

Improving effectiveness of Education Service Delivery

Impact Evaluation under the Tanzania SEDP II Project

Baseline Report

Preliminary, please do not cite without Authors'¹ Permission

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INTRODUCTION

The impact evaluation (IE) has been designed to rigorously evaluate performance-based incentives for teachers and schools. Its main objective is to guide the design and implementation of performance-based non-monetary incentives for teachers under Government's prioritization program titled Big Results Now in Education (BRNed).

Under this pilot incentive program, schools were divided into homogeneous groups based on geographic sub-area and performance at baseline (4-8 schools, with an average of 6, per group). Within each group, the top three schools with the highest index score (which combines the average score with the average gain in scores relative to baseline across three subjects) are scheduled to receive widely publicized recognition awards. In addition, the intervention will have a subject specific recognition award given to the best three teachers in a particular subject within the homogenous group.

The original design also included experimentation with school report cards. However, based on Government consultations this treatment arm was dropped and replaced with a student-incentive treatment. The rationale behind this change is as follows:

- Ministry of Education has requested comprehensive policy-guidance on the potential use of non-monetary incentives – including for teachers, schools, and students.
- There is lack of consensus around potential use and design of school report cards.
- Under the BRNed program, several types of accountability interventions are under consideration. The IE team is participating in these discussions.

The treatment arm on student incentives is designed to test whether, and to what extent, the impact of teacher performance awards is augmented by providing performance-awards to students at the same time. The underlying rationale is to find mechanisms to align the incentives of students and teachers so that they work together towards the same goal.

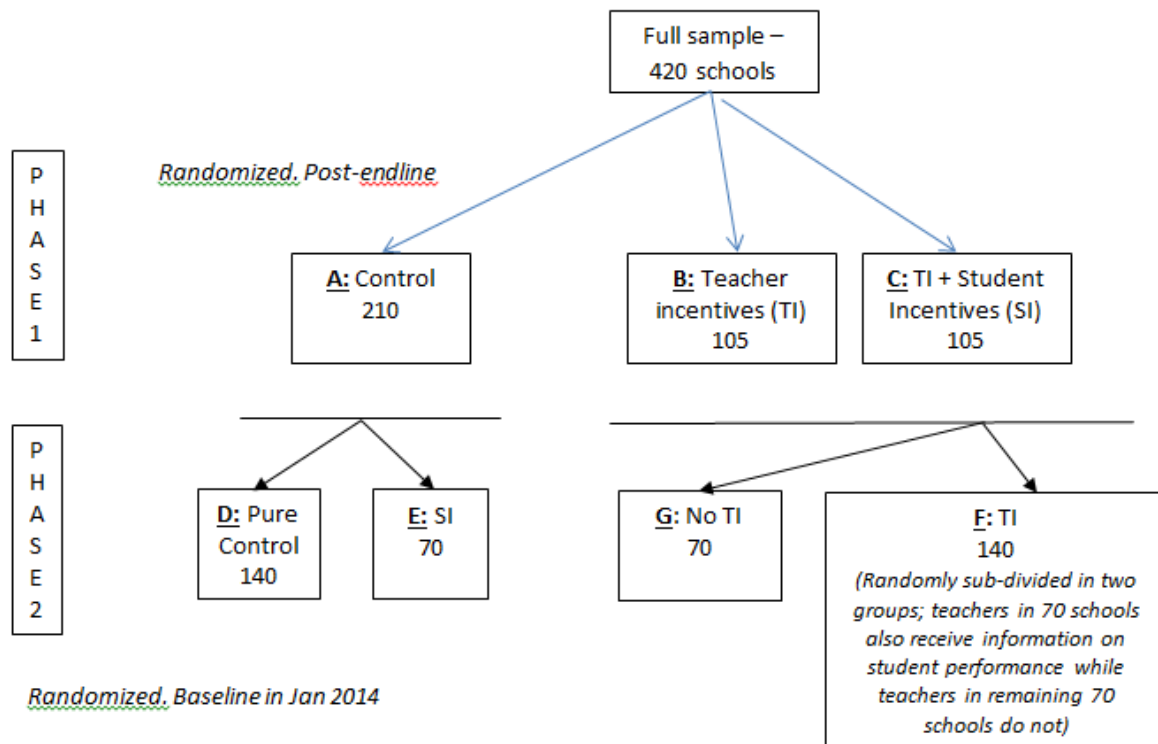
Student awards will be given to the most improved student in each student incentive school, averaged over Kiswahili, English, and Math. Prizes will also be awarded to the second and third most improved student in each school. These awards will be in the form of tablets, books, and certificates/medals.

In addition, in the second year of implementation, there are two different features: 1) a pure Student Incentive group and 2) half of the Teacher Incentive group receives information on student performance and feedback suggestions. (is the TI + Feedback still valid).

IMPACT EVALUATION: METHODOLOGY

The IE is being carried out in five regions² and 420 schools (public and private). Sampled schools have been randomly assigned to one of four groups of schools³, as illustrated in the graph below:

² The schools remain the same as the original design but some schools were moved into new politically divided regions.



OVERVIEW OF DATA COLLECTION

Baseline data was collected in from March to April 2013. Details below

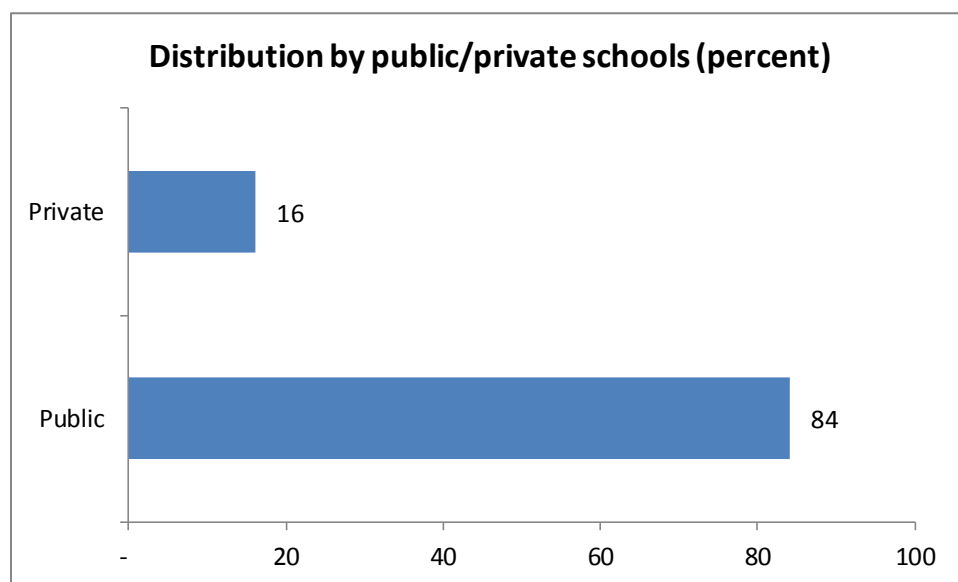
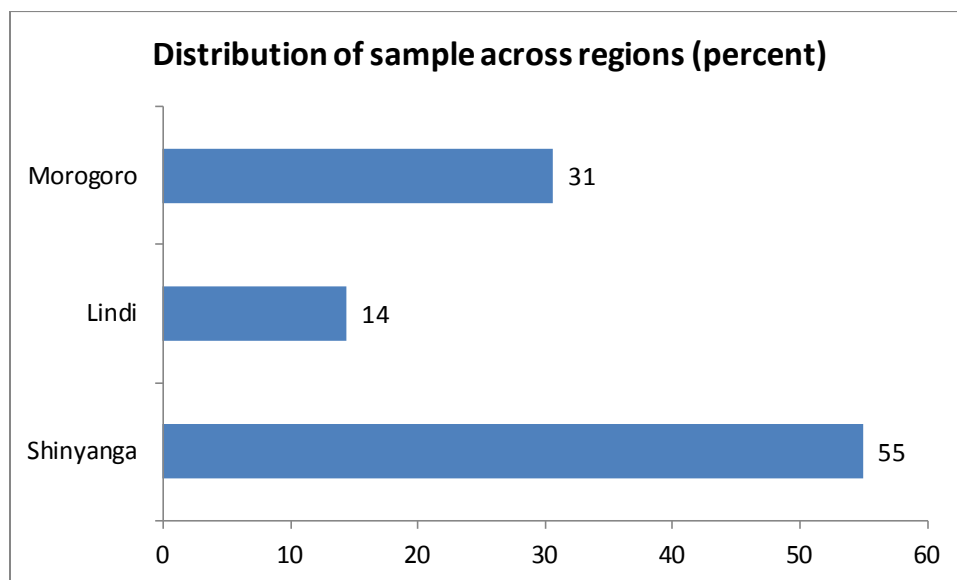
SCOPE

- 409 schools were visited, data collection was successful with 396 schools
- The purpose of the baseline visit was to:
 - Administer baseline student tests in English, Math, and Kiswahili
 - Create detailed student and teacher rosters (including contact information) for Form 3 students
 - Follow up on teacher and headmaster surveys by administering s similar but shortened set of question as last year.

COVERAGE

³ Random assignment avoid selection bias and ensures that groups will be fully comparable in statistical terms in terms if their observable and unobservable characteristics.

Our sample comes from 396 schools from the three regions of Tanzania Shinyanga (further split into Simiyu and Geita), Morogoro and Lindi. The sample as seen below is not uniformly distributed with the largest percent in Shinyanga region (55 percent) and the lowest coming from Lindi region (14 percent). In our sample around 84 percent of schools are public schools.



DATA COLLECTION

- Data Collection dates: March to April 2014
- Mode: Face to face interviews
- Collectors: Trained enumerators from the hired data firm: Ipsos-Synovate Tanzania

VALIDATION OF IE DESIGN (BALANCE TESTS)

Balance Test

As mentioned earlier in the introduction we have undergone a randomized control trial and our sampled schools have been randomly assigned to one of the four treatment groups or a control group. These groups are coded as follows: TI (Teacher Incentives); SI only (Student Incentives); No TI (No incentives - these schools in phase 1 were provided incentives but are not provided any incentive in phase 2) and Pure Control groups.

We perform the regression of the selected characteristics on the three indicators for TI, SI and No TI and provide the p value from the regression in the following table. We can deduce from the table by looking at the p value that the treatment and control groups are balanced.

Variable	1
Region	0.953
Public vs. Private Schools	0.540
Gender of the headmaster	0.476
Age of the headmaster	0.432
Headmaster teaches regular classes	0.181
Headmaster has training in school management	0.846
Headmaster rewards teacher who perform better	0.971
Headmaster belongs to a teacher union	0.572
School has electricity	0.963
School has generator	0.763
Number of working toilets	0.678
Number of separate working toilets for girls	0.891
Number of separate working toilets for teachers	0.995
School receives capitation grant from the government	0.496
Schools receives other grants from the government	0.814

In the next table the reported results show the regression coefficients with stars showing their significance level as per conventional norm (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). The regression are done with the standardized test scores in different subjects and the average score as independent variable and various groups as dependent variable. We will conduct two regressions with dependent variables as follows:

1. SI vs Pure Control (comparison between group E and D)

2. TI vs No TI (comparison between group F and G)

The clustering of standard errors in this case is important since a lot of students come from the same school.

Group	Standardized score in English	Standardized score in Mathematics	Standardized score in Kiswahili	Standardized average score
SI vs Pure Control	0.063	0.001	-0.014	0.022
TI vs No TI	-0.008	0.018	-0.050	-0.018

When we look at the balance tests we find in most of the variables the p - values do not indicate significance. More over in robust regression analysis, regression coefficients are not significant hence providing further proof that the various groups are balanced.

NEXT STEPS

Before the baseline, the teacher awards were held to reward the teachers and schools that had the most improved performance. Representatives from all the treatment schools were invited to ceremonies in each region. The winners were announced and prizes and certificates were presented by government officials.

Subsequent to the baseline, the following steps have been/are being carried out:

- Student awards (August): the awards are held individually at each Student Incentive school. The top three most improved student of the Form 3 class tested last year will receive prizes and certificates.
- Unannounced visit (October): the unannounced visit round will be held in October this year. The goal is to observe the qualitative changes in teaching and schools closer to the endline tests.
- Endline tests (November): all students will be assessed again with the three subjects of Kiswahili, English, and Math. Other information such as student and teacher attendance will also be collected.
- Report to Ministry of Education on baseline (August)
- Report to Ministry of Education on unannounced visits and endline (March 2015)

- Announcement of awards (Jan-Feb 2015)

SIGNIFICANT RISKS TO IE DESIGN

Given that baseline tests have been administered and student award ceremonies are being planned, at present there appear to be no significant risks to IE design. Information from endline data collection and unannounced visits have been shared with the Government.

BASELINE CHARACTERISTICS OF THE SCHOOLS AND THEIR COMPONENTS

In this section we provide an overview of the main features of the schools and its components. We will offer insights on the school characteristics, characteristics of the headmaster, teachers provision among other important components.

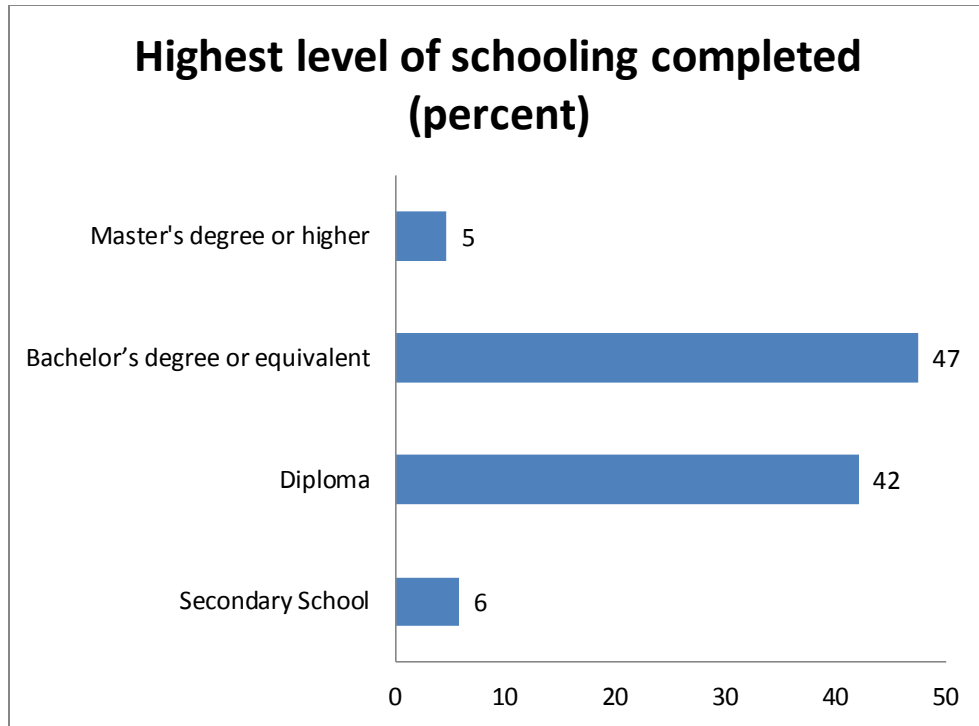
CHARACTERISTICS OF THE HEADMASTER

Characteristics of the headmaster

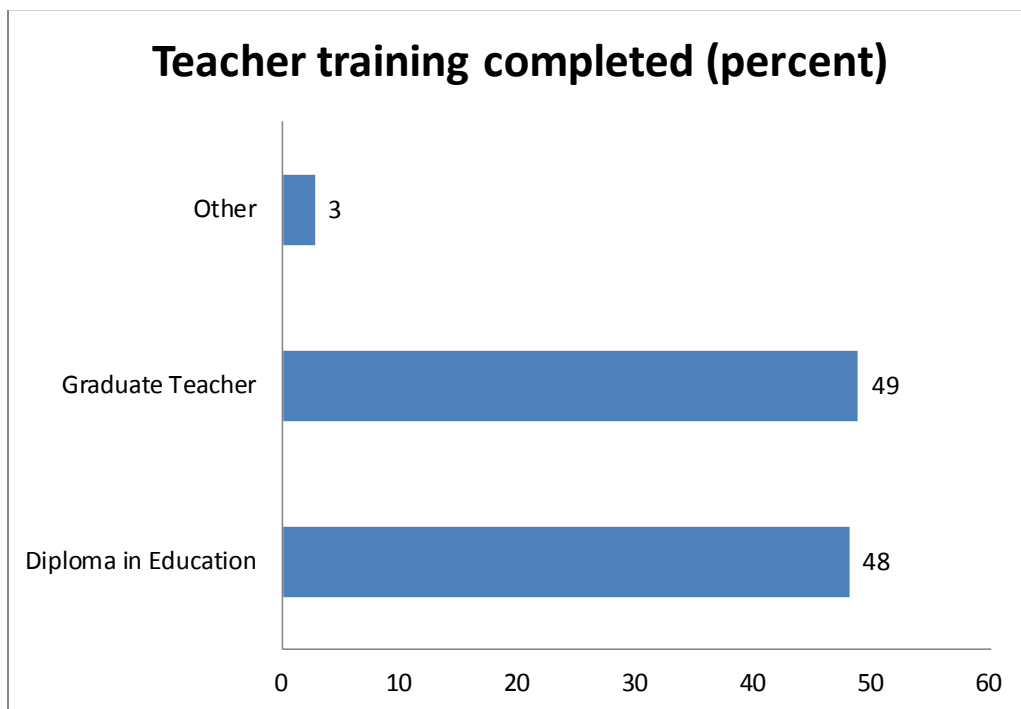
At baseline detailed information was collected from the headmasters of the various schools using the Headmaster survey. It provided insights on the headmaster and his running of the school. It also provided other important characteristics of the school which would be discussed later in various sub -sections. We find a majority of these headmasters are male and have themselves worked as teacher for a long time before being elevated to this position. Around 90 percent of these headmasters still continue to teach classes.

Headmaster Characteristics	Mean
Headmaster is Male	87.8%
Age of the headmaster	39.7
Belong to teacher's union	77.2%
Years in this position	4.1
Years worked as a teacher	9.3

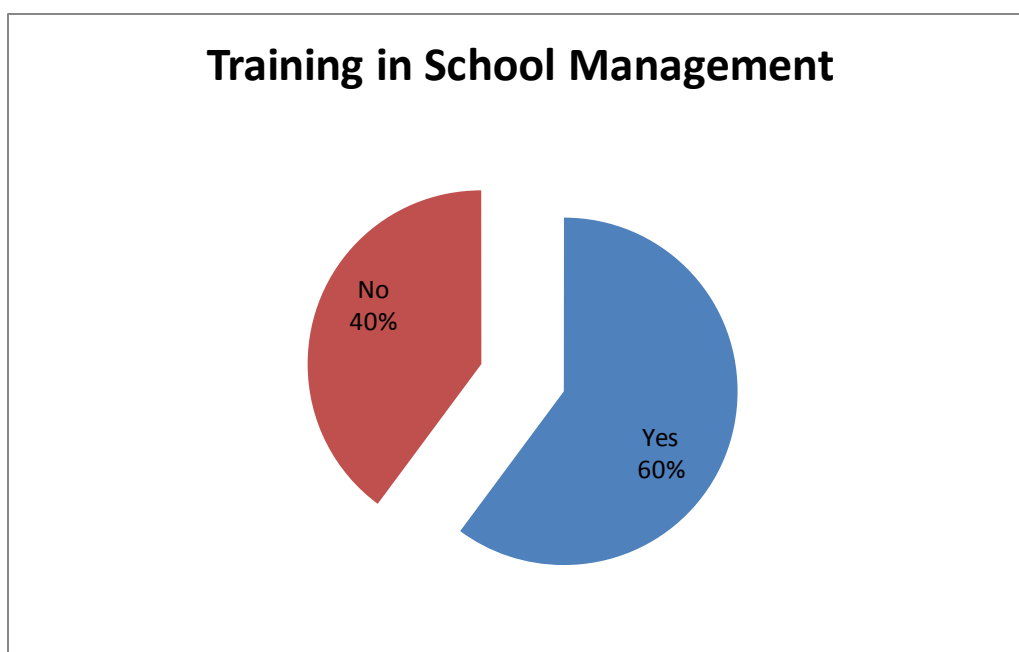
In terms of qualification we find that a significant number of them have a Bachelor's degree or a Master's degree (52 percent) although many of them have a diploma as well (42 percent).



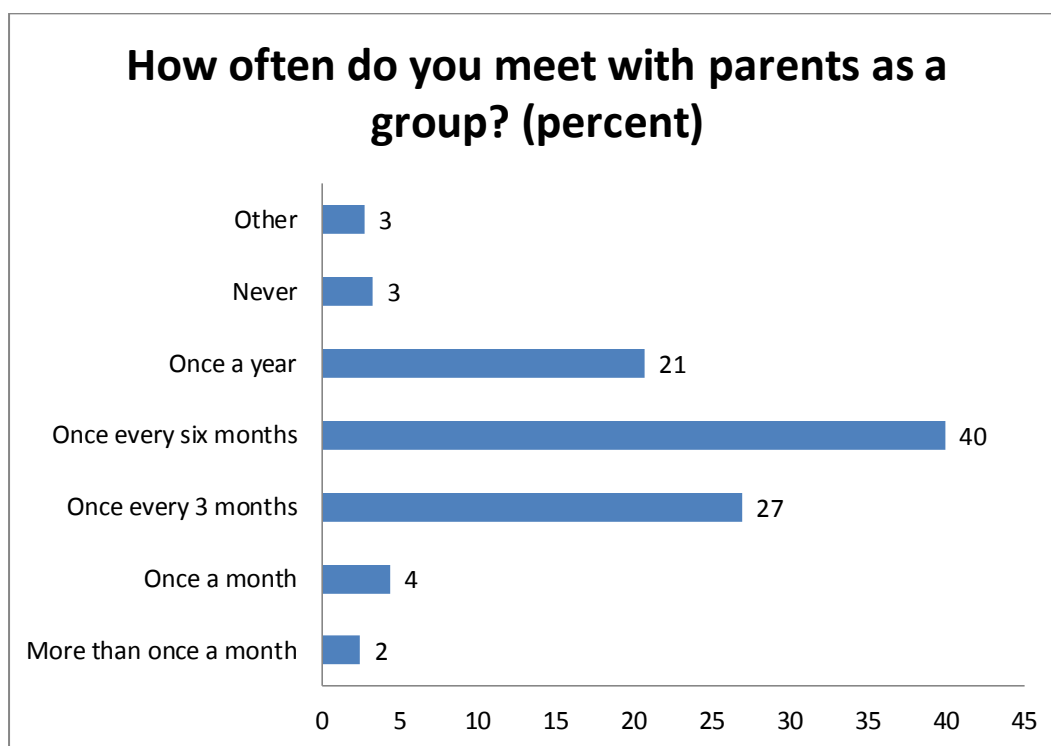
Considering that we found earlier that these headmasters have worked as a teacher for a long time it comes as no surprise that they have completed some form of teacher training. The distribution is as follows:



Even though a lot of the headmasters have undertaken some sort of teacher's training, on the question of having undertaken some sort training in school management around 60 percent confirmed that they have undergone such trainings.



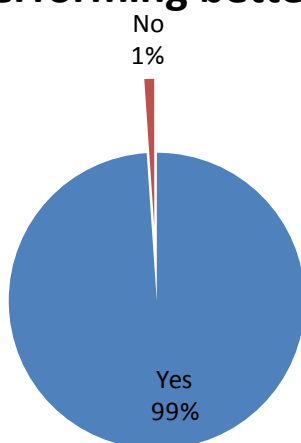
During the survey the headmasters were asked about how often they meet the parents as a group. Around 73 percent of them meet the parents at least once in six months with the whole distribution as follows:



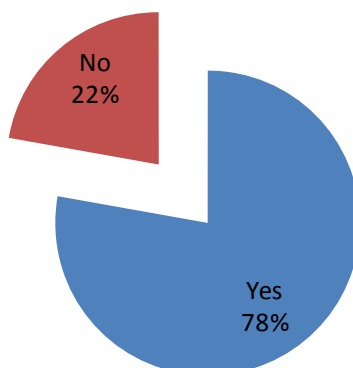
When asked about action they have taken towards a teacher who is being absent for an extended period without official clearance around 96 percent have taken some sort of action such as warned the teacher, submitted a written query, reported to district education officer, or reported to the owner of the school.

Almost of all them claim to know the teachers who are performing better and about 78 percent of them give rewards to the teacher who are performing better like financial rewards, formal recognition or informal locally organized congratulatory note.

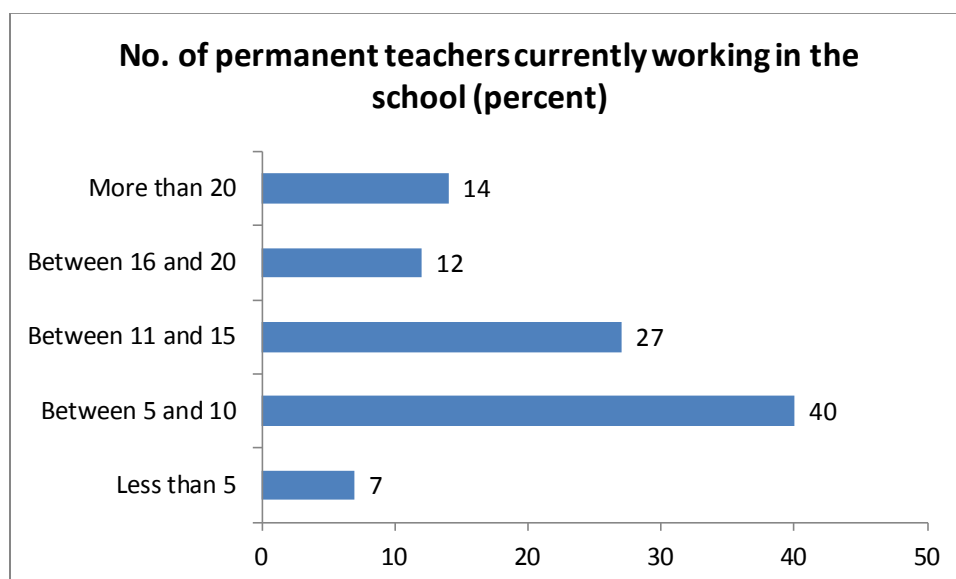
Do you know which teacher are performing better?



Do you reward teachers who perform better?



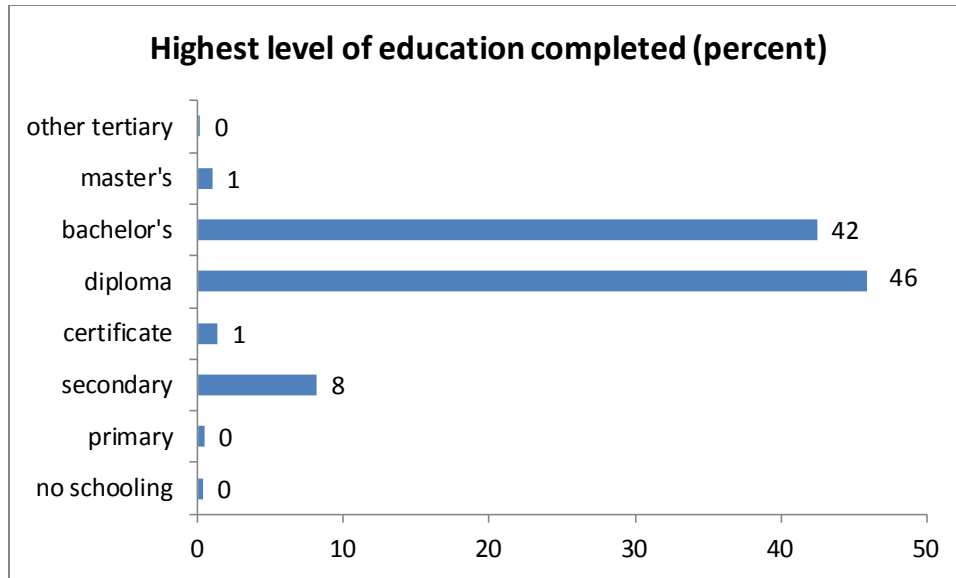
Information was collected on the teachers working in the school. We find that most of the schools have between 5 and 10 permanent teachers working in the school, specifically 40 percent.



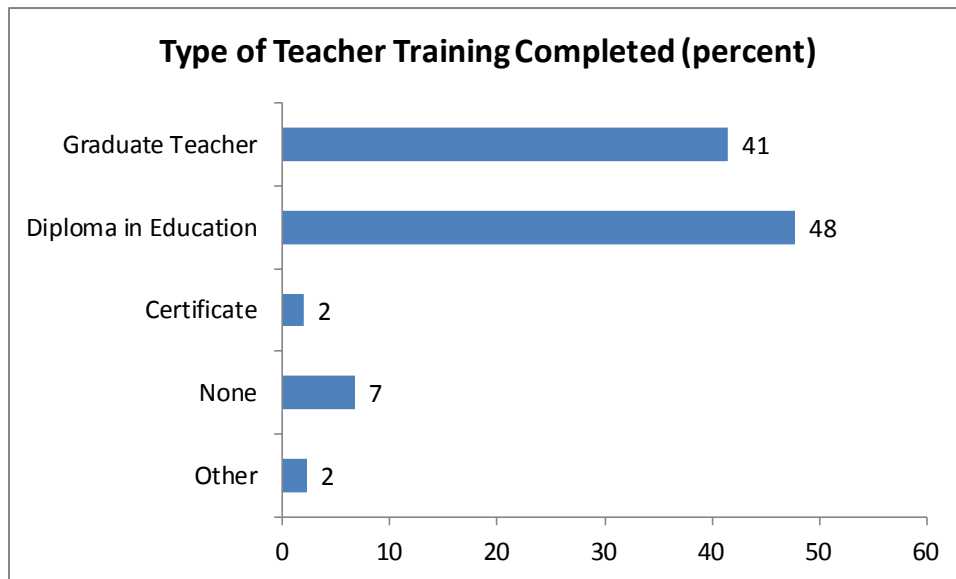
In order to collect information directly from teachers, a random sub-sample of teachers were interviewed from these schools. In total we have data from 1076 teachers. We find that 26 percent of teachers from the sample are female and most of them have some sort of teacher training. A majority of teachers were also able to show a scheme of plan of work for the term and to show a lesson plan for the week.

Information from Teacher Interviews	Mean
Age	30.5
Female	25.8%
Schooling less than university/other tertiary	56.3%
No teacher training	6.7%
No. of students per class	50.5
Show scheme of plan of work for this term	79.5%
Show lesson plan for week	62.2%

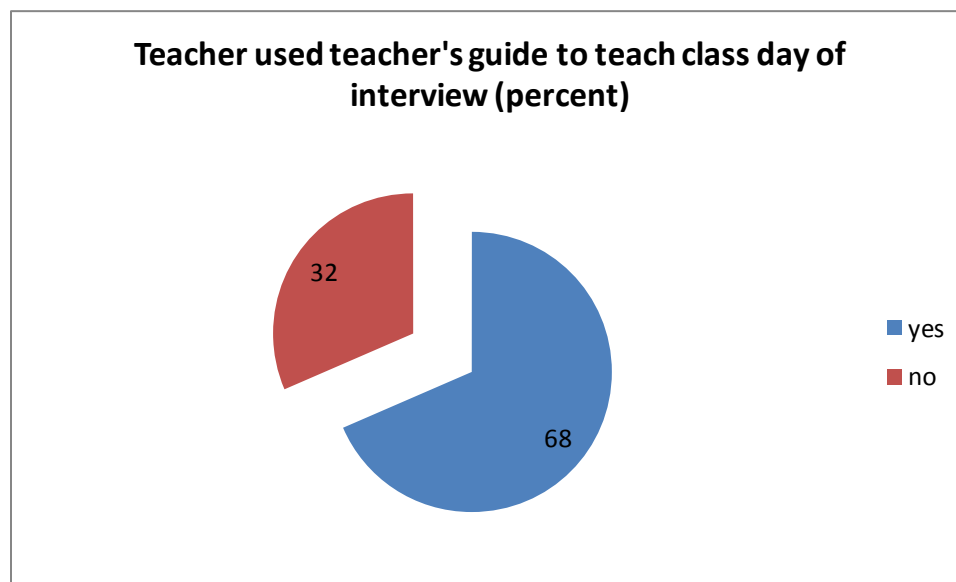
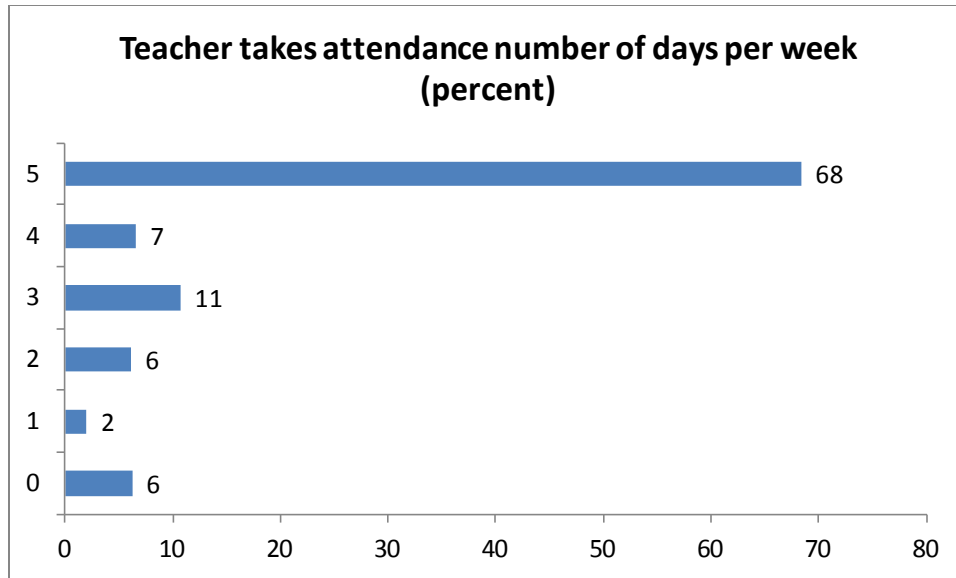
In terms of qualification we find a large amount of teachers have more than secondary level of education with 43 percent having finished a Bachelor's degree or a Master's degree.



A large number of them also have some sort of teacher training with 48 percent having a diploma in education. The distribution is as follows:



Around 65 percent of teachers claim to regularly take attendance while 68 percent of them had used the teacher's guide to teach their class on the day of the interview.



SCHOOL RESOURCES

With the baseline survey, attempts were made to collection information on how well-equipped and resourced these schools are. Out of our sample 3.5 percent have classes held in open due to lack of classrooms. There are 42 percent of schools who have electricity whereas there are 20 percent of schools who have a generator.

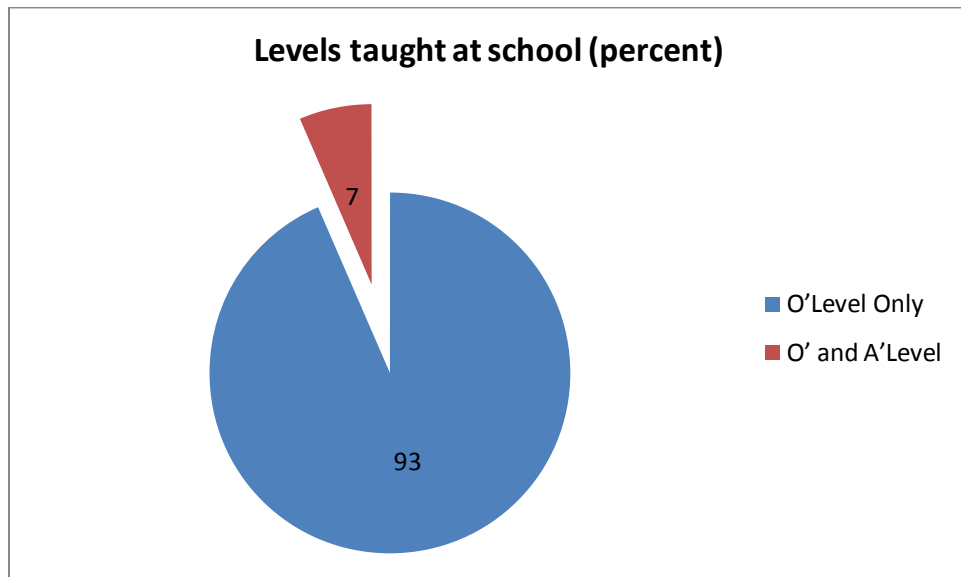
School Resources		Mean
Classes held in open due to lack of classrooms		3.5%
School has electricity		42.0%

School has generator	20.1%
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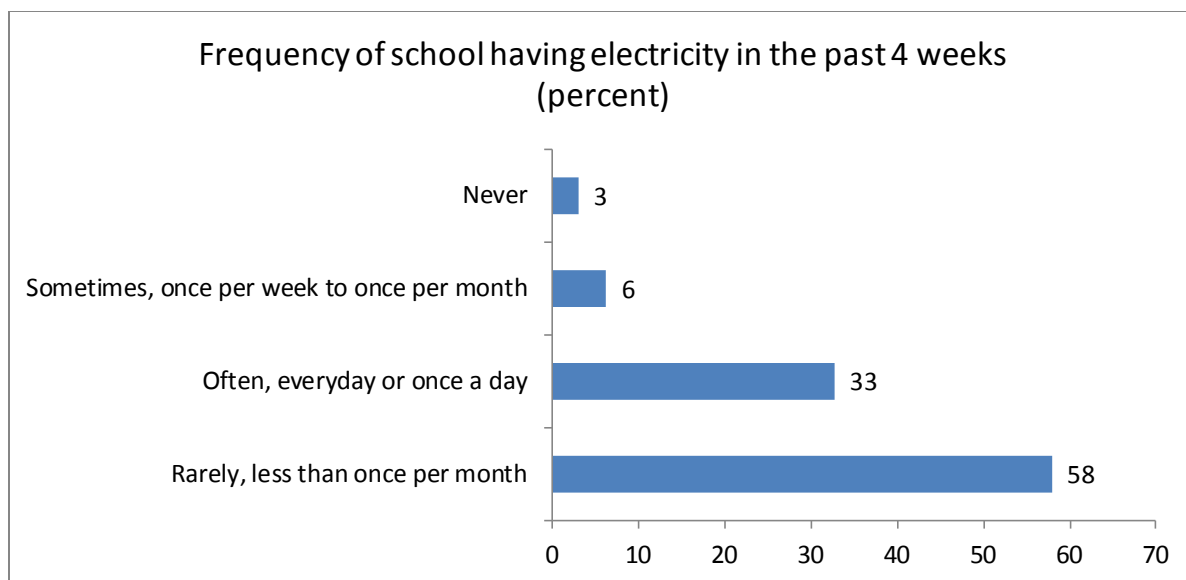
Average number of classroom in the school are 9.4 while number of working toilets are 12 out of which 45 percent are assigned to girls.

School Resources	Mean
Number of classrooms in the school	9.4
Number of working toilets in the school	12.4
Number of separate toilets for girls	5.6

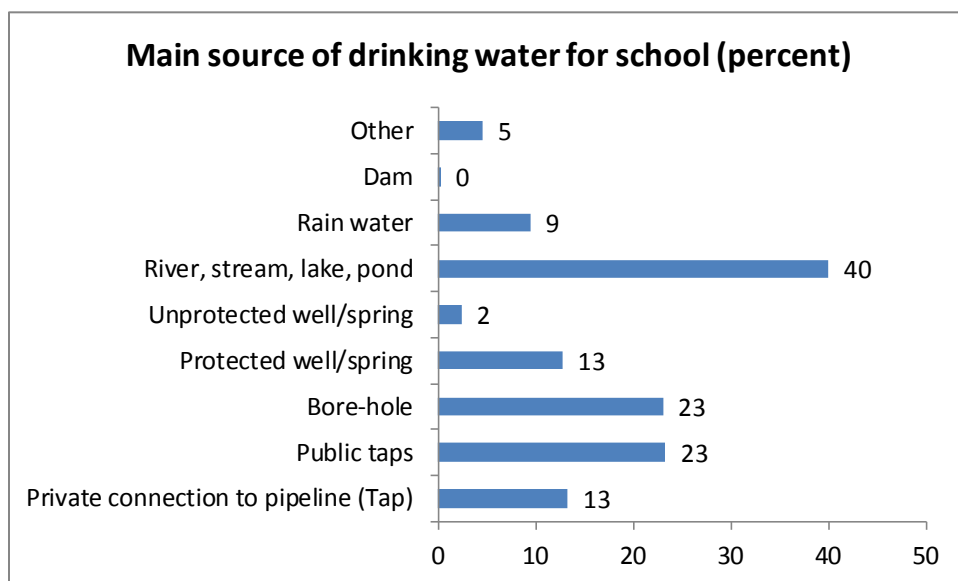
Out of our sample schools 93 percent of them teach O Levels only which the other 6.5 percent teach both O and A Levels



We found that among the schools which have an electricity connection almost 33 percent of them often have electricity. The distribution is as follows:



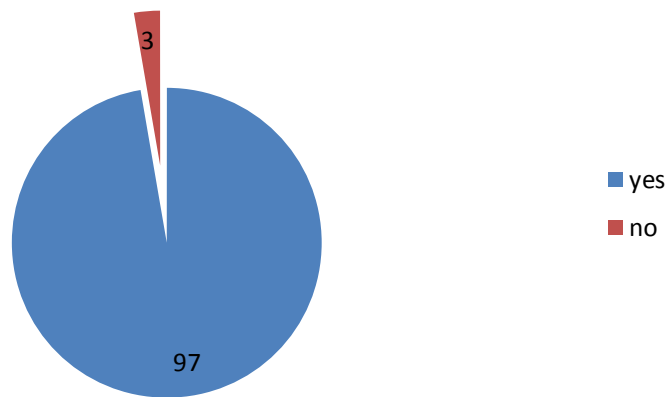
The following figure shows the distribution of main source of drinking water. We see that all the sources are used with about 13 percent of schools rely on public taps.



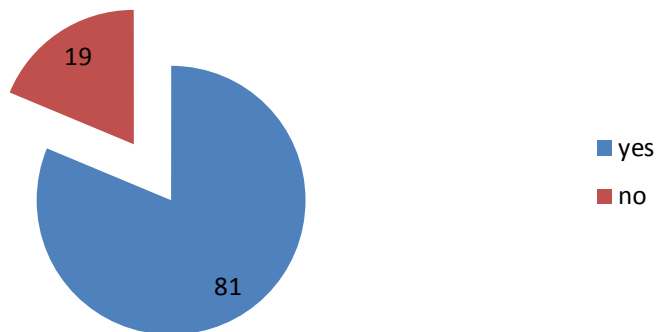
SCHOOL FINANCES

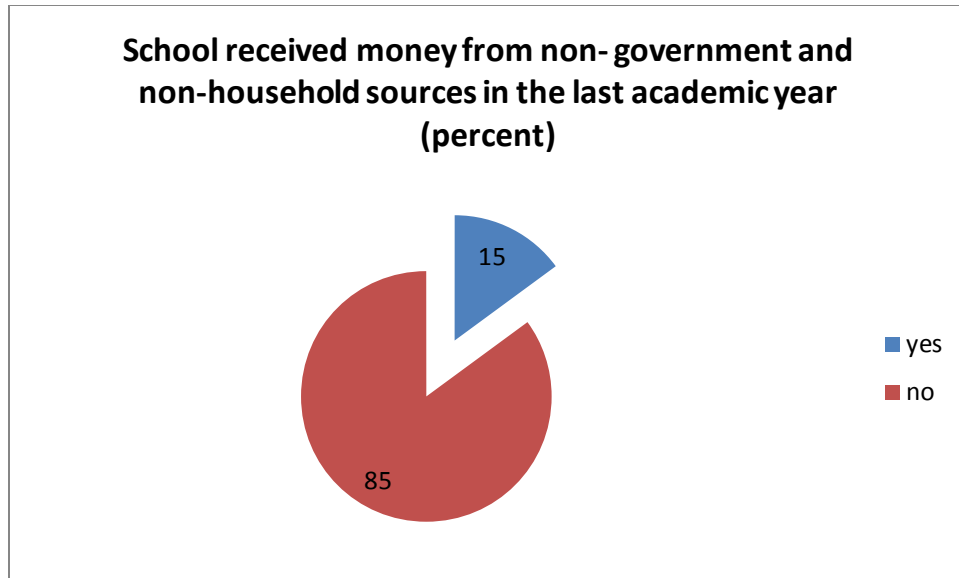
We can see from the figure below that around 97 percent of schools collect school fees whereas 15 percent of schools have received some sort of funding from non - governmental and non - household sources in the last academic year. 19 percent of the schools had received the capitation grant from the government in the last academic year.

School collects school fees from parents (percent)

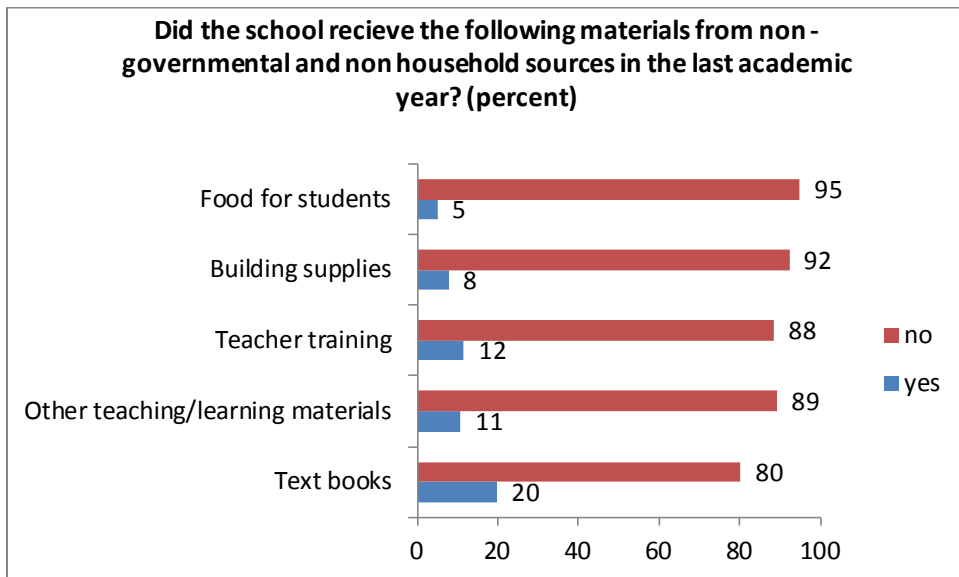


School receive Capitation grant from the government in the last academic year? (percent)





Besides money schools also received materials such as food for students, building supplies, training for teachers, teaching materials and textbooks from non - governmental and non-household sources. Around 20 percent of schools received textbooks from these sources which was the highest among such materials. The figure below shows the statistics.

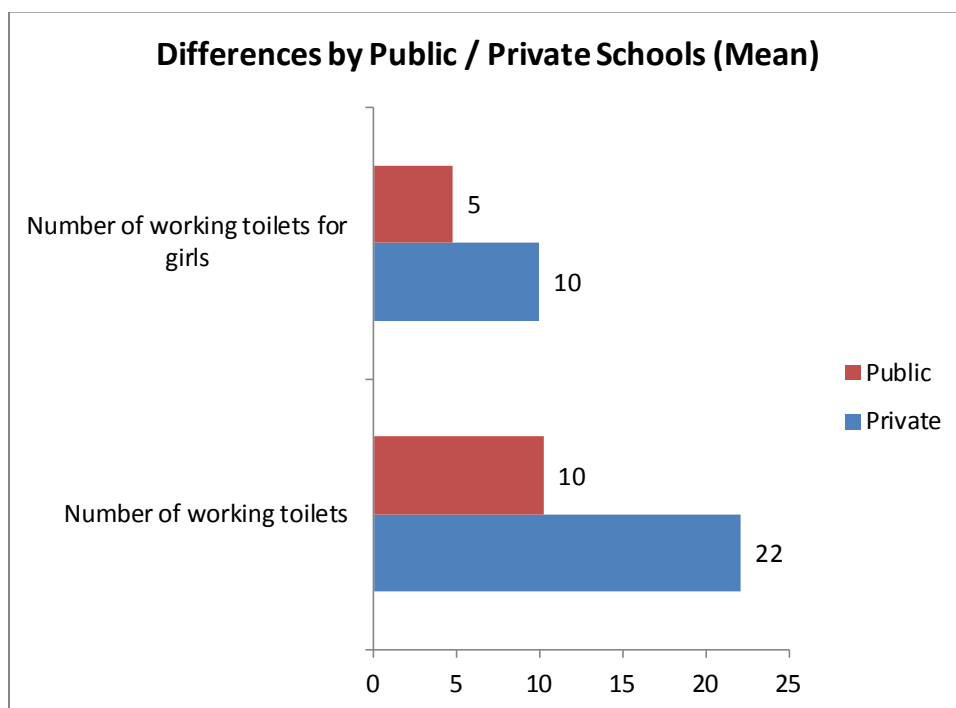
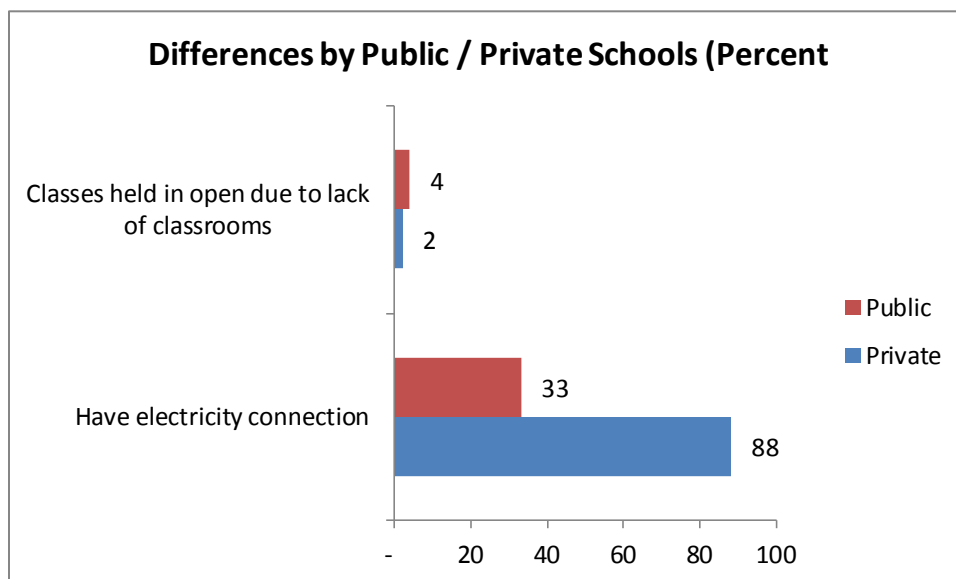


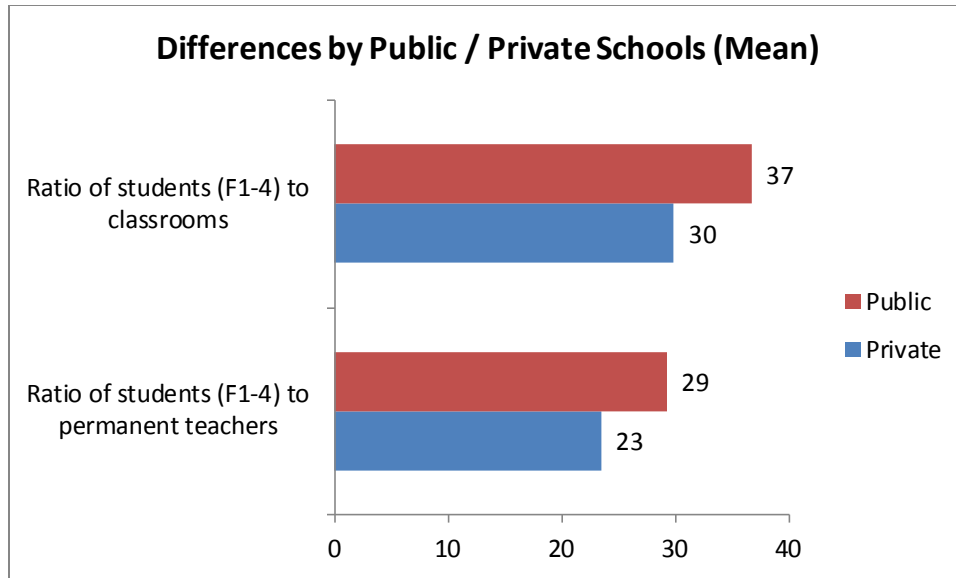
PUBLIC SCHOOLS VS. PRIVATE SCHOOLS

In this section we will give a brief overview about the differences between Public Schools and Private Schools. We will compare the differences among school resources and school management in the Public and Private Schools. In section 3 such a comparison would also be undertaken for the marks obtained the students.

88 percent of private schools claim to have electricity connection as compared 33 percent of public schools. Only 2 percent of private schools have classes in open as compared to 4 percent of public schools. On an average there are 22 working toilets in the private schools this number drops to 10 when we look for it in public schools. The same happens with average number of working toilets for girls which are 5 and 10 for public and private schools respectively.

The ratio of number of students (all students from Form 1 to Form 4) to number of permanent teachers is 29 for public schools whereas it is only 23 for private schools. Another ratio we looked at was the number of students (in Form 1 to Form 4) to number of classrooms. This results in 37 for the public schools whereas it is 30 for private schools.



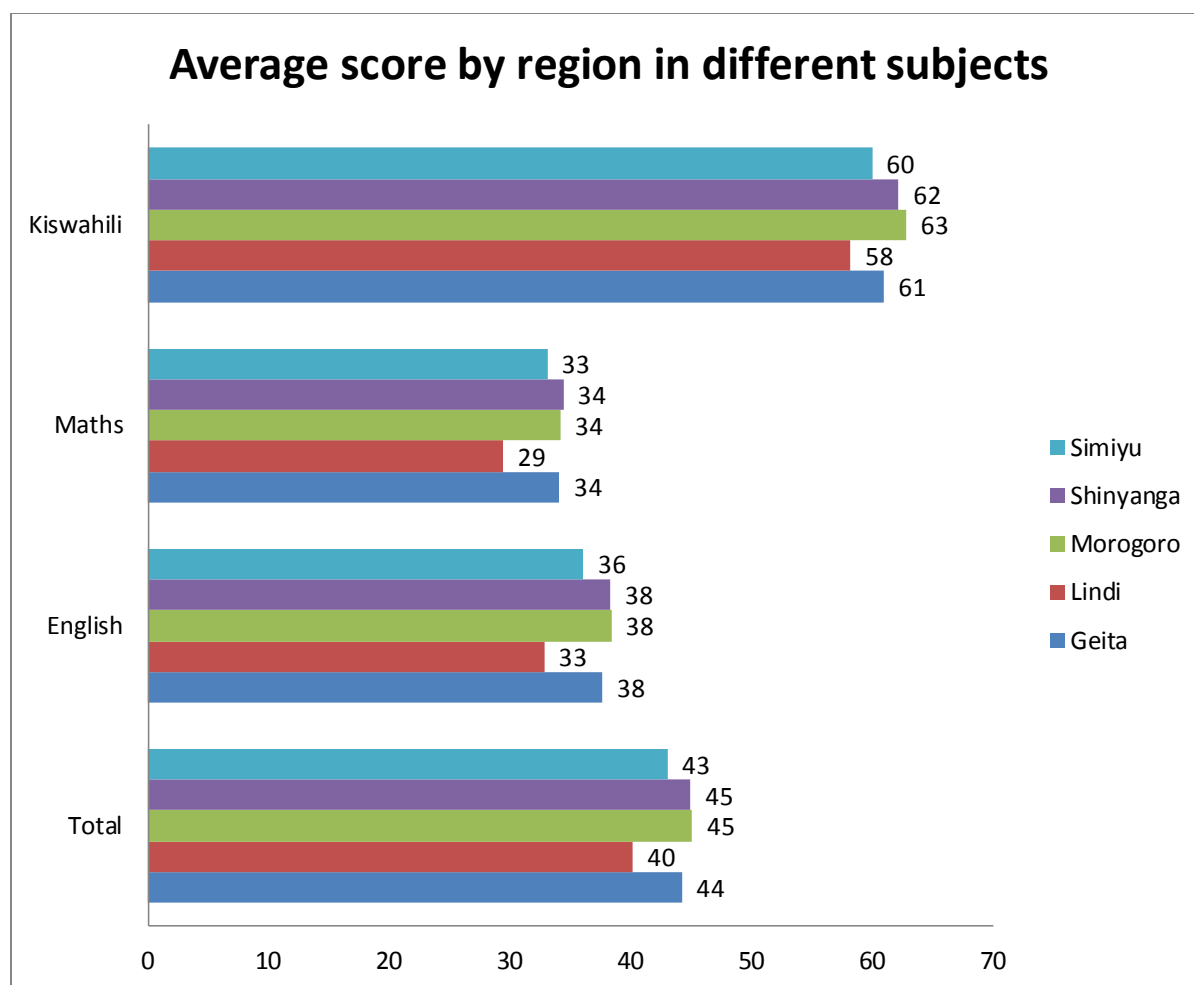


TEST SCORES

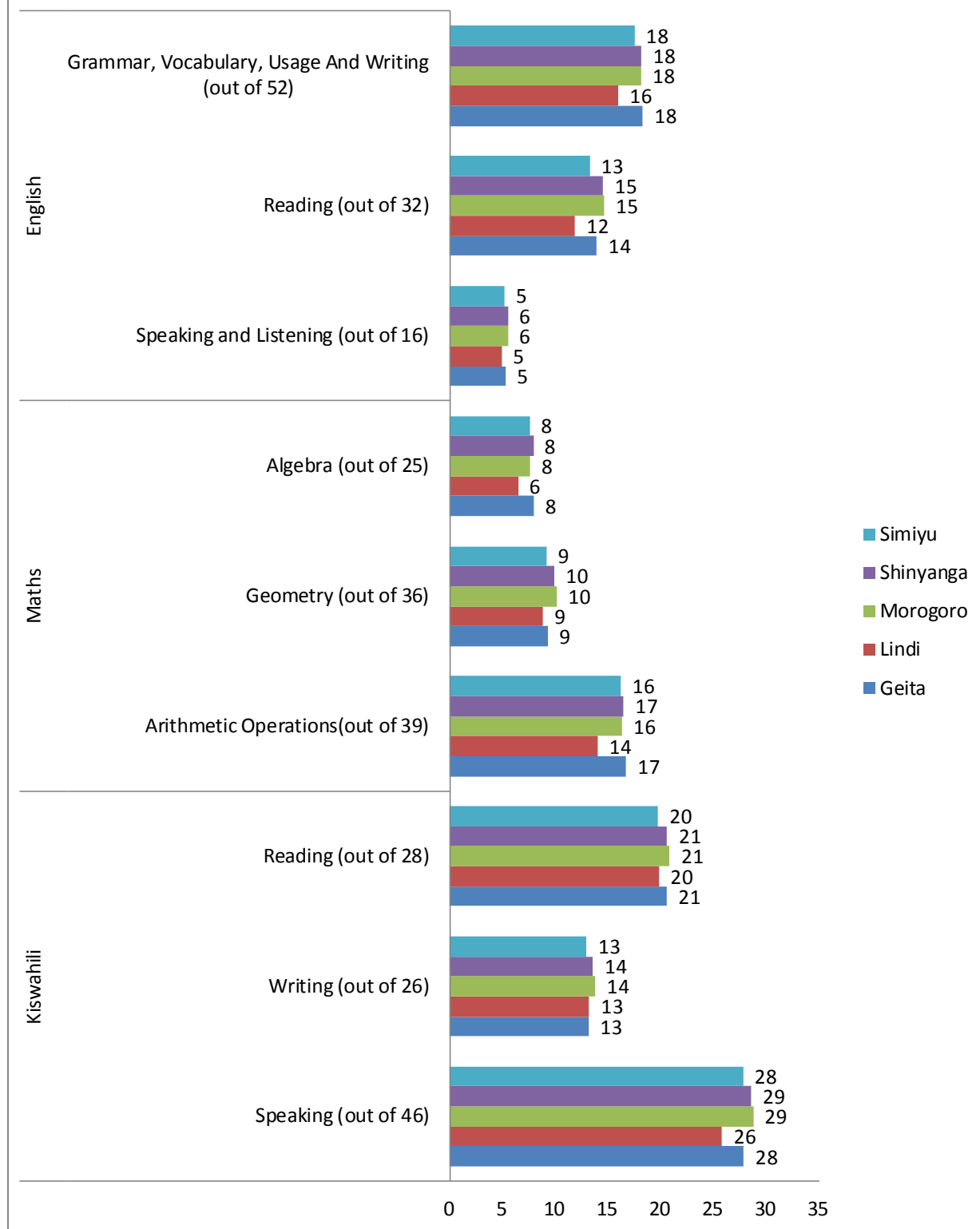
During the baseline we also have the test scores for English, Mathematics and Kiswahili for over 25000 students from our sample of schools. It was done to get a sense of command students have in these three important subjects. In Mathematics students took a test which comprised of questions on Geometry, Algebra and Arithmetic Operation. In English the test comprised of three sections on Reading, Speaking and Listening and then the last section was based on Grammar, Vocabulary, Usage And Writing. While Kiswahili had sections on Speaking, Reading and Writing. They were then allotted a total score which is the average score of all the three subjects.

Score by Region

Students were tested in English, Mathematics and Kiswahili in five regions namely: Simiyu, Shinyanga, Morogoro, Lindi and Geita. Average score by region can be shown in the figures below. We found that student performance in all three subjects was similar in Geita, Shinyanga and Morogoro. These regions performed better than other regions in all subjects. We also gave a section wise average score in all the three regions based on the sections in different subjects discussed above.

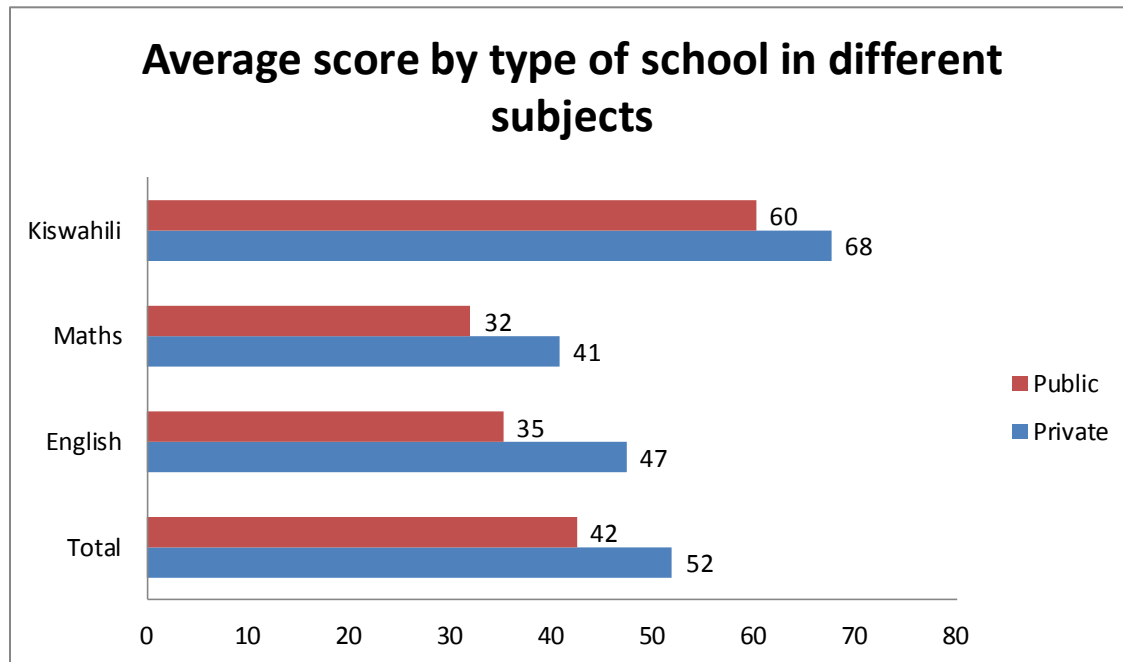


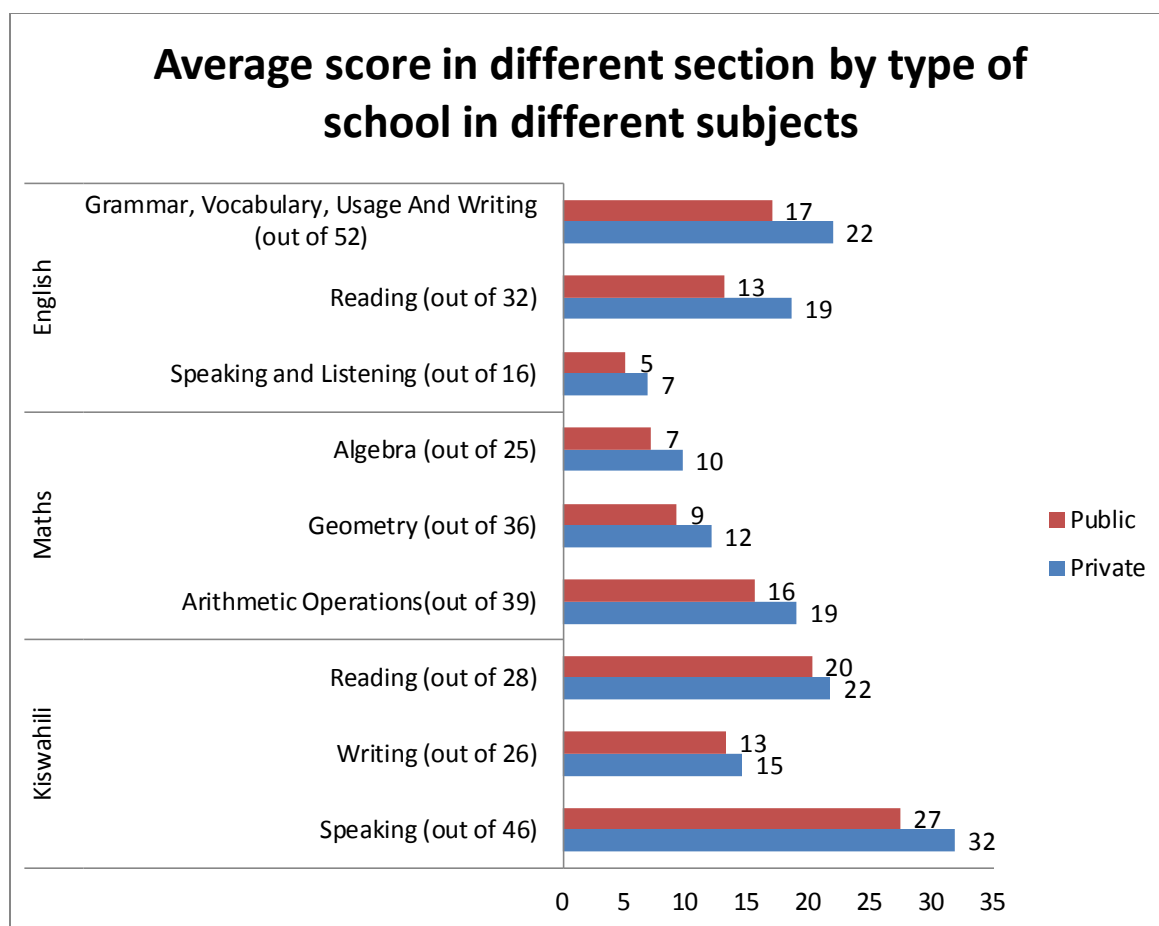
Average score section - wise by region in different subjects



Public vs Private Schools

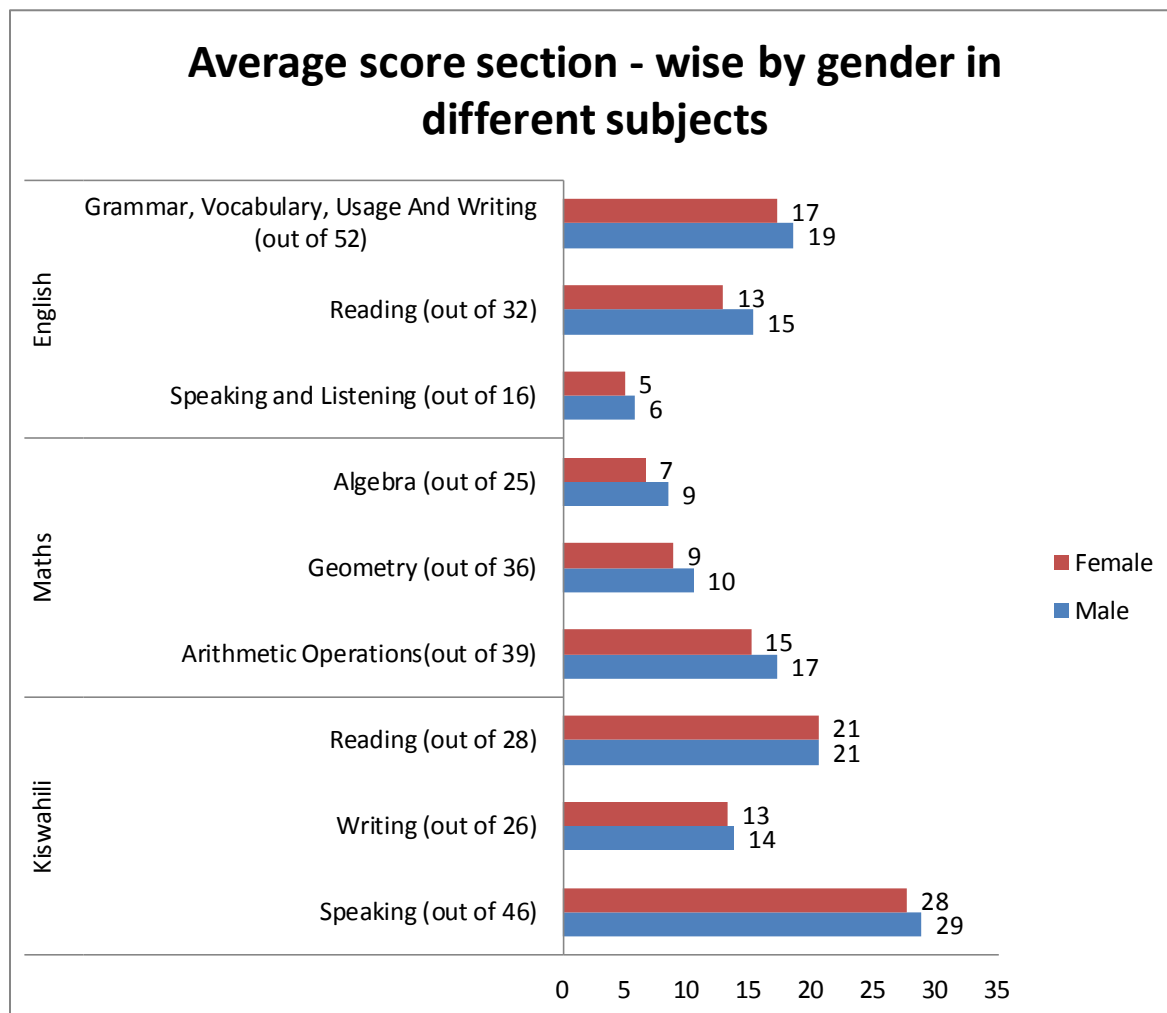
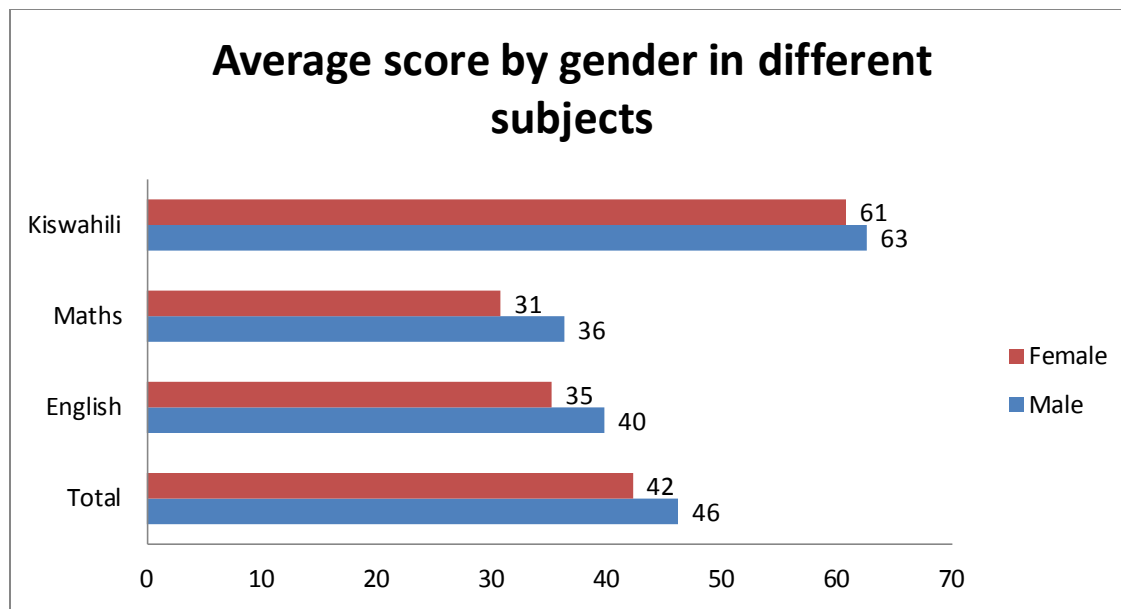
A similar analyses was done to see the differences of test scores between Public Schools and Private Schools. Around 18 percent of our sample of students tested are studying in Private schools. In Public schools the average score in Mathematics is 32 whereas this scores rises to 41 when we take into account the student scores in Privates Schools. As in the case of Mathematics we see in English as well the scores are very different. Students in Public Schools score on an average 35 whereas average score for students studying in Private Schools are 47. As for Kiswahili the Public Schools have an average score of 60 whereas for Private Schools this score is 68. The figures present this figures and also give a section wise score in different subjects.





Gender Comparison

We also compare the test scores in male and female students. Our sample is evenly split by gender around 51 percent of the sample are male students. A big difference was observed in Mathematics and English, where the difference in score is around 5 points. This difference is reduced to 2 points in the case of Kiswahili. A detailed analyses can be seen in following figures. As in the case of previous analyses section wise scores are provided as well.



CONCLUSION

Our sample comes from 396 schools from the three regions of Tanzania Shinyanga, Morogoro and Lindi. The sample is not uniformly distributed with the largest percent lying in Shinyanga region (55 percent) and the lowest coming from Lindi region (14 percent). In our sample around 84 percent of schools are public schools.

We find that, for most part, headmasters and teachers have more than secondary education and some form of teacher training. However, we also find that around 40 percent have no training in school management. In order to assess the impact of Impact Evaluation under the Tanzania SEDP II Project from different angles, we conducted unannounced visits, student assessments, and teacher interviews. We will be undertaking the unannounced visit and endline assessment at the end of this year again.