

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Preliminary, please do not cite without Authors'¹ Permission

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CONTENTS

1. Background	3
1.1 Some education-service delivery issues.....	Error! Bookmark not defined.
1.2 The Big Results Now Initiative	Error! Bookmark not defined.
1.3 Impact Evaluation: Its rationale	Error! Bookmark not defined.
1.4 Impact Evaluation: Policy relevance.....	Error! Bookmark not defined.
1.5: Impact Evaluation: Primary objectives	Error! Bookmark not defined.
1.6 Impact Evaluation: Methodology.....	3
2. Baseline Characteristics of the schools and their components	5
2.1 Characteristics of the Headmaster	8
2.2 Teacher Provision.....	11
2.3 School Resources	14
2.4 School Management.....	16
2.5 School finances	17
2.6 Public Schools vs. Private Schools	19
3. Test Scores	21
3.1 Score by Region	21
3.2 Public vs. Private Schools	22
3.3 Gender Comparison	24
4. Balance tests	5
5. Conclusion	25

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 (20-25 schools 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 all 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.

IMPACT EVALUATION: METHODOLOGY

The IE is being carried out in three regions and 420 schools (public and private). Sampled schools have been randomly assigned to one of three groups of schools², as in illustrated in the table below:

	No Recognition Award for schools & teachers	Recognition Award for Teachers
No student awards	T0 (210 schools)*	T1 (105 schools)
Student awards	N/A	T2 (105 schools)

*: To measure and control for potential John Henry effects, these 210 control schools have been divided into two groups of 105 schools each. One group will be visited for collection of mid-term data and the other will not.

OVERVIEW OF DATA COLLECTION

Baseline data was collected in from Nov 2012 – Feb 2013. Details below

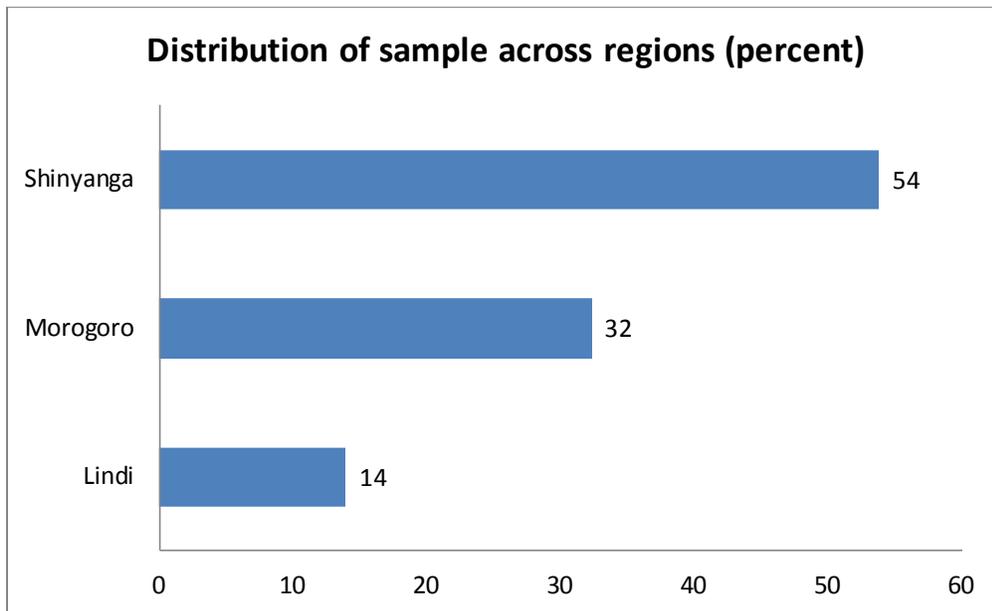
SCOPE

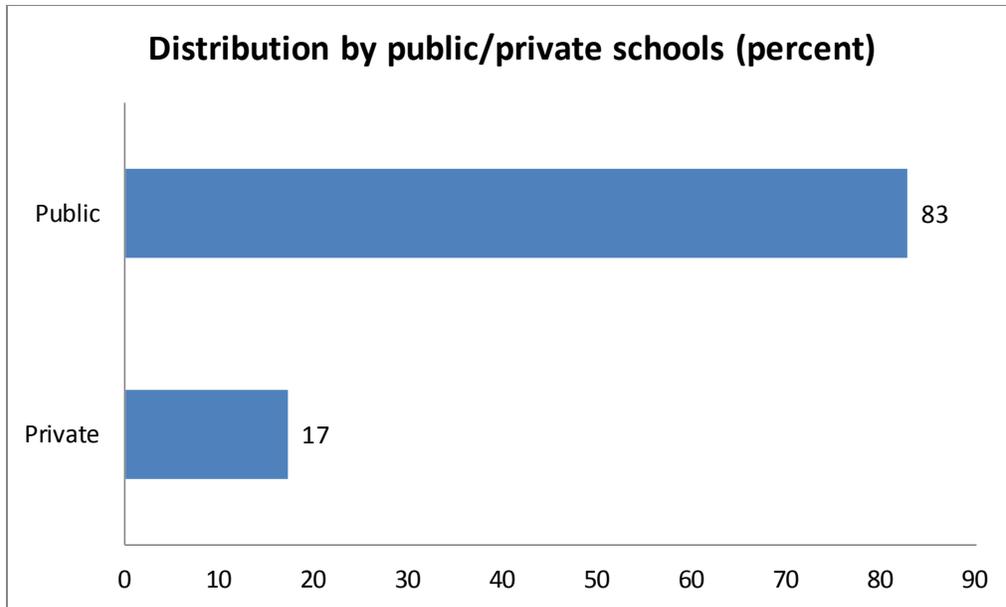
² Random assignment avoid selection bias and ensures that groups will be fully comparable in statistical terms in terms if their observable and unobservable characteristics.

- 420 schools were visited, data was collected from 411 schools
- The purpose of the baseline visit was to:
 - Administer baseline student tests in English, Math, and Kswahili
 - Create detailed student and teacher rosters (including contact information) for Form 3 students

COVERAGE

Our sample comes from 411 schools from the three regions of Tanzania Shinyanga, Morogoro and Lindi. The sample as seen below is not uniformly distributed with the largest percent lying in Shinyanga region (54 percent) and the lowest coming from Lindi region (8 percent). In our sample around 83 percent of schools are public schools.





DATA COLLECTION

- Data Collection dates: Nov 2012 – Feb 2013
- Mode: Face to face interviews
- Collectors: Trained enumerators from Synovate Tanzania

VALIDATION OF IE DESIGN (BALANCE TESTS)

As mentioned earlier in the introduction we have undergone a randomized control trial and out sampled schools have been randomly assigned to one of the three treatment groups or a control group. These groups as coded as follows: TI (Teacher Incentives); SI (Student Incentives); TI_SI (Teacher and student incentives).

We perform T-tests to determine if two sets of data for a variable and these different sets belonging to two different groups (ex one from a treatment groups and other from a control group) are significantly different from each other. Since we have 3 groups we will conduct T-tests three times (3 groups 2 at a time = 6) for a single variable. The reported results show the difference in means with stars showing the their significance level as per the conventional norm (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$). Let us denote numbers to the tests for a particular group:

Group 1 = TI_SI vs. Control

Group 2 = TI_Only vs. Control

Group 3 = TI_SI vs. TI_Only

Variable	1	2	3

Region	-0.043	-0.028	-0.015
Public vs. Private Schools	0.019	0.072	-0.053
Gender of the headmaster	-0.042	0.034	-0.076
Age of the headmaster	-0.137	-1.393	1.256
Headmaster teaches regular classes	-0.021	0.004	-0.024
Headmaster has training in school management	0.046	0.020	0.026
Headmaster rewards teacher who perform better	0.046	0.020	0.026
School has electricity	-0.034	-0.100	0.066
School has generator	0.094*	0.010	0.083
Number of working toilets	-1.237	0.246	-1.483
Number of working toilets for girls	-0.124	-0.287	0.163
The School development plan made with stakeholder's participation	0.008	-0.003	0.011
The School plan has been implemented	-0.015	-0.011	-0.004
School has PTA meetings	-0.044	0.034	-0.079
School has SMC	0.063	0.025	0.038
School has a school board	0.012	0.012	0.000
School has activities for community participation	-0.020	-0.071***	-0.072*
School receives capitation grant from the government	0.013	0.061	-0.048

Schools receives other grants from the government	0.005	-0.034	0.039
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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 regressions are done with the test scores in different subject as independent variable and the different groups (with same convention as before) being dependent variable. The clustering of standard errors in this case is important since a lot of students come from the same school.

Variable	1	2	3
Score in English	1.914	-1.685	3.598
Score in Mathematics	1.589	-1.588	3.177
Score in Kiswahili	1.011	-0.137	1.148
Total average score	1.48	-1.111	2.59

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 the regression coefficients are not significant.

NEXT STEPS

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

- Unannounced visits to measure student and teacher attendance (Aug 2013)
- Endline tests (Nov-Dec 2013)
- Report to Ministry of Education on baseline and unannounced visits (Nov 19 2013)
- Announcement of awards (Feb-March 2014)

The Government has requested that the experiment be replicated for 2014 and several new hypotheses be tested. The objective is to build a rich and multi-dimensional evidence-base to inform future-scale up of non-monetary incentive programs in Tanzania. To meet this request Phase II of this IE has been designed and funds have been requested from SIEF under the 2013 Call for Proposals.

SIGNIFICANT RISKS TO IE DESIGN

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

BASELINE CHARACTERISTICS OF THE SCHOOLS AND THEIR COMPONENTS

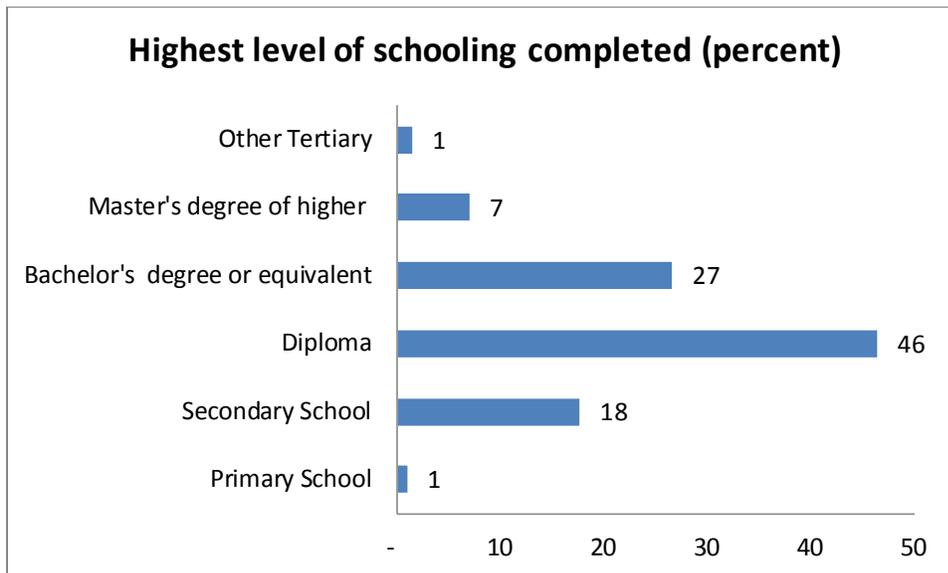
In this section we provide an overview of the main features of the schools and its components. We will offer insights on the school characteristics, characteristics of the headmaster, teachers provision among other important components.

CHARACTERISTICS OF THE HEADMASTER

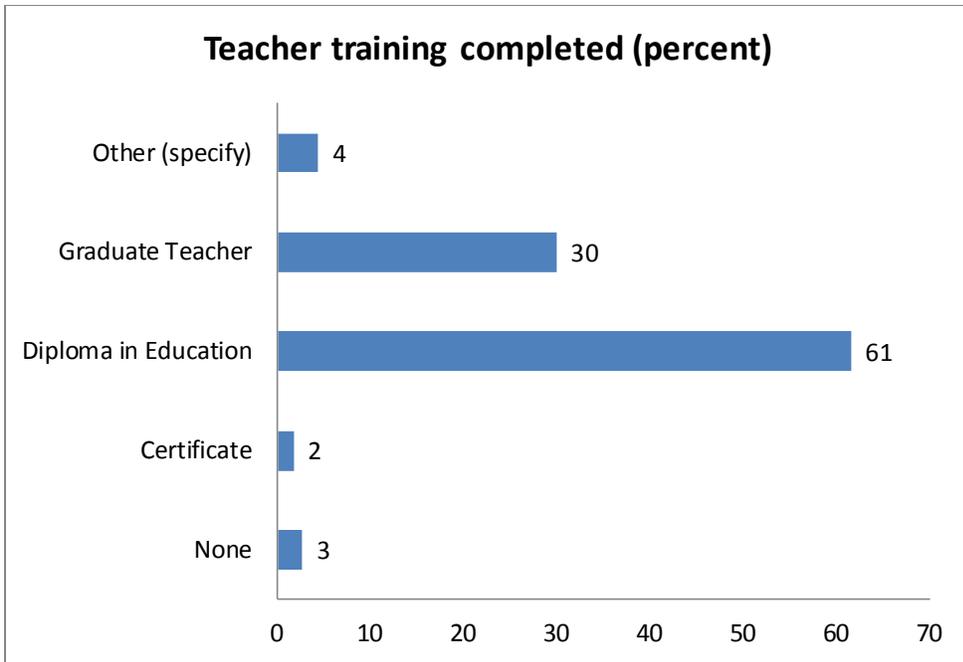
At baseline detailed information was collected from the headmasters of the various schools using the Headmaster survey. It provided insights on the headmaster and his running of the school. It also provided other important characteristics of the school which would be discussed later in various sub -sections. 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. Not even that around 80 percent of these headmasters still continue to teach classes.

Headmaster Characteristics	Mean
Headmaster is Male	84.7%
Age of the headmaster	40.4
Belong to teacher's union	74.4%
Years in this position	3.5
Years worked as a teacher	10.0

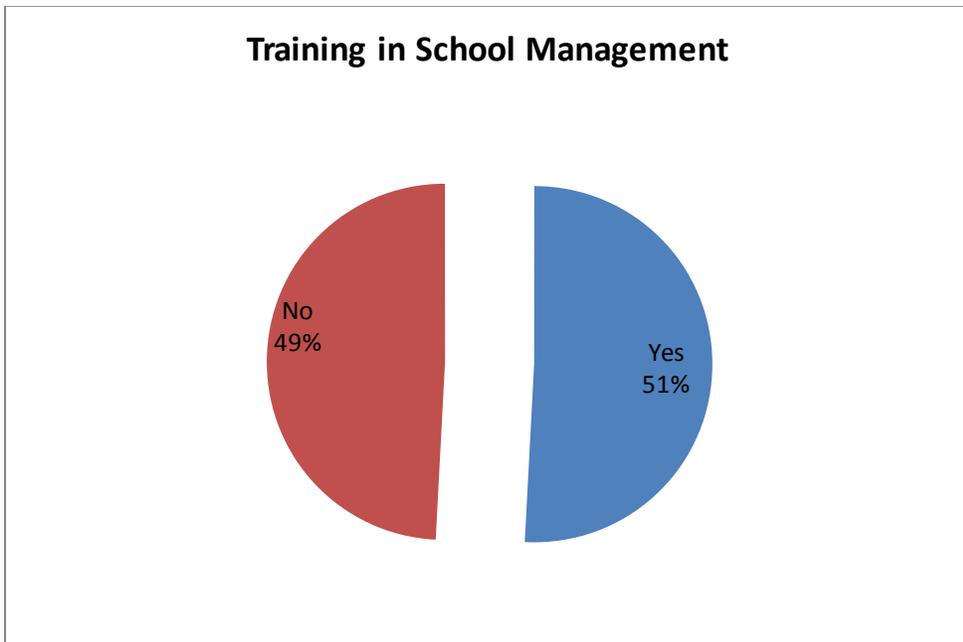
In terms of qualification we find that a significant number of them have a bachelor degree or a master degree (34 percent) although majority of them have a diploma (46 percent).



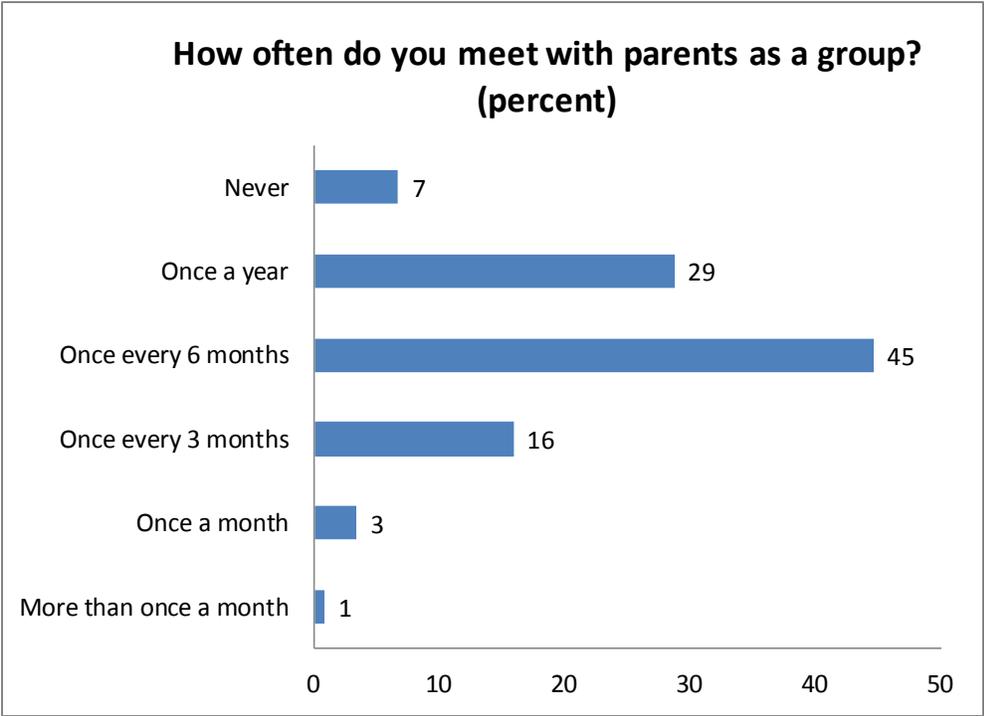
Considering that we found earlier that these headmasters have worked as a teacher for a long time it comes as no surprise that they have completed some form of teacher training. The distribution is as follows:



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 there was almost an even split.



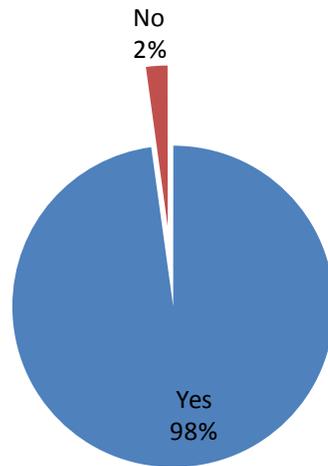
During the survey the headmasters were asked about how often do they meet the parents as a group. Around 65 percent them meet the parents at least once in six months with the whole distribution as follows:



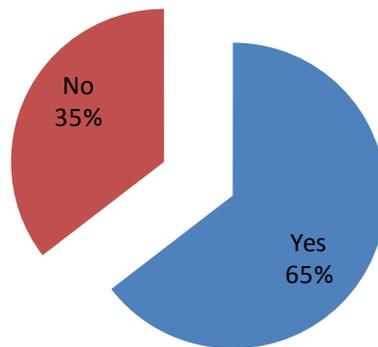
When asked about action they have taken towards a teacher who is being absent for an extended period without official clearance around 55 percent have taken some sort of action like warned the teacher, submitted a written query or reported to district education officer.

Almost of all them claim to know the teachers who are performing better and about 65 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?

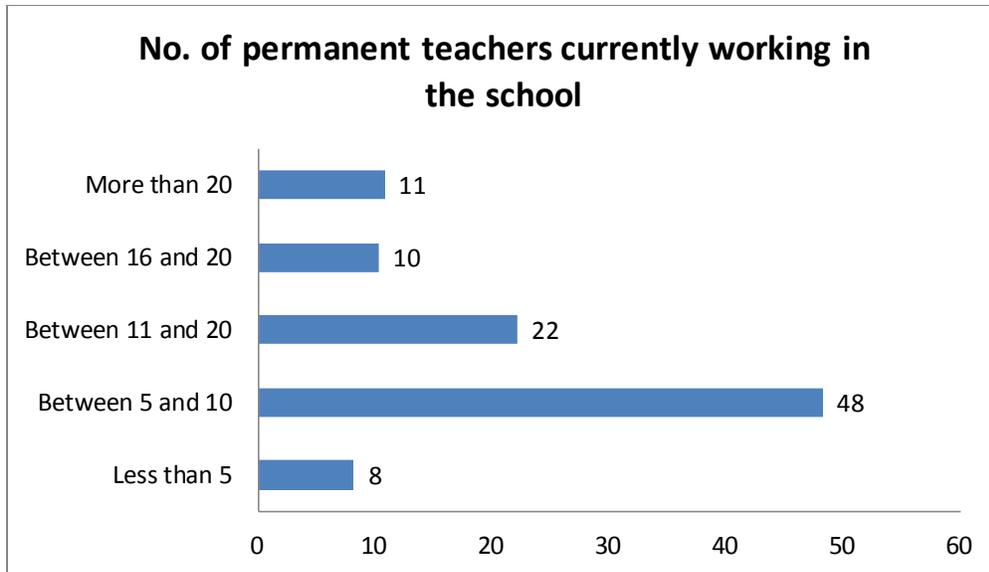


Do you reward teachers who perform better?



TEACHER PROVISION

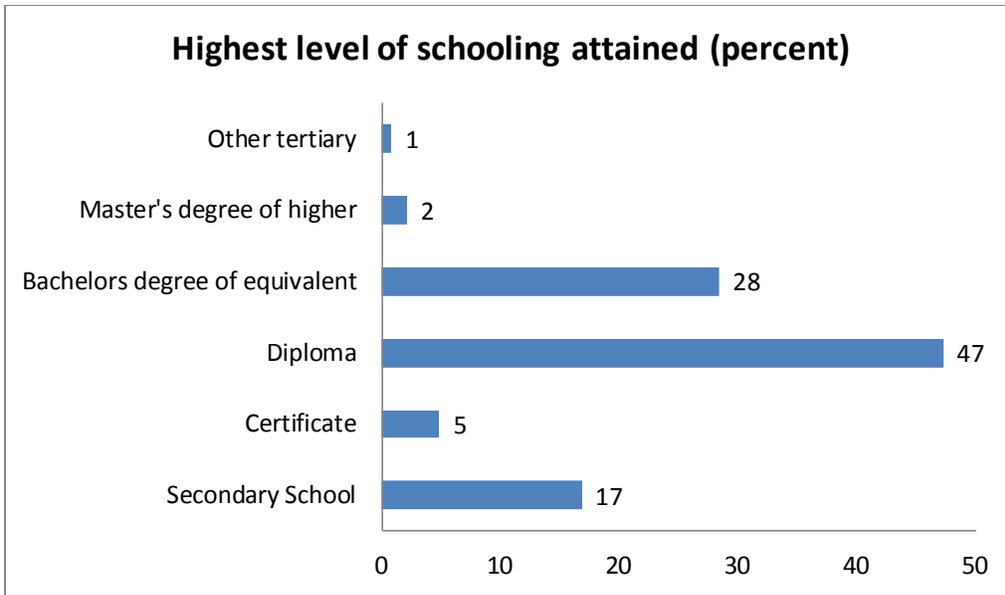
Information was collected on the teachers working in the school. We find that most of the schools have between 5 and 10 permanent teachers working in the school 48 percent in our case.



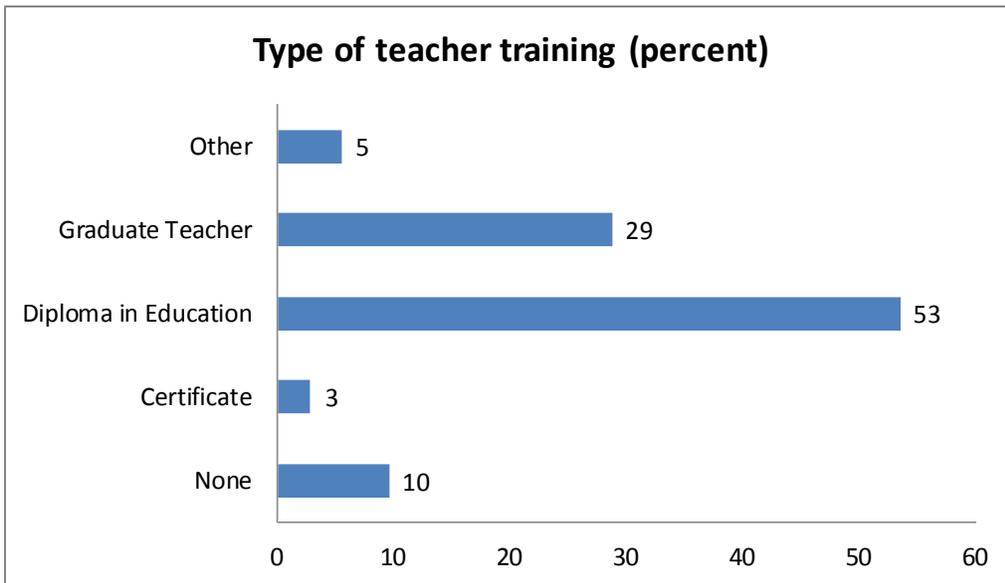
In order to collect information directly from teachers, a random sub-sample of teachers were interviewed from these schools. In total we have data from around 1100 teachers. We find that 21 percent of teachers from the sample are female and most of them have some sort of teacher training. A majority of teachers were also able to show a scheme of plan of work for the term and also able to show a lesson for the week.

Information from Teacher Interviews	Mean
Age	30.8
Female	21.2%
Schooling less than university/other tertiary	68.7
No teacher training	8.8%
No. of students per class	45.1
Show scheme of plan of work for this term	73.7%
Show lesson plan for week	65.3%

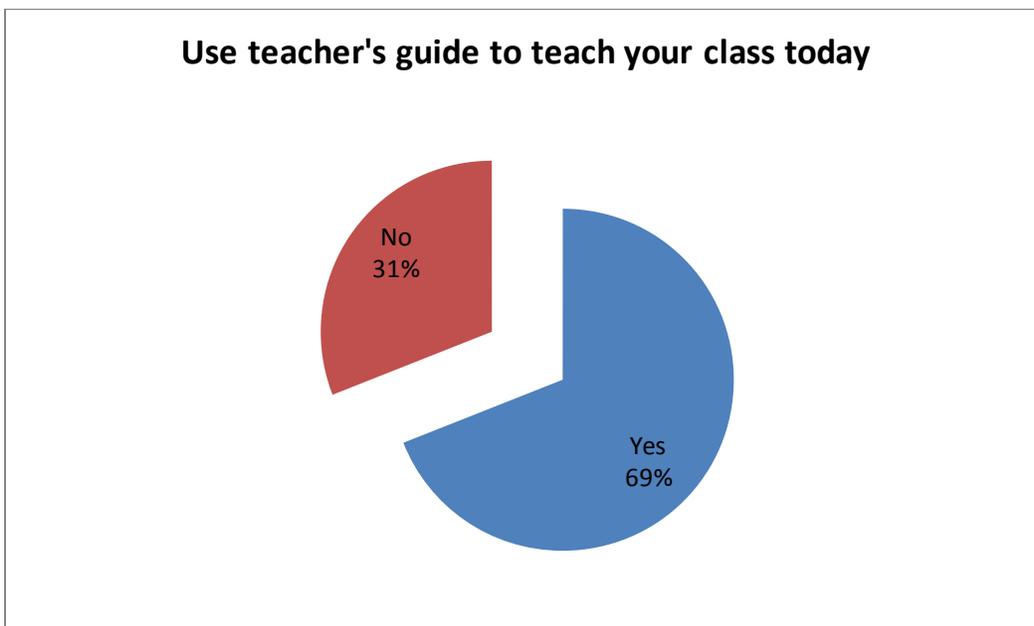
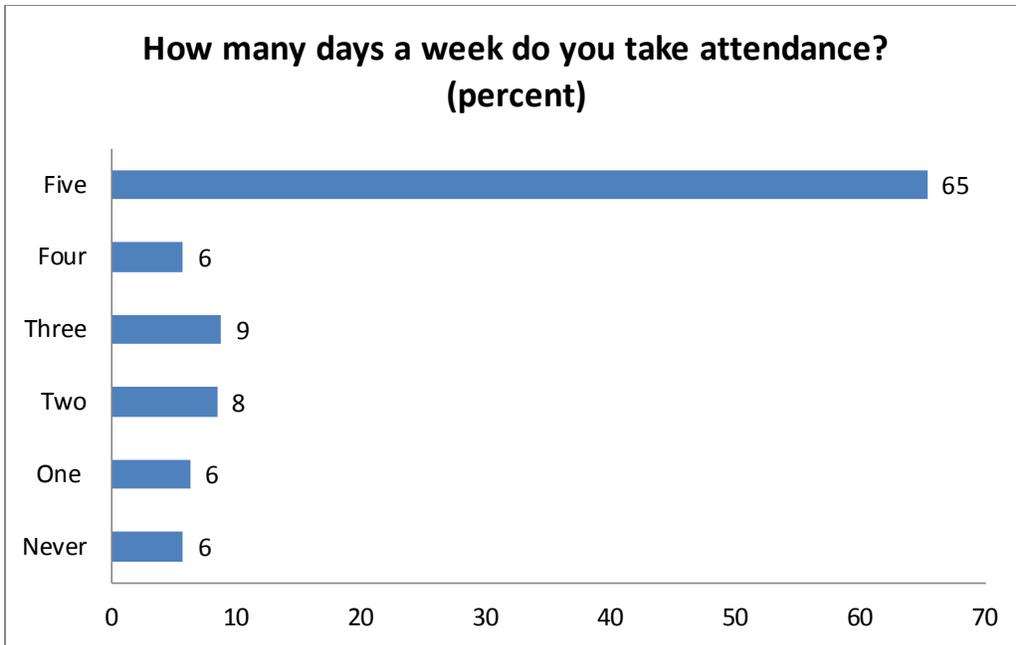
In terms of qualification we find a large amount of teacher have more than secondary level of education with 30 percent having finished a Bachelor's degree of a Master's degree.



A large number of them also have some sort of teacher training with 53 percent having a diploma in education. The distribution is as follows:



Around 65 percent of teachers claim to regularly take attendance while 69 percent of them agreed to be using the teacher's guide to teach their class today.



SCHOOL RESOURCES

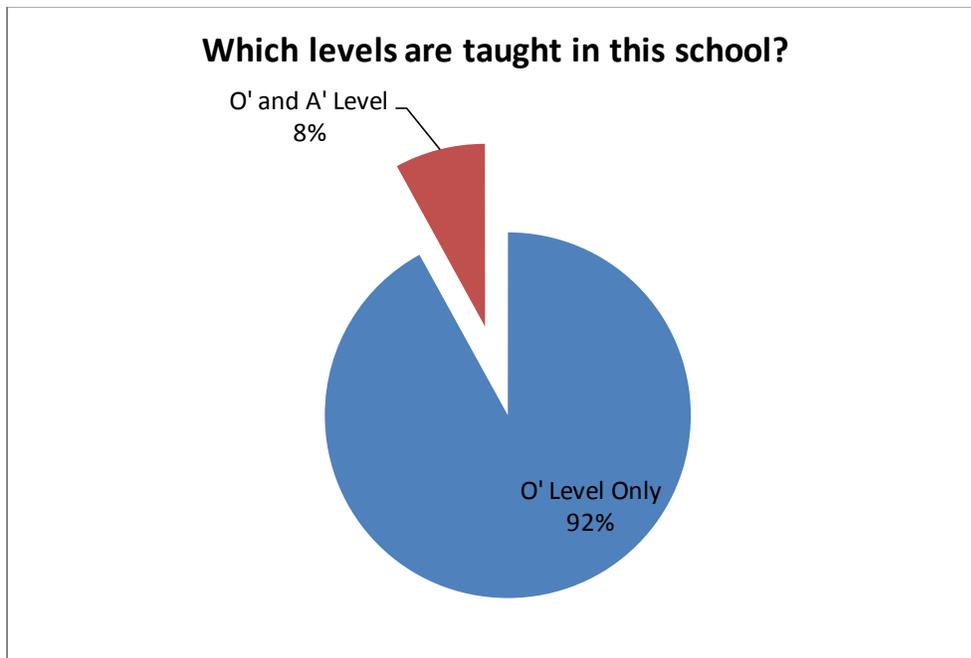
With the baseline survey, attempts were made to collection information on how well-equipped and resourced these schools are. Out of our sample 5.2 percent have classes held in open due to lack of classrooms. There are 36 percent of schools who have electricity whereas there are 20 percent of schools who have a generator.

School Resources	Mean
Classes held in open due to lack of classrooms	5.2%
School has electricity	36.0%
School has generator	20.0%

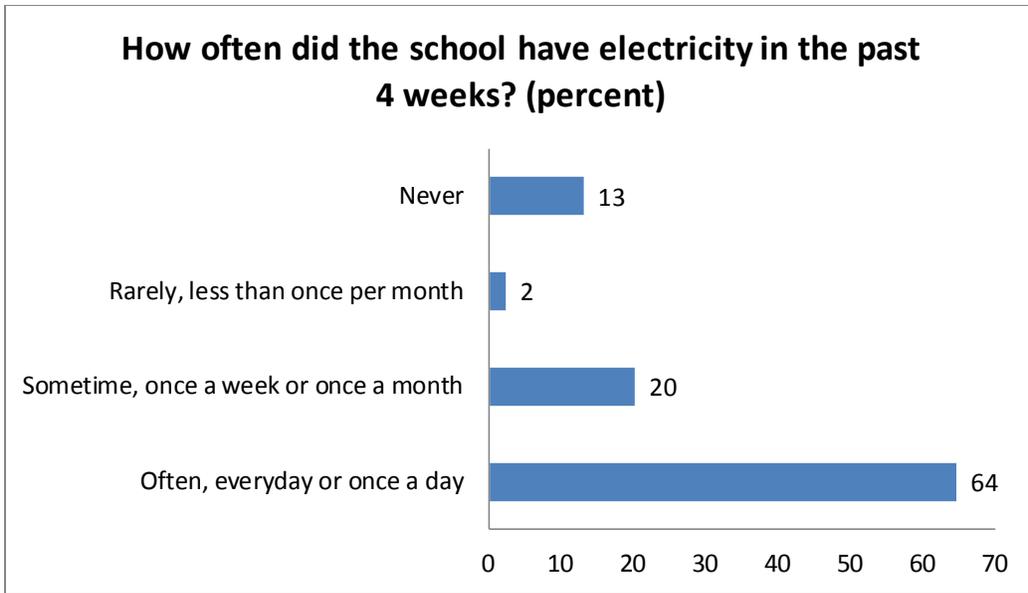
Average number of classroom in the school are 9.6 while number of working toilets are 12.5 out of which a little more than 50 % are assigned to girls.

School Resources	Mean
Number of classrooms in the school	9.6
Number of working toilets in the school	12.5
Number of separate toilets for girls	6.5

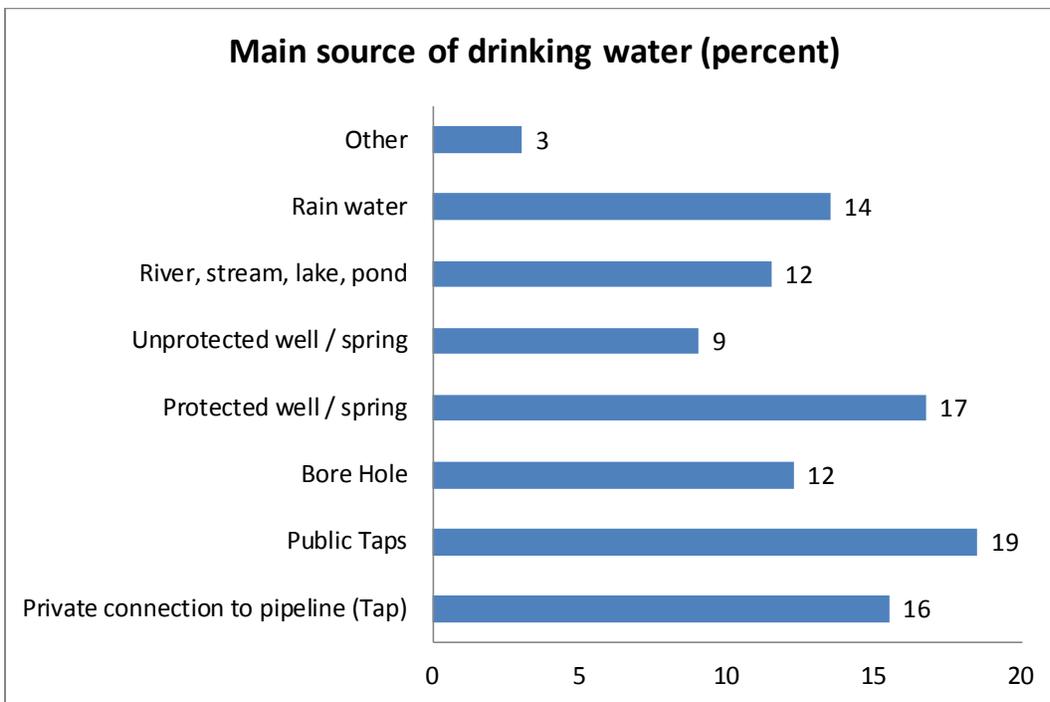
Out of our sample schools 92 percent of them teach O Levels only which the other 8 percent teach both O and A Levels



We found that among the schools which have an electricity connection almost 65 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 19 percent of schools relying on public taps.



SCHOOL MANAGEMENT

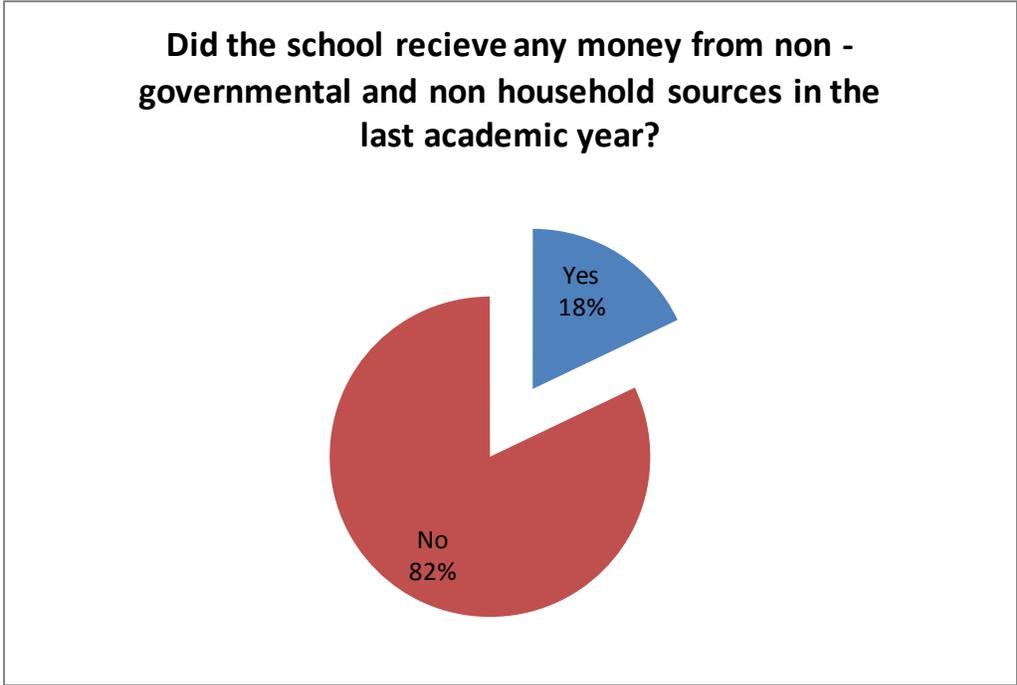
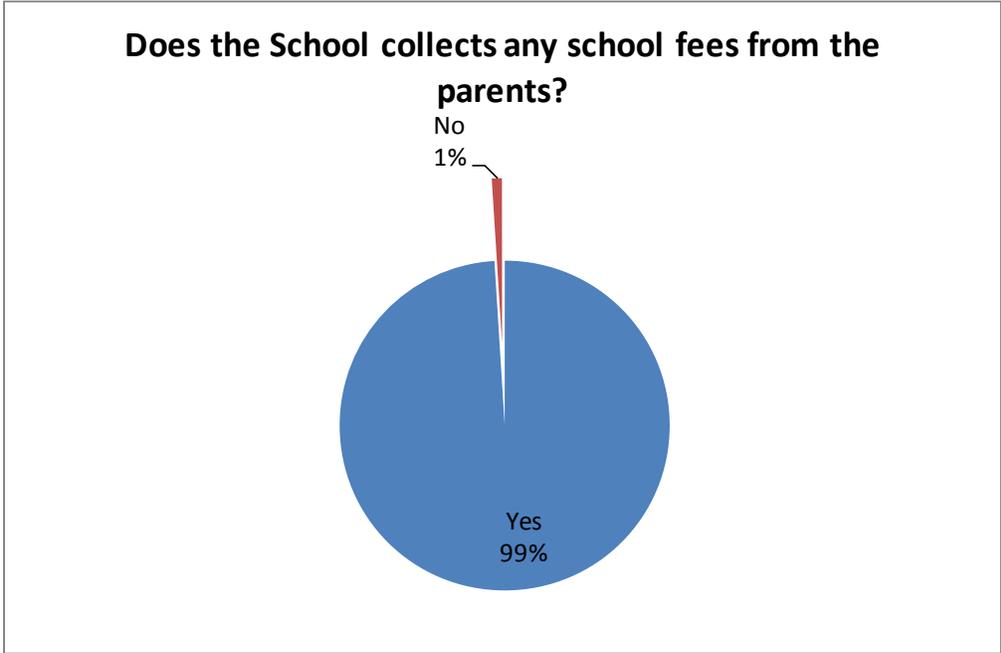
Some notable aspects of school management for the private schools in the sample are summarized in this section. Following are some important characteristics from this section.

School Management	Mean
Yes, the school development plan for 3 years is displayed on headmaster's wall.	31%
Yes, the school development plan for 3 years is developed with stakeholder's participation.	69%
Yes, the school development plan for 3 years is developed with school board participation.	73%
Yes, the annual whole school plan is displayed on the headmaster's wall.	42%
Yes, the annual whole school plan is being implemented.	77%
Yes, the schools term are adhered to.	97%
Yes, the school calendar is displayed in the headmaster's office	68%
Yes, the daily routine is displayed in the headmaster's office	74%
Yes, the headmaster keeps a daily duty book.	94%
Yes, the headmaster refers to the daily duty book for checking teacher attendance	87%
Yes, the school board is elected in accordance with regulations	87%
Yes, the board member serve for more than 6 years or more than 2 terms.	35%
Yes, there is a Parent Teacher Association.	69%
Yes, there is a School Management Committee.	86%
Yes, the headmaster conducts staff meeting in accordance to the school calendar.	87%
Yes, the community participates in the school events.	94%
Yes, the headmaster refers to the head of school guide.	92%
Yes, the students sing the national anthem of Tanzania every morning.	73%
Yes, the students sing the school song every morning.	68%
Yes, the students participate in the school band.	30%

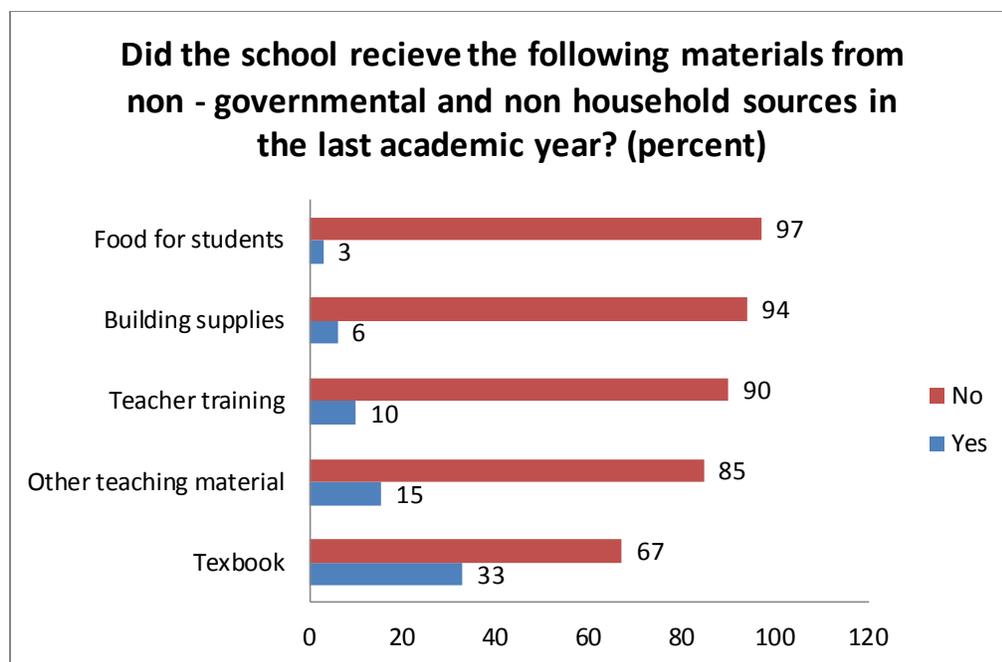
A large majority of schools have Parent Teacher Association (PTA) which comes to be around 69 percent whereas 86 percent have a School Management Committee. We can also see from the stats above that in 94 percent of the school there are events in which community participates whereas most of the important documents such as school development plan for 3 years, annual school development plan, school calendar and daily routines are displayed in the headmaster's room in majority of the schools in our sample.

SCHOOL FINANCES

We can see from the figure below that around 99 percent of schools collect school fees whereas 18 percent of schools have received some sort of funding from non - governmental and non - household sources in the last academic year.



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 33 percent of schools received textbooks from these sources which was the highest among such materials. The figure below shows the statistics.

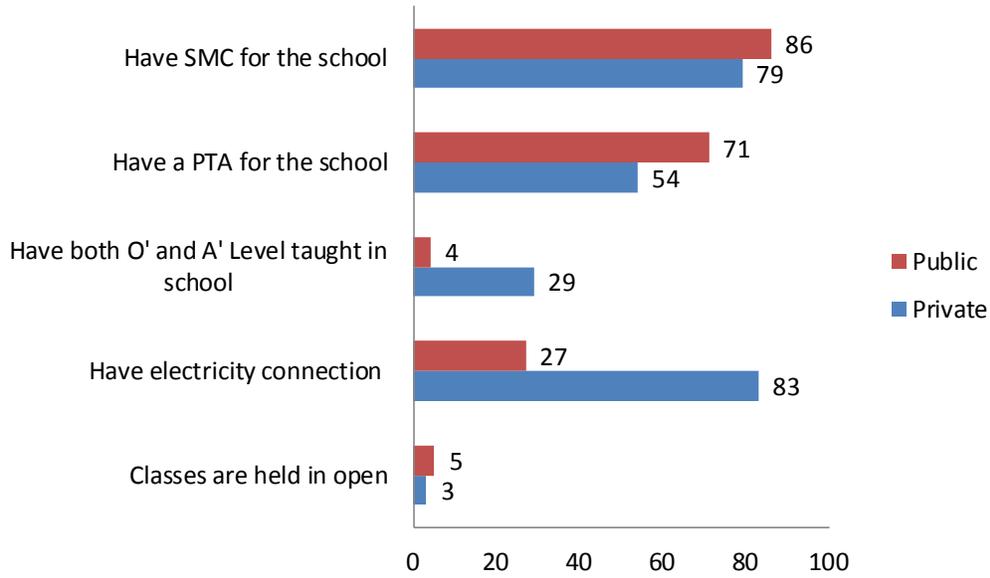


PUBLIC SCHOOLS VS. PRIVATE SCHOOLS

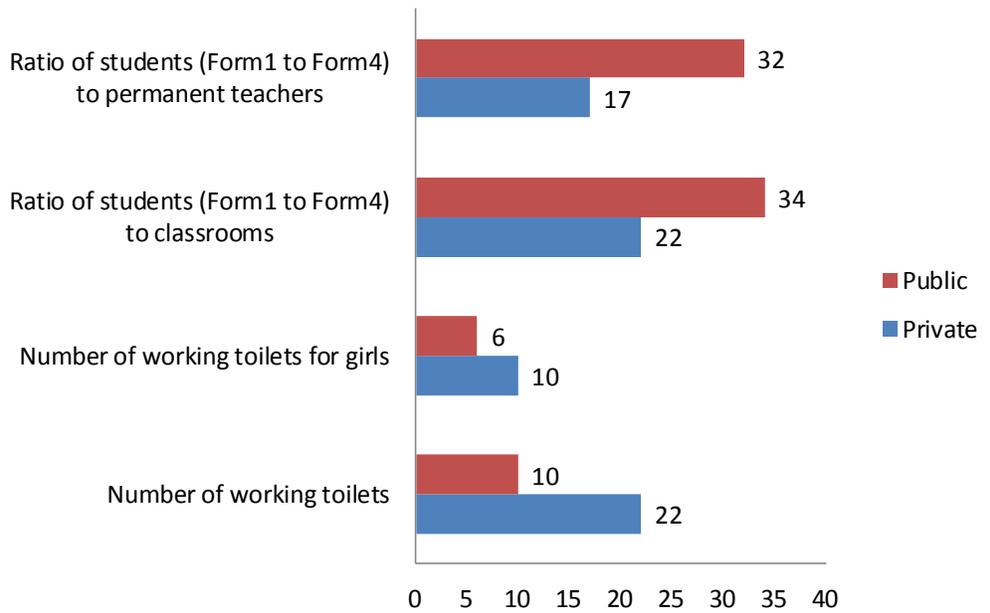
In this section we will give a brief overview about the differences between Public Schools and Private Schools. We will compare the differences among school resources and school management in the Public and Private Schools. In section 3 such a comparison would also be undertaken for the marks obtained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

We see that Public School lead Private Schools in having School Management Committees (SMC) and Parent Teacher Association (PTA) (in our sample 86 percent of public schools have SMCs whereas 71 percent have PTAs as compared to 79 percent and 54 percent respectively in Private Schools). But in other parameters Private Schools lead the Public Schools. 83 percent of privates schools claim to have electricity connection as compared 27 percent of public schools. 29 percent of private schools teach both O' levels and A' levels as compared to 4 percent of public schools. Only 3 percent of privates schools have classes in open as compare to 5 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 6 and 10 for public and private schools respectively. The ratio of number of students (in Form 1 to Form 4) to number of permanent teachers is 32 for public schools whereas its only 17 for privates schools. Another ratio we looked at was the number of students (in Form 1 to Form 4) to number of classrooms this comes out to be 34 for the public schools whereas its 22 for private schools.

Differences by Public / Private Schools (Percent)



Differences by Public / Private Schools (Mean)

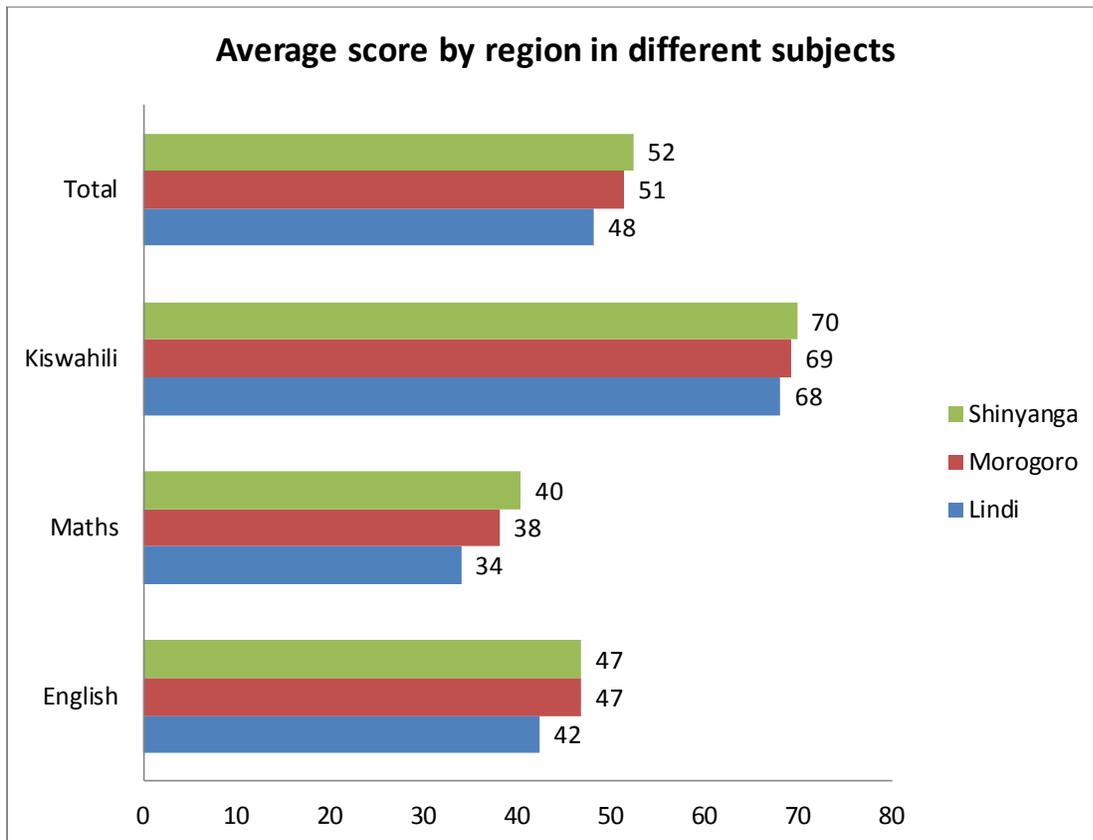


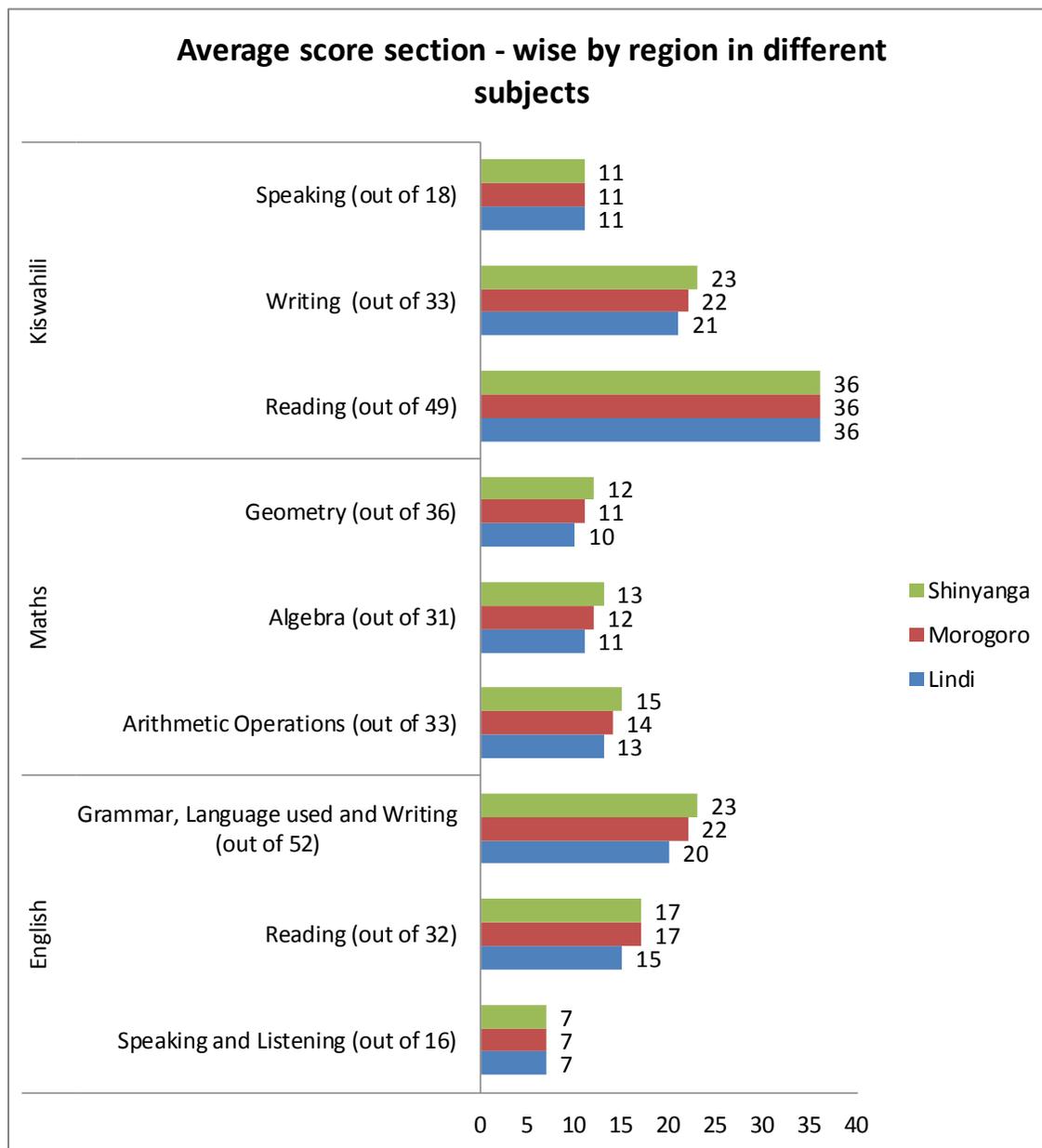
TEST SCORES

During the baseline we also have the test scores for English, Mathematics and Kiswahili for over 12000 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 sections on Grammar, Language used and Writing, Reading and the last section was based on Speaking and Listening. While Kiswahili had sections on Speaking, Writing and Reading. They were then allotted a total score which is the average score of all the three subjects.

SCORE BY REGION

Average score by region can be shown in the figures below. We found that students performance in Kiswahili was close in all the three regions Shinyanga, Morogoro and Lindi but in English there was difference of scores in Lindia as compared to Shinyanga and Morogoro. Average score in English in the region of Lindi is 42 whereas in Shinyanga and Morogoro its is 47. While in Shinyanga led the way in Maths with average score of 40 with Morogoro and Lindi with 38 and 34 respectively. We also gave a section wise average score in all the three regions based on the sections in different subjects discussed above.

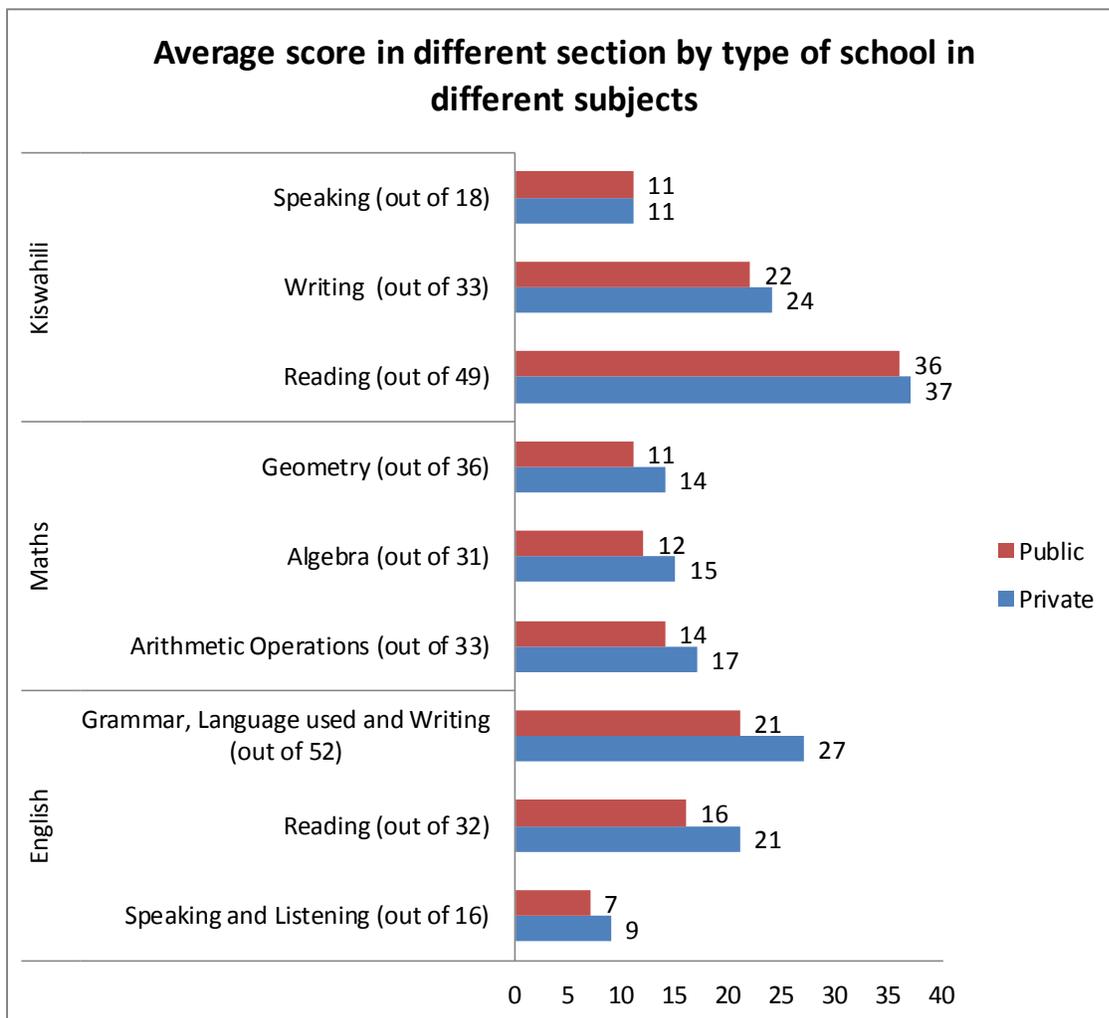
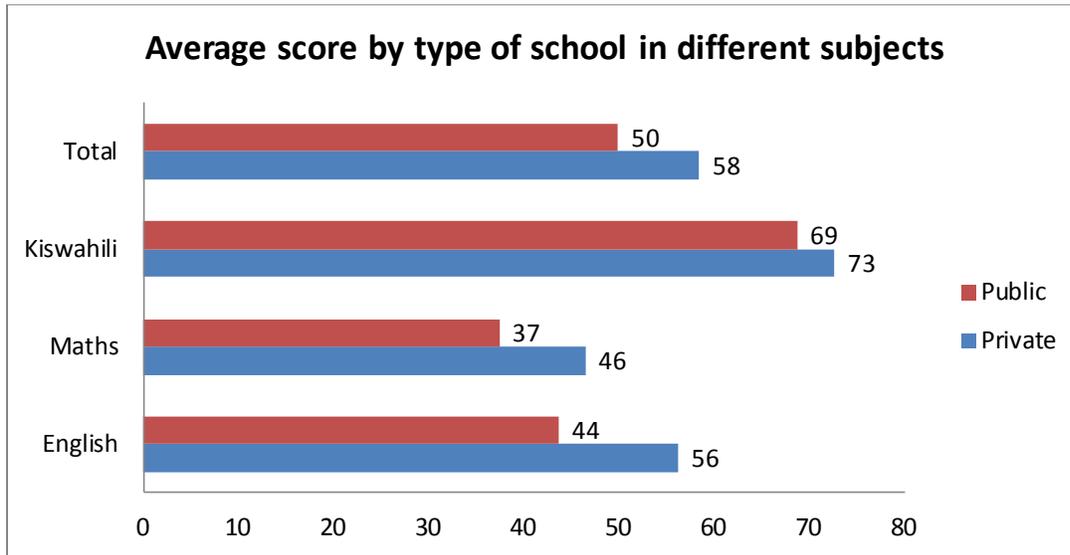




PUBLIC VS. PRIVATE SCHOOLS

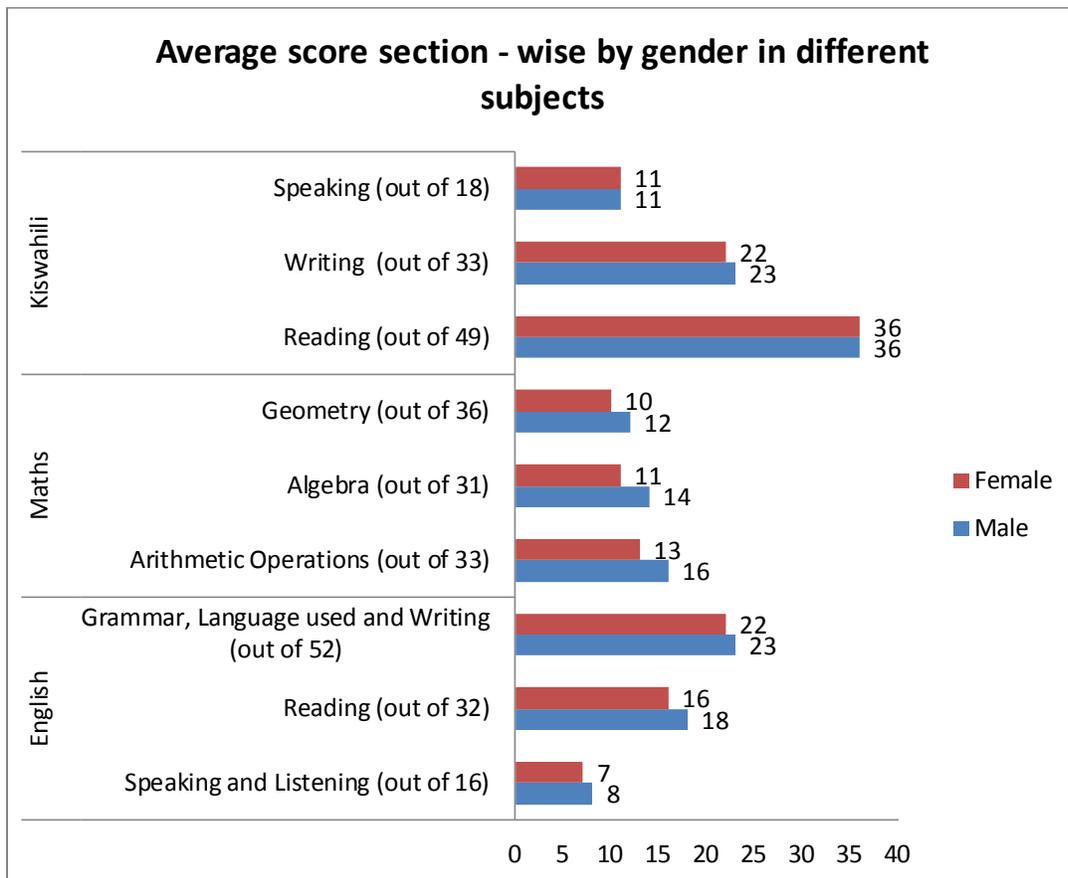
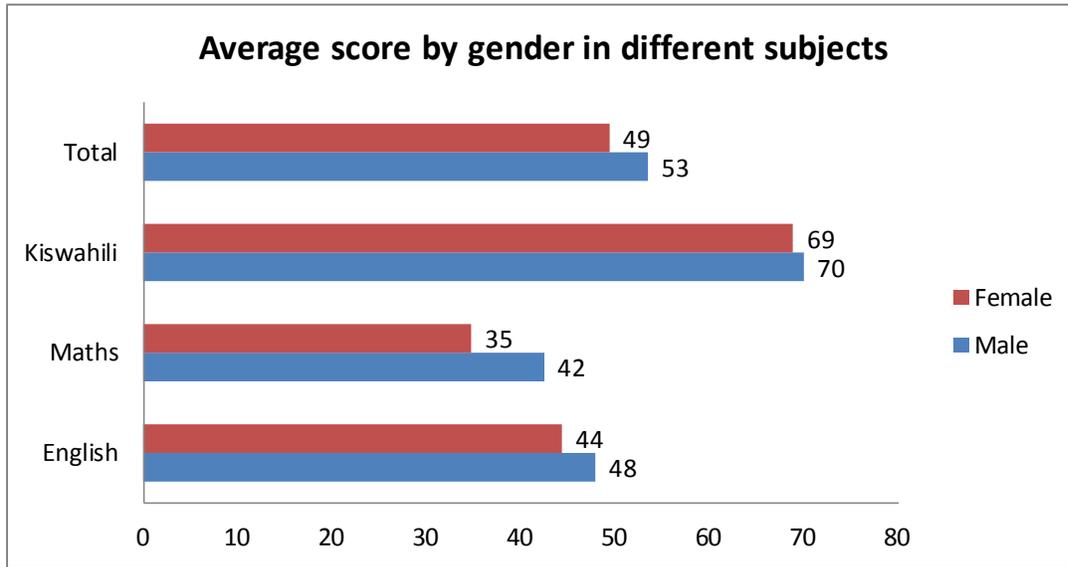
A similar analyses was done to see the differences of test scores between Public Schools and Private Schools. We see that there is big difference in the average score of Mathematics and English among the two groups. In public schools the average score in Mathematics is 37 whereas this score rises to 46 when we take into account the student scores in Private 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 44 whereas the average score for students studying in Private Schools are 56. As for

Kiswahili the Public Schools have an average score of 69 whereas for Private Schools this score is 73. 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. A big difference was observed in Mathematics where males obtained an average score of 42 whereas females had an average score of 35. In English this score was reduced to 4 marks with males and females scoring 48 and 44 respectively. A detailed analyses can be seen in following figures.



5. CONCLUSION

Our sample comes from 411 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 (54 percent) and the lowest coming from Lindi region (8 percent). In our sample around 83 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 49 percent have no training in school management. In order to assess the impact of Impact Evaluation under the Tanzania SEDP II Project we also did a round of unannounced school visits. Apart from this round of unannounced visits we also did the midline survey in August 2013 and the endline survey in November 2013.