than the girls from all the zones of the country.

5.11 ACHIEVEMENT OF S 2 STUDENTS IN BIOLOGY OVER THE YEARS: 2008 – 2014

In this section, the trend of the achievement of students in Biology over the period 2008 – 2014 is given. Figure 5.09 shows the proportions of S 2 boys and girls meeting or exceeding the minimum level of proficiency in Biology over the period 2008 – 2014.

FIGURE 5.09: PERCENTAGE OF STUDENTS RATED PROFICIENT IN BIOLOGY IN 2008 2014, BY GENDER



	2008	2009	2010	2011	2012	2013	2014
BOYS	43.2	41.4	36.1	24.2	23.6	19.9	26.9
GIRLS	28.8	30.6	24.6	14.9	10.7	9.2	13.4
ALL	36.7	36.3	30.4	19.6	17.7	14.5	20.5

The performance of the S 2 students in Biology shows a general decline over the years 2010 – 2013, followed by a remarkable increase in the performance level of students in 2014. Boys continue to exhibit higher performance than the girls.

5.12 CONCLUSION

S 2 students exhibited the best performance in the topic of 'Insects' where 69.5% of the students reached the desired proficiency.

In the topic of 'Flowering Plants', the majority of S 2 students (83%) were able to state the main functions of a root to a plant. However, fewer than 15% of the students could 'explain the function of petals to a flower' or 'state a leaf modified for a purpose'.

In the topic of 'Soil', whereas over three quarters of the students (82.4%) knew the components of a fertile soil, more than a half of the students (57.9%) were able to draw a soil profile or state functions of microorganisms in the soil. Fewer than 5% of the students could describe an experiment to determine the percentage of water in a soil sample or construct the carbon cycle.

In 'Classification of Living Things', results showed that nearly 2 in 3 students could either estimate the number of organisms in an area or tell the importance of Biology to a mother.

In the topic of 'Microscopes and Hand lenses', fewer than 40% of the students demonstrated the knowledge and skill expected of them in the role of microscopes. On the other hand, in the competence of 'computing the magnification of a specimen', only about 10% of the students could tell the difference between an object and its image.

Generally, boys performed significantly better than the girls in all the assessed competencies of Biology.

The proportion of S 2 students rated proficient in Biology was 6% more than that of 2013.

Chapter 6

SCHOOL FACTORS, FAMILY INVOLVEMENT, TEACHER DEVELOPMENT INTERVENTIONS AND S 2 STUDENT ACHIEVEMENT

6.1 INTRODUCTION

In this chapter, a description of the relationships between S 2 student level of achievement and school and home factors and teacher development interventions is given.

A total of 1,781 (9.1%) students from S 2 were interviewed from 378 (72.1%) of the surveyed schools. Common school - level background information of the students was obtained from their Head teachers.

6.2 S 2 STUDENT ACHIEVEMENT BY SCHOOL FACTORS AND TEXTBOOK USE

This section is a description of S 2 students' achievement by school factors and textbook availability and use in a school.

6.2.1 S 2 Student Achievement by School Boarding Status

This sub-section presents the S 2 students achievement by school boarding status. Table 6.01 shows the percentage of S 2 students rated proficient in English Language, Mathematics and Biology by students' boarding status.

TABLE 6.01: PERCENTAGE OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY BY BOARDING STATUS

LEARNING AREA	BOARDING STATUS		
	STAYS IN SCHOOL	STAYS IN HOME	STAYS IN A HOSTEL
English Language	66.5	41.6	53.0
Mathematics	60.1	31.7	47.6
Biology	37.1	13.1	25.2

Students' achievement in English Language, Mathematics and Biology is significantly associated with their boarding status. Those who stay at school achieved best followed by those who stay at the hostel; and least are those who come to school from home daily.

6.2.2 S 2 Student Achievement by Textbook Availability

Nearly all, 95.9%, of the students confirmed that they have textbooks at school, although they did not specify whether they were owned by the school or they were personal possession. The students were required to indicate where the books at school were stored or kept. Table 6.02 shows the distribution of S 2 students by textbook storage place in a school.

TABLE 6.02: DISTRIBUTION OF STUDENTS BY TEXTBOOKS STORAGE PLACE IN THE SCHOOL

Textbooks storage place	Frequency	Percentage
Library	1302	76.8
Head teacher's office	224	13.2
Store	96	5.6
Staff room	35	2.1
Laboratory	32	1.9
Classroom	3	0.2
Computer Laboratory	2	0.1
"I Don't Know"	1	0.1
Total	1695	

In most schools, textbooks are mainly kept in the Library (76.8%), followed by the head teacher's office (13.2%) and then school store (5.6%), among others.

Table 6.03 shows the percentage of students rated proficient in English Language, Mathematics and Biology by availability of textbooks at school.

TABLE 6.03: PERCENTAGE OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY BY AVAILABILITY OF TEXTBOOKS AT SCHOOL

Learning Area	Have Textbooks?	
	Yes	No
English Language	49.9	22.7
Mathematics	41.0	19.7
Biology	20.7	4.8

In general, a significantly larger percentage of S 2 students who indicated that textbooks were available at school were found to be proficient in all the learning areas. Interestingly, the performance pattern followed that of the overall achievement levels in the same learning areas.

6.2.3 Student Achievement by Textbook Use

Students who stated that there were textbooks at their school, were further asked to declare if they had ever borrowed the textbooks. In response, about half of the students interviewed indicated that they had ever borrowed the textbooks. The relationship between borrowing textbooks and proficiency in English Language, Mathematics and Biology is shown in Table 6.04.

TABLE 6.04: PERCENTAGE OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY BY TEXT BOOK USE

Learning Area	Ever Borrowed Textbooks	
	Yes	No
English Language	58.1	46.7
Mathematics	52.9	37.1
Biology	23.4	19.6

Results show that students who borrowed English Language or Mathematics textbooks attained significantly better proficiency than those who didn't borrow the corresponding textbooks. In Biology the difference in proficiency was not outstanding.

The students who indicated that they did not borrow books were asked to provide the reason that inhibited them from borrowing. The findings are shown in Table 6.05.

TABLE 6.05: DISTRIBUTION OF STUDENTS ACCORDING TO REASONS FOR NOT BORROWING TEXTBOOKS

Reason	Learning Area		
	English Language (%)	Mathematics (%)	Biology (%)
Teacher brings to class	43.7	35.0	23.3
Fear of losing them	26.6	28.6	34.7
No library permit	15.3	15.5	17.9
Books not enough	9.2	11.2	12.9
No need (enough notes)	8.8	9.0	8.4
Have my own (Borrow from friends)	5.1	6.5	6.0
Fear books will get dirty	2.3	2.6	2.2
Textbooks difficult to understand	1.5	2.1	1.2
Library access not easy	1.1	1.2	1.3
Not encouraged by teacher	1.0	0.9	1.0
Not allowed to borrow (Books for candidates only)	0.9	0.9	1.2
Long procedure (Bureaucracy)	0.6	0.6	0.5
Domestic chores do not allow (No free time at home)	0.6	0.6	0.5
No textbooks for Special Needs Students	0.2	0.2	0.1
Discouraged by teachers (Use pamphlets)	0.1	0.1	0.1

Responses indicated that students did not borrow textbooks mainly because the teacher brings them to class. The other main reason was that they fear losing the books. This was followed by lack of permission to access the library.

6.3 STUDENT ACHIEVEMENT BY FEEDBACK ON END OF TERM EXAMINATIONS

Given that the survey was conducted in July 2014, students were asked to mention all the tests they were exposed to in first term. The percentage distribution of the students by the kind of tests they did is shown in Table 6.06.

TABLE 6.06: DISTRIBUTION OF STUDENTS BY PERIOD OF TESTING IN THE THREE LEARNING AREAS

Tests Done	English Language (%)	Mathematics (%)	Biology (%)
End of Term	94.4	95.1	94.6
Mid of Term	66.9	66.8	66.4
Beginning of Term	54.9	55.3	54.5
Topical Tests	22.1	27.2	22.9
Monthly Test	14.2	15.3	13.4
Weekly Test	13.9	15.0	12.1
Other (Daily, Contest, Random tests)	3.3	3.2	1.7

Results show that several schools administer a number of tests to their students in a term. Majority of students did 'End of First Term' tests, followed by 'Mid Term', 'Beginning of Term' and 'End of Topic' tests, among others.

Furthermore, students were asked if the subject teacher provided them with corrections of the 'End of first term' examinations. Over three quarters of those interviewed mentioned that the teacher made corrections of the End of Term Examinations: Mathematics, 82.6%; Biology, 78.4%; and English Language, 80.7%.

The results of association between provision of feedback and level of student achievement are presented in Table 6.07.

TABLE 6.07: PERCENTAGE OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY BY EXAMINATION FEEDBACK

	Whether exam was corrected	
Learning Area	Yes	No
English Language	50.3	43.4
Mathematics	41.7	32.9
Biology	20.0	19.7

The level of proficiency of students who received feedback in Mathematics was significantly better than those who did not receive feedback. The differences were not significant in Biology and English Language.

6.4 STUDENT ACHIEVEMENT BY PARENTAL INVOLVEMENT

The students interviewed were asked if their parent or guardian ever visited them during the first term, and whether the parent or guardian provided for certain scholastic materials. The head teachers of the interviewed students gave the amount of school fees contributed per term for each child. The association between these parent factors and student achievement are subject matter of the subsequent sub sections.

6.4.1 Students Achievement by Parent Visits at School

S 2 students were asked to mention if their parent or guardian ever visited them at school in the term that had ended in April 2014. Sixty nine percent (69%) of the respondents were visited at school by their parents or guardians.

The percentage of S 2 students rated proficient in English Language, Mathematics and Biology by parental visit at school is shown in Table 6.08.

TABLE 6.08: PERCENTAGE OF STUDENTS RATED PROFICIENCY IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY BY PARENTAL VISIT AT SCHOOL

Learning Area	Whether parent visited at school	
	Yes	No
English Language	51.7	43.0
Mathematics	21.8	16.5
Biology	42.9	34.9

The results show that parental visit has a significant bearing to the proficiency of students in Mathematics and English Language, except for Biology whose performance is confounded by other factors such as lack of teachers and even inadequate teacher competence (UNEB, 2011).

The students were asked to give the reasons for their parents' or guardians' visits. The distribution of the students by reasons for parental visits is given in Table 6.09.

TABLE 6.09: DISTRIBUTION OF THE STUDENTS BY REASONS FOR PARENTAL VISITS

Reasons why parents visit	Percentage
Academic Performance	57.8
School Fees	53.1
Health	13.0
PTA Meetings	12.4
Visitation Day	11.2
Scholastic Necessities	1.1
Disciplinary Cases	0.9
OTHERS (Sports, Games)	0.8
Admission Letters	0.3

According to the students interviewed, parents mainly (57.8%) visited them at school to check on their academic performance, followed by issues concerning school fees such as part payment schedules (53.1%), students' health matters (13.0%), and attending PTA meetings, among others.

6.4.2 Students Achievement by provision of Lunch Meal and Scholastic inputs at School

6.4.2.1 Provision of Lunch Meal while at School

Of the S 2 students interviewed, 74.5%, had lunch while at school, whereas just about a quarter, 25.5%, did not have any form of lunch while at school. Noticeably, 2% of the students have to travel back home in order to have lunch. The percentage of S 2 students rated proficient in English Language, Mathematics and Biology by provision of lunch meal while at school is shown in Table 6.10.

TABLE 6.10: PERCENTAGE OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY BY PROVISION OF LUNCH MEAL WHILE AT SCHOOL

Learning Area	Provision of lunch meal while at school	
	Yes	No
English Language	52.9	36.7
Mathematics	44.7	26.6
Biology	22.7	12.4

Regardless of the learning area, students who had lunch while at school were found to be significantly more proficient in all the learning areas in comparison to those who never had lunch while at school.

6.4.2.2 Provision of Scholastic Inputs

Students interviewed were asked to state the scholastic items their parents provided. Table 6.11 describes their distribution by nature of scholastic inputs provided.

TABLE 6.11: DISTRIBUTION OF STUDENTS BY NATURE OF SCHOLASTIC INPUTS THAT PARENTS/GUARDIAN PROVIDED

Items provided	Percentage
Writing books	98.6
Pens and pencils	98.0
Uniforms	96.9
Mathematical Sets	87.7
Graph books	82.7
Calculator	77.1
Past question papers	26.5
Story books	24.1
Newspapers	22.5
Math textbooks	17.8
Biology textbooks	13.9

According to the S 2 students, over three quarters receive the following scholastic materials from their parents/guardians: writing books, 98.6%; pens and pencils, 98.0%; school uniforms, 96.9%; and mathematical set, 87.7%, among others. Noticeably, past question papers, story books, newspapers, Mathematics and Biology textbooks were the least of the items provided.

6.4.2.3 Association of student Achievement in English Language, Mathematics and Biology and Parental provision of Scholastic inputs

There was a significant association between achievement in Mathematics and provision of graph books and Mathematics textbooks. Students who had graph books and mathematical sets had significantly better achievement in Mathematics than those without these scholastic materials. The rest of the scholastic materials did not exhibit significant association with achievement in Mathematics.

There was a significant association between achievement in Biology and provision of graph books and scientific calculator. Students who were provided with graph books and scientific calculators attained better achievement in Biology than those without these requirements. The rest of the scholastic materials did not show significant association with achievement in Biology.

There was a significant association between achievement in English Language and provision of past papers and story books. Students who were provided with past papers and story books achieved better than those without these requirements. The rest of the scholastic materials did not demonstrate remarkable association with achievement in English Language.

6.4.3 Students Achievement by Parental school fees contribution

The head teachers of the sampled schools were, among other things, asked to indicate how much a parent pays for a S 2 student per school term. Evidence abounds that in 94.2% of the 378 schools, some amount of money is obtained from the parents in form of school fees. Table 6.12 shows the mean school fees contributed by parents by school ownership and USE status.

TABLE 6.12: MEAN SCHOOL FEES (UGANDA SHILLINGS) CONTRIBUTED BY PARENTS BY SCHOOL OWNERSHIP AND USE STATUS

SCHOOL OWNERSHIP AND USE STATUS	Mean	S.E
All Schools	155,380.70	14,995.45
Government	150,132.50	22,184.61
Private	159,153.10	16,510.84
USE	88,626.08	6,778.80
Non-USE	353,234.90	36,860.54
Government USE	92,462.25	9,035.53
Government Non-USE	534,692.20	65,122.45
Private USE*	80,034.03	9,335.30
Private Non-USE	266,189.10	30,581.67

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

The fees amount ranges from Uganda Shillings (UGX) 5000 to UGX.1,360,000 and an average of UGX.155,380.70 (SE=14,995.45). On average, schools implementing the USE policy collect from parents UGX.88,626.08, while those not implementing USE charge UGX. 353,234.90. Private schools in partnership with government (PPP) to implement USE charge UGX. 80,034.03 (SE=223.53) and government schools implementing USE charge on average UGX. 92,462.25 (SE=230,931.2) which is significantly more than the PPP schools.

However, these figures demonstrate that, despite the claim of *free-fee*, parental education financing plays an important role. Worst still, the capitation grant paid to schools per learner per year is UGX.41,000 (US$ 15.77). This translates to US$ 5, which is merely one-sixth (on average) of what PPP schools receive from parents as school fees contributions per child per term (Ninsiima, 2014). Hence, parental education financing is undeniably substantial (Bray, 1996).

Table 6.13 shows that percentage of S 2 students rated proficient in English Language, Mathematics and Biology by amount of school fees paid by the parents.

TABLE 6.13: PERCENTAGE OF STUDENTS RATED PROFICIENT IN ENGLISH LANGUAGE, MATHEMATICS AND BIOLOGY BY AMOUNT OF SCHOOL FEES PAID BY PARENTS

Learning Area	Fees paid by parents per term (in Uganda Shillings)			
	0 -	100,000 -	200,000 -	300,000 -
English Language	37.9	49.9	56.4	86.3
Mathematics	28.5	48.8	50.5	69.7
Biology	14.1	17.8	30.7	47.6

On the whole, achievement of the students in English Language, Mathematics and Biology at lower secondary is a function of parental fees contribution. Those who actually pay more achieve better. For instance, whereas 37.9% of those whose parents paid between nothing and just under UGX.100,000 were rated proficient in English Language, the ones whose parents paid more than UGX.300,000 and were rated proficient more than doubled, 86.3%.

6.5 STUDENT ACHIEVEMENT BY TEACHER DEVELOPMENT INTERVENTIONS

The revised Education Sector Strategic Plan (ESSP) 2007-2015 underscores the significance of putting in place continuous in-service training to augment the quality of education constrained by the introduction of several policies like USE. To this effect, to boost the competencies of secondary school science teachers in pedagogy of Mathematics and Science, the government of Uganda and Japan instituted SESEMAT (Secondary School Science and Mathematics Teachers) programme. SESEMAT is open to all schools (government aided and private) and it focuses on innovations in teaching and learning of Physics, Chemistry, Biology, and Mathematics (MoES, 2008; Ssebunga-Masembe, *et al.,* 2013).

Table 6.14 is a display of the percentage of S 2 students rated proficient in Mathematics and Biology by three Teacher Professional Development (TPD) initiatives - Cyberspace solutions, SESEMAT and NAPE.

TABLE 6.14: PERCENTAGE OF STUDENTS RATED PROFICIENT IN MATHEMATICS AND BIOLOGY BY TEACHER TRAINING THROUGH CYBERSPACE PROJECT, SESEMAT PROJECT AND NAPE SEMINARS

Learning Area	Teacher Trained through Cyberspace project		Teacher Trained through SESEMAT project		Teacher Trained through NAPE Seminars	
	Yes	No	Yes	No	Yes	No
Mathematics	45.8	37.7	40.6	27.4	42.9	36.5
Biology	28.0	15.6	20.9	14.0	21.2	20.2

6.5.1 STUDENT ACHIEVEMENT BY TEACHER ATTENDANCE OF CYBER SPACE TRAINING

The percentage of students rated proficiency in Mathematics is not substantially associated with Cyber Space training. Students whose teacher(s) were exposed to Cyberspace trainings did not perform significantly better from those whose teachers were not yet trained. However, it should be noted that more students (45.8%) whose teachers were trained under Cyberspace project were rated proficient in Mathematics compared to 37.7% whose teachers did not attend the training.

The percentage of students rated proficient in Biology is substantially associated with Cyberspace training. Results showed that 28% of the students whose teachers attended Cyberspace trainings were rated proficient compared to 15.6% of those whose teachers were not yet trained.

6.5.2 STUDENT ACHIEVEMENT BY TEACHER ATTENDANCE OF SESEMAT TRAINING

Results showed 40.6% of the S 2 students whose Mathematics teachers ever attended training through SESEMAT were rated proficient compared to 27.4% whose teachers were not trained.

The achievement of S 2 students in Biology is not outstandingly associated with training of the Biology teachers in SESEMAT. Although the difference is not significant, 20.9% of the students whose Biology teachers attended SESEMAT training were rated proficient in Biology compared to those (14%) whose teachers did not attend.

6.5.3 STUDENT ACHIEVEMENT BY TEACHER ATTENDANCE OF NAPE FEEDBACK SEMINARS

The achievement of S 2 students in Mathematics and Biology does not vary greatly with whether their teacher has ever attended NAPE feedback seminars or not. However, it should be noted that more students whose teachers attended NAPE seminars were rated proficient in Mathematics (42.9%) and Biology (21.2%) compared to those students whose teachers did not attend (36.5% and 20.2%, respectively).

6.6 CONCLUSION

To this end, evidence abounds that textbooks availability and use enhances learning achievement. Therefore, barriers such as fear of students to lose textbooks and unproductive restriction to access the textbooks need to be addressed.

It is theoretically expected that students who receive feedback on their performance end up performing better. However, weak association was established. It is likely that the quality of score and feedback provision strategy are wanting.

Similarly, the results show that parental involvement in student learning through visits, provision of lunch while at school, financial support to complement the inadequate USE funds, as well as provision of learning support materials substantially facilitate learning. In this regard, realistic and coherent messages on parental involvement must reach the parents and all stakeholders.

Finally, teacher professional development interventions need to acquire a deliberate approach and national scope; after all, Cyberspace has favoured proficiency in Biology and SESEMAT has been associated with better proficiency in Mathematics.

Chapter 7

CONCLUSIONS, DISCUSSIONS AND RECOMMENDATIONS

7.1 OVERALL LEVEL OF ACHIEVEMENT

Results:

- While about a half of the students (49.3%) reached the defined proficiency level in English Language, 41.5% reached a similar rating in Mathematics and just about a fifth (20.5%) did so in Biology.

Reason:

- Classroom practices that focus on output instead of the process – formative practices.

Recommendations	***Responsibility Centre***
Teachers should use instruction methods that emphasize the acquisition of competencies.	DES, Head teachers, Teachers
Teaching should be considered as the imparting of skills/abilities to perform or do other than training learners to recall facts.	DES, Head teachers, Teachers
Learning should be looked at as the acquisition of the ability to perform or do and not the mere superficial recall or recitation of knowledge.	DES, Head teachers, Teachers

7.2 ACHIEVEMENT BY COMPETENCIES

7.2.1 ACHIEVEMENT OF STUDENTS IN VARIOUS COMPETENCIES OF ENGLISH LANGUAGE

Results:

Students were able to:

- Read texts and select appropriate information directly from the text to answer the questions.
- Write a composition with legible handwriting and relevant to the content.
- Use nouns, prepositions and adjectives correctly to make sentences.

Students had difficulty in:

- Reading a text, and answer questions requiring making inferences on the basis of information in the text.
- Writing impressive compositions using the correct punctuation and spelling.
- Writing a well sequenced relevant conversation.

Reasons:

- Teachers not exposing students to the skill of comprehension analysis (higher order thinking skills).
- Inadequate training in composition writing leading to inadequacies in composing texts.
- Inadequate knowledge of the attributes of different texts.
- Inadequate exercises given, marked and corrected, perhaps due to large class sizes.
- Lack of practice in spoken conventional English as a result of over-use of the mother tongue, slang and shortened word texts.

Recommendations	***Responsibility Centre***
Teaching and classroom assessment should balance between low order and high order thinking abilities.	DES, Head teachers, Teachers
Language teaching and training should emphasize the training of learners in the skills of writing different texts.	DES, NCDC, Head teachers, Teachers
Learners should be exposed to the attributes of good written texts.	DES, NCDC, Head teachers, Teachers
Extensive reading by teachers and students.	Head teachers, Teachers

7.2.2 ACHIEVEMENT OF STUDENTS IN VARIOUS COMPETENCIES OF MATHEMATICS

Results:

Students were able to:

- Compute mean of ungrouped data.
- Measure length accurately.
- Workout values of linear functions.
- Represent a relationship using set theory symbols.
- Solve problems involve shopping.

Students had difficulty in:

- Solving discount problems.
- Funding the sum of a series.
- Applying the concept of HCF in novel situations.
- Stating the equation of the mirror line.
- Describing a given set.
- Identifying a side of triangle adjacent to a given angle.

Reasons:

- Some teachers are incompetent in some areas like set theory and Cartesian coordinates
- Teachers have inadequate knowledge in the concepts where students had difficulty.
- Lack of emphasis on basic concepts.
- English Language deficiency.
- Insufficient practice by the students.
- Teachers do not give adequate exercises to students, mark and correct.
- Lack of qualified Mathematics teachers especially in rural schools.

Recommendations	***Responsibility Centre***
Provide refresher courses.	MoES, Head teachers
Teach every concept in a logical manner: from simple to complex.	DES, NCDC, Head teachers, Teachers
Teachers should give the students sufficient exercises to enhance learning.	DES, Head teachers, Teachers

7.2.3 ACHIEVEMENT OF STUDENTS IN VARIOUS COMPETENCIES OF BIOLOGY

Results:

Students were able to:

- State the difference between animal and plant cells.
- Describe the life cycle of a housefly.
- State the economic importance of bees.
- State the functions of parts of a plant.
- State the components of a fertile soil.

Students had difficulty in:

- Constructing the carbon cycle.
- Constructing identification keys.
- Explaining what a tissue is.
- Explaining functions of petals to a flower.
- Describing an experiment to determine the percentage of water in a soil sample.

Reasons:

- Qualified Biology teachers are in very short supply in some schools.
- Laboratory practical lessons are initiated late in S 3 or even S 4 classes.
- Teachers conducting Biology lessons theoretically without using the "vast" laboratory, the environment around the school.
- Teachers themselves have problems with the dichotomous key.
- Dictation of notes.

Recommendations	***Responsibility Centre***
Encourage more students to do Biological sciences at colleges.	MoES, DEO, Head teachers, Teachers
Carry out a practical at the end of every concept.	Head teachers, Teachers
Reduce on part timing to allow Biology teachers increase the hours of contact.	MoES, DES, Head teachers
Affirmatively train more teachers of Biology and deliberately deal with retention mechanism.	MoES, TIET, PTCs, NTCs, Universities

7.3 ACHIEVEMENT BY GENDER

Results:

- Girls and boys performed at nearly the same level in English Language.
- Boys achieved significantly better than girls in Mathematics and Biology.

Reason:

- Still few role models. As mentioned in the NAPE 2012 report, during the 2011 survey, it was found that 39.6% of the teachers of English Language were female, while only 8.7% and 10.9% of the teachers of Mathematics and Biology, respectively, were females.

Recommendations	*Responsibility Centre*
Devise a strategy to help girls get interest in Mathematics and Sciences.	MoES, DEO, Head teachers, Teachers, Parents, PTCs, NTCs, Universities
Deliberately source for and recruit female teachers of Mathematics and Biology.	MoES, DEO, Head teachers, Teachers, Parents

7.4 ACHIEVEMENT BY SCHOOL OWNERSHIP AND USE STATUS

Results:

- Government non-USE schools performed best, followed by private non-USE, Government USE and then Private USE (PPP').
- Performance difference was greatest in Biology, followed by Mathematics and English Language.
- Less than a third of students in Private USE schools were rated proficient in Biology and Mathematics.

Reasons:

- The girls' performance lagged behind that of boys in either categories of school ownership and USE status across all subjects.
- The learning environment in most Government non-USE schools is better compared to other categories.
- There is intensive supervision and monitoring in most Government non-USE schools. More so many of them are boarding.
- High teacher and student absenteeism is very common especially in the USE schools.
- Many private providers with basically commercial interests entering the provision of education under the USE partnership arrangement.
- Lack of basic teaching necessities in many USE schools especially in the rural areas.

Recommendations	*Responsibility Centre*
Improve the learning environment in USE schools.	MoES, Head teachers
Devise strategies to combat teacher and student absenteeism.	MoES, CAO, DEO, parents, Teachers
Ensure strict supervision and monitoring of USE schools.	MoES, DES, DEO, Head teachers
Enforce the minimum requirement for setting up schools.	MoES, DEO
Involve the student in planning school activities and related goods.	Head teachers, Teachers, Pupils

7.5 ACHIEVEMENT BY SCHOOL PROGRAMME

Results:

- Achievement levels were higher in single-session than double session schools.
- Performance difference was greatest in Biology, followed by Mathematics and then English Language.

Reasons:

- Supervision and monitoring of students in double-session schools is difficult.
- Management of discipline of the group of students who study in the evening but have to come to school in the morning becomes a problem.
- There is not enough space for private study in private schools.

Recommendations	***Responsibility Centre***
Train students to manage their time and study.	Head teachers, Teachers, Parents, Pupils
Involve parents and community to help in managing the students when they are not yet in school or when they go home after their session.	Head teachers, Parents
Provide more structures for the students' private study and discussions at school.	MoES, Parents, Head teachers

7.6 ACHIEVEMENT BY SCHOOL FACTORS, FAMILY INVOLVEMENT AND TEACHER DEVELOPMENT INTERVENTIONS

7.6.1 ACHIEVEMENT BY SCHOOL FACTORS

Results:

- Students' achievement in English Language, Mathematics and Biology is significantly associated with their boarding status. Those who stay at school achieved best followed by those who stay at the hostel and least are those who come to school from home daily.
- Text book availability and use enhances learning achievement. Students who borrowed Mathematics or English Language textbooks attained significantly better proficiency than those who didn't borrow the corresponding textbooks, except for Biology where the difference in proficiency was not outstanding.

Reasons:

- Limited or no time for revision. Students who stay at home are involved in home chores in the morning and evening.
- Shortage of qualified Biology teachers to guide those who borrow the textbooks.
- Dictation of notes during Biology lessons.

Recommendations	***Responsibility Centre***
Barriers such as fear of students to lose textbooks and unproductive restricted access need to be addressed.	Head teachers, Teachers
Recruit more Biology teachers.	MoES, ESC, Head teachers

7.6.2 ACHIEVEMENT BY PARENTAL INVOLVEMENT

Results:

- More students who had lunch while at school were rated proficient in all the learning areas compared to those who never had lunch while at school.
- The results show that parental visit has a significant bearing to the proportion of students rated proficient in English Language and Mathematics, except for Biology.

- Provision of requisite learning materials substantially facilitates learning. Graph books and textbooks were found to be the requisite materials for higher achievement in Mathematics; graph books and scientific calculators for Biology; and past papers and story books for English Language.
- Achievement of the learners in English Language, Mathematics and Biology at lower secondary is a function of parental fees contribution. Those who actually pay more achieve better. For instance, whereas 37.9% of those whose parents paid between nothing and just under UGX.100,000 were rated proficient in English Language, the 86.3% of the ones whose parents paid more than UGX.300,000 were rated proficient.

Reasons:

- Low level attention during afternoon lessons due to hunger.
- Parental visits had no bearing on the performance in Biology because the learning area is confounded by other factors such as lack of teachers and even inadequate teacher competence (UNEB, 2011).
- Requisite scholastic materials enhance the learning of otherwise complex concepts.

Recommendation	***Responsibility Centre***
Realistic and coherent messages on parental involvement should reach the parents and all stakeholders.	MoES, LC V, CAO, DEO, Head teachers

7.6.3 ACHIEVEMENT BY TEACHER DEVELOPMENT INTERVENTIONS

Results:

- Students whose Mathematics teachers were exposed to Cyber Space trainings did not perform significantly different from those whose Mathematics teachers were not yet trained in Cyber Space solutions. However, the percentage rated proficient in Biology was significant.
- The achievement of S 2 students in Mathematics or Biology did not vary greatly with whether their teacher has ever attended NAPE feedback seminars or not.
- Students whose Mathematics teachers ever attended training through SESEMAT performed significantly better than those whose teachers were not trained through SESEMAT. However, the performance is different with regard to Biology.

Reasons:

- There are many opportunities for demonstrating Mathematics concepts using easily available resources in and around Uganda schools. Moreover, the achievement level of Mathematics teachers is not seriously wanting, 70% proficient with mean score of 82% (NAPE, 2011), compared to Biology (61%).
- For Biology, this pattern of results is likely, because the Cyber Space project offers the occasion to animate demonstrations that would not be possible with the limited laboratory facilities in some schools and therefore focusing on subject content.
- There is a commonly held view that SESEMAT trainings emphasize more on lesson preparation and teaching techniques which are known to anecdotally be inadequately used by many of our Mathematics teachers.
- It was also observed by Ssebunga-Masembe *et al*., (2013) that there is discontent with the timing of the SESEMAT training and its imposition on head teachers which then trickles to science teachers and impacts negatively on learning opportunities.

- As for NAPE seminars, the inconsequential influence on students' proficiency rates could be attributed to the fact that the target seminar participants are not consistent; sometimes it is teachers and other times the head teachers who are invited. Equally the duration of the seminars is very short and the facilitators may not necessarily be subject experts.

Recommendations	***Responsibility Centre***
Teacher professional development interventions need to acquire a deliberate approach and national scope, after all, Cyberspace has favoured proficiency in Biology and SESEMAT has been associated with better proficiency in Mathematics.	MoES, Head teachers, Teachers
NAPE seminars should be attended by all the major stakeholders at the school level.	UNEB, Head teachers
The duration of NAPE seminars should be increased. In this way, NAPE will conduct action oriented seminars.	UNEB, Donors

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