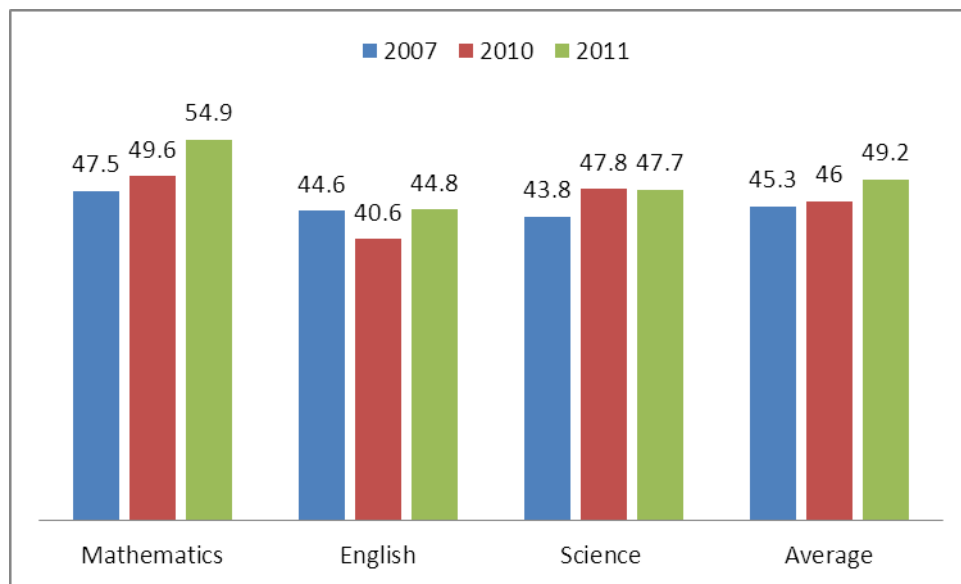


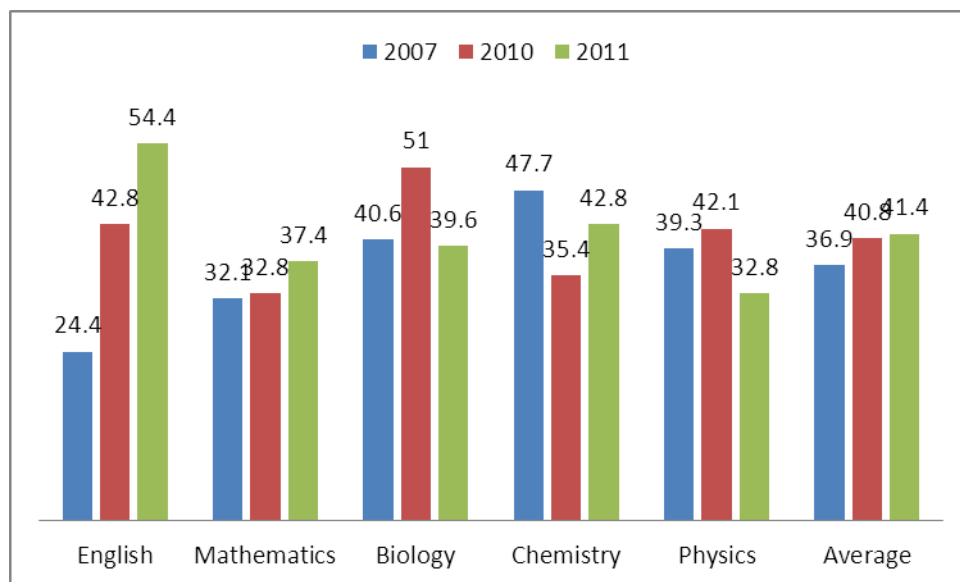
Learning Assessment of Grades 4 and 7 Students in Bolosso Sore, Damot Gale, Damot Pulasa and Damot Sore in Wolaita Zone



A Report Submitted to LCD

January, 2012

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Prepared by Zewdu Gebrekidan

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1 Introduction

Link Community Development (LCD) through Woreda School Improvement Project is working in Wolaita Zone and its objective is better basic education delivery in the Zone through enhanced access to school performance data for parents and local communities, increased stakeholder demand for improvements, and more responsive and effective delivery by the system.

LCD is currently operating in the Southern Nations, Nationalities and Peoples Regional State (SNNPRS) in south west Ethiopia. The Project is the Woreda School Improvement Project. Phase I of the projects is being implemented in Damot Gale and Bolosso Sore woredas of Wolaita Zone while Phase II is in Damot Sore and Damot Pulasa. One of the main project outputs is annual data collection and administering learner tests in the project schools. In line with this the annual assessments were conducted in three subjects at Grades Four and Seven. The latest tests were administered in 2011 Academic Year. This report presents the outputs of the statistical analyses based on the test scores.

1.1 Background

Test scores provide one important measure of how well the curriculum is being learned, and help to indicate achievement at the main exit points of the school system. Teachers, schools and national governments have long gathered information on pupils' performance. Teachers and schools use assessment data to monitor pupil progress, identify pupils with difficulties (and suggest appropriate responses), and even to motivate pupil learning. Although these types of assessment are quite varied in form and function, they are used primarily to provide information on individual performance. National governments may also assess educational outcomes (what has been learned) through examinations. Learning assessments allow the objective measurement of performance at system-level. Although there are many benefits to such type of data, some are of particular relevance. Greaney and Kellaghan (1996) identified eight main uses for such data: *informing policy, monitoring standards, identifying correlates of achievement, introducing realistic standards, promoting accountability, increasing public awareness, directing teachers' efforts and raising pupil achievement, and informing political debate.*

Concern for educational change and improving its quality has been the focus of educational planners for years. However, the World Declaration on Education for All (EFA) in Jomtien, Thailand (1990) is considered to have uncovered much of the dire necessity of learning assessment. The Education for All declaration gave not only fresh impetus to issues related to assessment but also made clear that there has to be a new form of assessment: system assessment, or national assessment, in order to determine whether children were acquiring the essential knowledge, reasoning ability, skills, and values that schools have promised to deliver. In other words, the basis for learning assessment is a response to both the desirable learning behavior to take place and ensuring schools' accountability to their stakeholders (the state, the parents, etc) (Kellaghan and Greaney, 2004).

Kellaghan and Greaney (2001) also revealed that one of the most influential statements of concern for learning outcomes is contained in the declaration adopted by the World Conference on Education for All. It emphasizes that the provision of basic education for all was meaningful only if children could acquire useful behavioural skills and values. To this end, Article 4 of the World Declaration on Education for All (1990) stated that focus of basic education should be “on actual learning acquisition and outcome, rather than exclusively upon enrolment, continued participation in organized programmes and completion of certification requirements”. Similarly, after a 10-year follow-up to Jomtien declaration, the Dakar Conference (2000) stressed the importance of having “a clear definition and accurate assessment of learning outcomes (knowledge, skills, attitudes, and values)” as governments need to ensure basic education of quality for all, for their citizens (UNESCO, 2000).

The focus on learning has been progressively shifting from input to outcomes in view of learning achievement. Past educational reforms mainly used to emphasize educational structure, curriculum and teacher training, in a view to realize quality. But this trend began to give way to issues related to the improvement of learning achievement, school effectiveness, management and accountability. Consequently, decentralization, school-based management and learning assessment became the area of focus in the efforts related to educational reforms of the 1990s. In the view of Kellaghan and Greaney

(2001), global economic competition has resulted in the critical importance of quality human resources, and the demand for new competencies in the modern information society. All of these demands have therefore, made the educational system, schools, and individual students to be under increasing pressure to perform and work hard. In short, assessing students' learning achievements has instigated due attention and a necessary focus to be made for the former.

The emergence of learning assessment is believed to come up with an objective appraisal system of a given education system before arriving at sound judgment. It is also important to note that one of the modern assessment procedures focus on outcomes. Kellaghan and Greaney argue that unlike past assessments which focus on inputs (e.g. physical facilities, curriculum materials, books, and teacher training) to determine the quality of education, this is no longer the case. Today, the dominant question posed by many stakeholders, including policymakers, has become on the outcomes of education: whether students are acquiring the desired knowledge, skills, behavior, and attitudes. As a result, policymakers or educational managers need information that would be necessary to reach informed judgment as related to the adequacy of student achievements obtained in the system. They may also need baseline data on student achievement against which to measure progress or excellence being registered in the educational program. In the meantime, teachers may need similar information on the achievement of their students in order to make some form of comparisons and assess their own professional effectiveness.

1.2 Objectives

The main purpose of the study was to determine the achievement levels of the students at Grades 4 and 7 in the 2011 Academic Year using selected subjects. Based on this, the specific objectives of the study were to:

1. Describe the achievement levels of Grade 4 students in mathematics, English and environmental science.
2. Describe the achievement levels of Grade 7 students in mathematics, English, biology, chemistry and physics.
3. Compare the achievement scores across subgroups (sex, school, woreda).
4. Compare the results of the current data with baseline data and discuss any progress.
5. Establish baseline data for Phase II project.

2 Methodology

2.1 Population

This learning assessment was conducted in Bolosso Sore, Damot Gale, Damot Pulasa and Damot Sore woredas of Wolaita Zone. All the students at Grades 4 and 7 in schools where LCD is operating were included in the study. In Phase I the total number of Grade 4 students was 7,052 where 3,451 were girls and 3,601 boys. In Grade 7 the total number was 4442 where 2195 were girls and 2247 were boys. In Phase II

2.2 Tools

In Grade 4, the subjects tested were mathematics, English and science. The mathematics test was based on two content areas namely Positive Irrational Numbers (M1) and Positive Rational Numbers (M2), the English test was composed of five content areas and the environmental science test contained four content areas. In Grade 7 in addition to mathematics and English, biology, chemistry and physics were administered linearly.

2.3 Data Collection and Organization

The achievement tests were developed, administered and corrected at the woreda level. The tests were manually corrected and the scores were captured using MS Excel and submitted for further analysis. The data were later reorganized and merged using MS Excel 2010 and SPSS 19.

2.4 Data Analysis

Descriptive summary statistics to summarize central tendencies and dispersion were computed to each subject. Correlation and statistical tests of significance were computed to detect relationships and differences. Variance partitioning procedures were followed to explain school level and student level effects on the achievement scores. Standardized scale scores were generated for the purpose of making comparisons between the tested subjects. Proficiency levels were determined based on the scaled scores. Stata 11 and SPSS 19 were used for analysis and charts were generated using MS Excel 2010.

3 Findings and Discussion Grade 7 Phase I

This part presents the statistical analysis and interpretation of the findings for each subject by grade. Initially the summary descriptive statistics and frequency distribution based on the raw scores for each subject are addressed followed by subgroup analyses (sex, woreda and school). Proficiency levels are presented based on standardized scale scores. The test items were composed of different content areas in each subject:

Biology: *What is Biology? Cell, Single celled organism, and Habitat.*

Chemistry: *Chemistry and Its Role in Production, Substances, Language of Chemistry, Meaning of Chemical Formula and Symbol*

Mathematics: *Rational Numbers, Linear Equation and Inequalities, Ratios, Proportions and Percent*

Physics: *Motion, Laws of Motion, Physics Measurement, Work, Energy and Power*

English: *Famous Person Story of Two Brothers Neither Tears Nor Sweat Transmit HIV/Aids Helping Our Parents Addis Ababa Not As Old As Harar, My Responsibilities Do Things On Time*

This part presents the statistical analysis and interpretation of the findings for each subject by grade. Initially the summary descriptive statistics and frequency distribution based on the raw scores for each subject by content area and the total scores are addressed followed by subgroup analyses (sex, woreda and school). Proficiency levels are presented based on standardized scale scores.

3.1 Summary Descriptive Statistics

The summary descriptive statistics for Grade 7 shows that the mean score for each subject was found below the passing mark set by the MoE except English (54.4%). The mean score for physics (32.8%) was the least and 4 points lower than the average score (41.4%). Looking at the standard deviation the widest variation is in chemistry (12.79%) and the least is in mathematics (Table 1). When compared with the 2010 there is no

major difference in the average scores. Looking at each subject the result is mixed where gains are observed in English (11.6%), chemistry (7.4%), mathematics (4.6%) while there were declines in biology (11.4%) and physics (10.3%). Compared with the 2007 scores major progresses were observed in English (30%) and mathematics (5.3%) while there are declines in the science subjects.

Table 1. Mean and Standard Deviations by Year

Subject	2011		2010		2007	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
English	54.4	7.97	42.8	6.19	24.4	7.66
Mathematics	37.4	6.28	32.8	3.68	32.1	6.40
Biology	39.6	11.15	51.0	8.60	40.6	11.08
Chemistry	42.8	12.79	35.4	7.78	47.7	7.12
Physics	32.8	9.80	42.1	7.82	39.3	8.22
Average	41.4	8.34	40.8	5.96	36.9	7.12

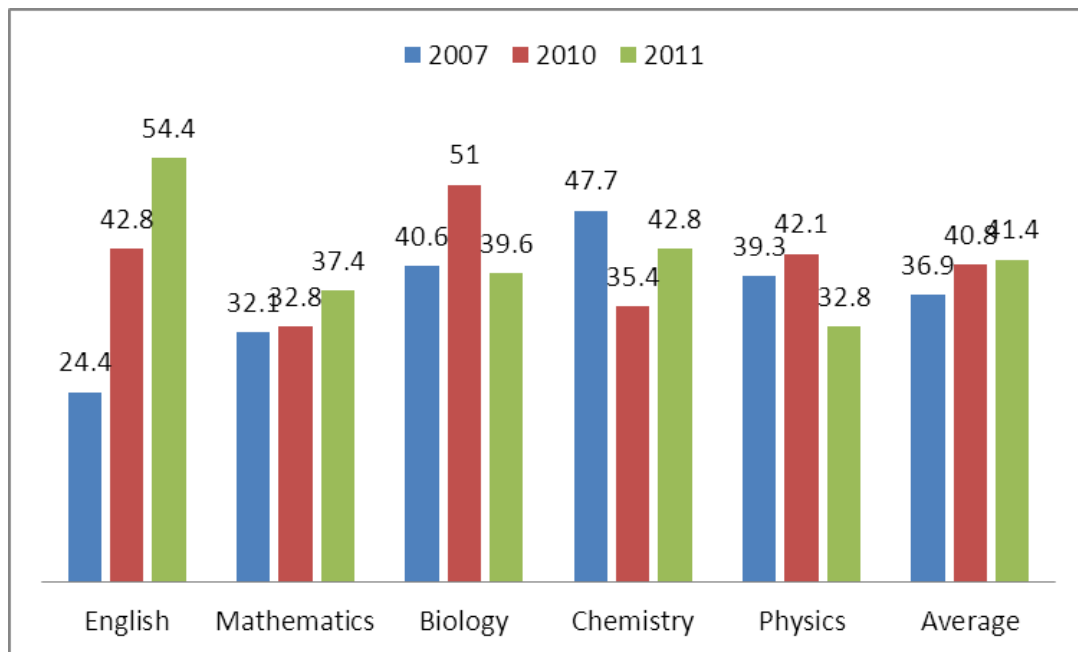


Figure 1. Mean Scores by Year Phase I

Table 2 below shows Person Product Moment correlation between the tested subjects plus the average score. There exist positive relationship in all cases and the correlations

were statistically significant in all cases. This shows that students performing well in one subject did the same in the others. Biology showed the strongest correlation ($r=.916$, $p < .01$) with the average score indicating that those who did well in chemistry performed better overall. The correlation between English and the average score ($r = .775$, $p < .01$) was the least.

Table 2. Correlates of Achievement Scores Grade 7

	English	Mathematics	Biology	Chemistry	Physics
Mathematics	.567**				
Biology	.668**	.733**			
Chemistry	.553**	.799**	.699**		
Physics	.638**	.726**	.835**	.642**	
Average	.775**	.871**	.916**	.871**	.887**

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3 below shows the range of achievements in the five subjects and the average scores at Grade 7. The table indicates scores achieved at five key marker points: 10th, 25th, 50th, 75th and 90th percentile ranks. Performance at the 10th percentile may be taken as indicative of the standard among low achievers, while performance at the 90th percentile can be taken as indicative of high achievers.

Pupils at the 90th percentile achieved a score of 50% in the average. This means only 10% of the candidates scored 50% and above. On the other hand, pupil at 10th percentile scored only 34.9% and this means 10% of the examinee scored at or below 34.9%. In mathematics 50% of the students scored less than 36% and only 10% were able to score 45.1% and above. It was only in English the 25th percentile equals 50.1%. The scores at the 10th percentile show that the most difficult subject for the low achievers was physics (25.9%) followed by chemistry (31.5%). On the other hand the 90th percentile shows that the most difficult subject for the high achievers was physics (39.7%) followed by mathematics (45.1%). For both low and high achievers physics was found the most difficult subject.

Table 3. Five Key Marker Point of the Achievement Scores (%) Grade 7

Percentiles	English	Mathematics	Biology	Chemistry	Physics	Average
10 th	45.6	32.0	31.6	31.5	25.9	34.9
25 th	50.1	34.1	33.2	34.1	27.8	36.2
50 th	52.3	36.0	35.7	37.9	31.1	39.2
75 th	57.5	39.3	40.1	47.7	33.2	43.5
90 th	68.2	45.1	54.5	67.6	39.7	50.0

3.2 Standardized Scaled Scores

Table 4 shows the summary descriptive statistics based on the standardized scale scores for Grade 7. The minimum score ranges from 167.7 (English) to 206.6 (physics) while the maximum scores are in the ranges of 381.2 (English) to 451.7 (mathematics).

Table 4. Descriptive Summary Statistics Grade Seven Scaled Scores Grade 7 Phase I

	Minimum	Maximum	Mean	Std. Deviation	Skewness
English	167.4	381.2	246.7	49.36	1.00
Mathematics	191.8	451.7	251.8	56.24	2.13
Biology	197.2	413.0	248.8	49.29	2.10
Chemistry	192.4	383.7	250.3	51.00	1.41
Physics	206.6	442.2	248.8	51.82	2.72
Average	190.7	437.4	249.0	51.92	2.21

Pupils who scored at the 10th percentile achieved a score of 208.3 in the average score, which is 0.834 standard deviations less than the mean (250). The corresponding score for pupils at the 90th percentile is 302.3 that is 1.04 standard deviations greater than the mean. The scaled score at the 50th percentile (235.3) is less than the scaled mean score (Table 5).

Table 5. Five Key Marker Point of the Scaled Scores Grade 7

Percentiles	English	Mathematics	Biology	Chemistry	Physics	Average
10 th	191.7	203.0	213.3	205.1	212.3	208.3
25 th	220.0	222.4	220.3	215.4	222.0	216.7
50 th	233.4	238.8	231.6	230.5	239.7	235.3
75 th	265.7	268.2	250.9	269.7	250.7	262.0
90 th	331.7	320.4	314.6	349.1	285.2	302.3

3.3 Performance at Varying Levels of Standards

In order to understand the distribution of scores, the continuum of student's achievement is divided into four levels as '*Below Basic*', '*Basic*', '*Proficient*' and '*Advanced*' and the proportion achieving at each level at Grade 7 is presented below in Table 6 and Figure 2. The classification is based on the scaled scores where '*Advanced*' is greater than 2 standard deviations from the mean '*Proficient*' is between 1 and 2 standard deviations above the mean, '*Basic*' is within 1 standard deviation above the mean and '*Below Basic*' is less than the mean score. Accordingly based on the average score 5.5% of the students are categorized as *Advanced*, 7.2% as *Proficient*, 20.1% as *Basic* and 67.3% as *Below Basic*.

Table 6. Proficiency Levels of the Five Subjects Grade 7

Subject	Below Basic	Basic	Proficient	Advanced
English	64.7%	22.2%	7.6%	5.5%
Mathematics	67.6%	21.2%	4.0%	7.2%
Biology	74.6%	15.0%	1.4%	9.0%
Chemistry	67.3%	18.7%	6.8%	7.2%
Physics	74.1%	16.8%	3.4%	5.7%
Average	67.3%	20.1%	7.2%	5.5%

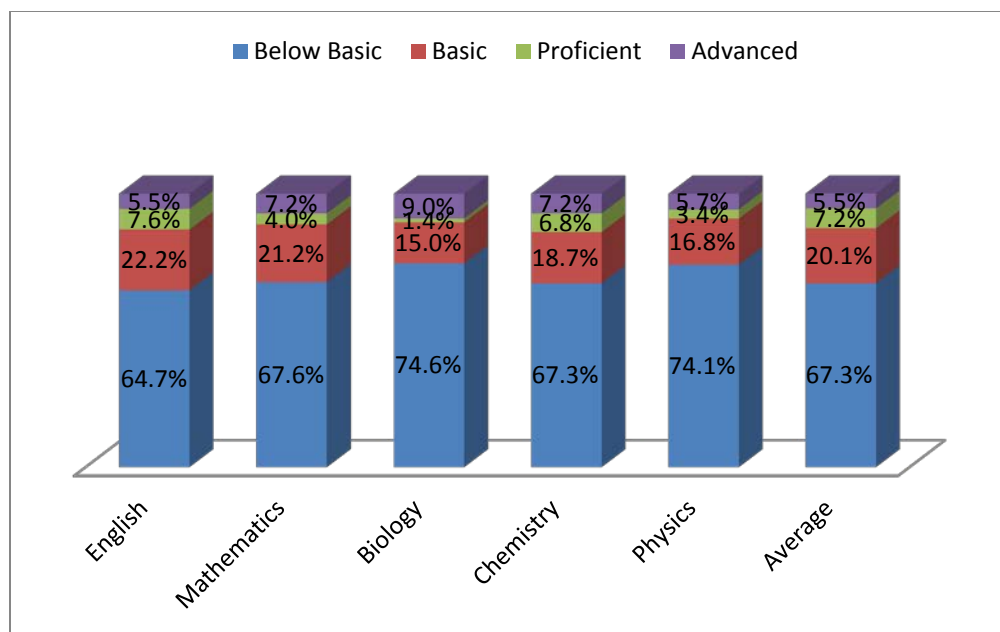


Figure 2. Proficiency Levels of the Five Subjects Grade 7 Phase I

3.4 Achievement across Subgroups

Independent sample t-test was carried out in order to see whether statistically significant mean differences exist between boys and girls. Boys performed better than girls in all subjects and the mean differences were statistically significant. The mean difference in chemistry (8.1%) was the highest while in physics (4.8%) was the least (Table 7).

Table 7. Independent Sample t-Test of the Achievement Scores by Sex Grade 7

Subject	Sex	Mean	Std. Deviation	t	Sig	MD
English	Male	57.4	17.7	11.63	0.000	5.9
	Female	51.5	16.3			
Math	Male	40.6	15.0	14.96	0.000	6.4
	Female	34.2	13.3			
Biology	Male	43.4	23.2	11.39	0.000	7.5
	Female	35.9	20.0			
Chemistry	Male	46.4	21.7	12.43	0.000	8.1
	Female	38.3	21.1			
Physics	Male	35.2	17.9	9.41	0.000	4.8
	Female	30.4	16.3			
Average	Male	44.6	19.1	11.96	0.000	6.5
	Female	38.1	17.4			

Independent sample t-test was carried out in order to see whether statistically significant mean differences exist between Bolosso Sore and Damot Gale. The mean difference in the average score was found very small in favor of Damot Gale. In mathematics Bolosso Sore performed better than Damot Gale. Table 8 shows that in all other subjects Damot Gale performed better but the mean differences in English and chemistry were very small and statistically not significant. The mean difference in physics (3.75%) was the highest.

Table 8. Independent Sample t-Test of the Achievement Scores by Woreda Grade 7

Subject	Woreda	Mean	SD	t	Sig.	MD
English	Boloso	54.5	6.62	.837	.403	.199
	Damot	54.3	9.04			
Mathematics	Boloso	38.0	4.88	5.471	.000	1.02
	Damot	36.9	7.32			
Biology	Boloso	38.7	7.32	-5.267	.000	-1.75
	Damot	40.5	13.74			
Chemistry	Boloso	42.6	10.29	-1.283	.199	-.49
	Damot	43.1	14.74			
Physics	Boloso	30.9	3.45	-13.038	.000	-3.75
	Damot	34.6	12.94			
Average	Boloso	40.9	4.38	-3.831	.000	-.95
	Damot	41.9	10.77			

Table 9 shows mean scores by school for Grade 7 in Bolosso Sore. The average score of the five subjects ranges from 32.1% to 50%. The highest achieving four schools scored from 44.8% to 50%. The lowest achieving three schools scored from 32.1% to 35.7%.

Table 9. Achievement Scores by School in Bolosso Sore Grade 7

No	School	English	Math	Biology	Chemistry	Physics	Average
1	Hembecho	57.5	39.3	63.9	51.2	38.0	50.0
2	Admancho	50.1	50.9	37.3	74.6	31.5	48.9
3	Weybo	63.4	38.6	39.0	47.7	35.7	44.9
4	Afama Mino	61.6	38.7	46.8	45.8	31.1	44.8
5	Gurumo Koisha	51.6	40.5	45.0	50.2	31.1	43.7
6	Dangara Selata	59.8	45.1	38.2	46.6	27.9	43.5
7	Gido Homba	55.8	41.7	38.4	42.4	31.4	41.9
8	Yukara	60.2	37.0	36.3	38.3	32.8	40.9
9	Korke Doge	54.1	37.2	39.6	37.2	36.4	40.9
10	Dache Gofera	41.6	36.7	42.7	45.1	34.7	40.2
11	Tiyo Hembecho	61.9	35.8	31.6	38.8	30.4	39.7
12	Gara Godo	55.8	39.9	32.7	35.2	34.2	39.6

No	School	English	Math	Biology	Chemistry	Physics	Average
13	Afama Bancha	68.2	31.3	36.8	34.1	27.0	39.5
14	Legama	52.5	37.6	33.1	39.7	33.2	39.2
15	Sore Homba	58.7	35.3	34.8	37.9	28.5	39.0
16	Chama Hembecho	51.5	36.3	34.6	31.5	32.0	37.2
17	Basa Gofera	47.0	30.7	37.0	36.1	27.8	35.7
18	Dola	46.5	36.2	33.2	35.8	25.9	35.5
19	Achura	47.3	31.6	28.0	28.3	25.2	32.1
	Average	55.01.0	37.92	38.37	41.92	31.31	40.91

Table 10 shows mean scores by school for Damot Gale. The average score of the five subjects ranges from 34.1% to 717.7%. The highest achieving three schools scored from 54.2% to 71.7%. The lowest achieving three schools scored from 34.1% to 34.9%.

Table 10. Achievement Scores by School in Damot Gale Grade 7

No	School	English	Math	Biology	Chemistry	Physics	Average
1	Wandara	76.2	59.7	76.7	76.3	69.4	71.7
2	Harto Kontola	72.4	45.3	67.4	67.6	43.4	59.2
3	Harto Burkito	68.8	36.0	54.5	61.6	63.8	56.9
4	Bala Koisha	68.9	39.5	65.7	57.0	39.7	54.2
5	Damot Ofa	53.0	41.2	50.6	54.8	49.9	49.9
6	Sha Sha Gale	54.9	33.6	31.7	67.6	25.2	42.6
7	Buge	57.5	36.0	35.7	39.7	31.2	40.0
8	Aro Wegera	53.9	34.7	37.7	42.0	24.9	38.6
9	Woshe Gale	53.3	34.5	39.3	38.2	27.6	38.6
10	Ade Ofa	51.9	32.4	35.0	33.5	31.7	36.9
11	Sibaye	51.2	34.1	33.3	36.3	29.2	36.8
12	Obe Jage	50.3	34.2	35.2	31.3	31.8	36.5
13	Damot Mokonisa	52.3	34.2	32.1	32.8	30.1	36.3
14	Gacheno	42.9	34.6	40.1	35.0	28.6	36.2
15	Wegera	51.4	34.1	32.7	33.1	28.8	36.0
16	Zegere	51.2	34.9	33.4	33.8	25.5	35.8
17	Mokonisa Woige	51.1	32.0	35.0	29.9	26.4	34.9
18	Ade Chreke	44.8	32.6	30.3	31.8	33.8	34.7
19	Komasa	45.6	35.9	29.9	35.6	26.3	34.6
20	Ade Damot	47.3	32.1	30.5	33.0	27.5	34.1
	Average	54.95	36.58	41.34	43.55	34.74	42.23

4 Findings and Discussion Grade 4 Phase I

This part presents the statistical analysis and interpretation of the findings for the three subjects tested in Grade 4. Initially the summary descriptive statistics and frequency distribution based on the raw scores for each subject are addressed followed by subgroup analyses (sex, woreda and school). Proficiency levels are presented based on standardized scale scores. The test items were composed of different content areas in each subject:

Mathematics: *Positive Irrational Numbers and Positive Rational Number.*

English: *Asking About and Describing People, Comparing People, Animals and Objects, Quantities, Peoples Work and Buildings, Families, Friends and Where Things Are.*

Science: *Food and Health, Digestive System, Natural Conditions, and Transformation of Heat.*

The total test score for each subject presented here is the percentage score.

4.1 Summary Descriptive Statistics

The mean score for English (44.8%) was the least and 4.4 points lower than the average score (49.2%) Table 11. Looking at the standard deviation the widest variation is in English (9.19%) and the least is in mathematics (7.66%). When compared with the 2010 there is a gain of 3.2% points in the average score. Looking at each subject the gains are observed in mathematics (5.3%) and English (4.2%). There was no change in the environmental science score. Compared with the 2007 scores, progresses were observed in mathematics (7.4%) and environmental science (3.5%) and the gain in the average score was 3.9%.

Table 11. Mean and Standard Deviations of Grade 4 Scores by Year

Subject	2011		2010		2007	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Mathematics	54.9	7.66	49.6	6.66	47.5	5.17
English	44.8	9.13	40.6	8.28	44.6	7.46
Science	47.7	8.28	47.8	8.04	43.8	5.37
Average	49.2	7.71	46.0	7.27	45.3	5.52

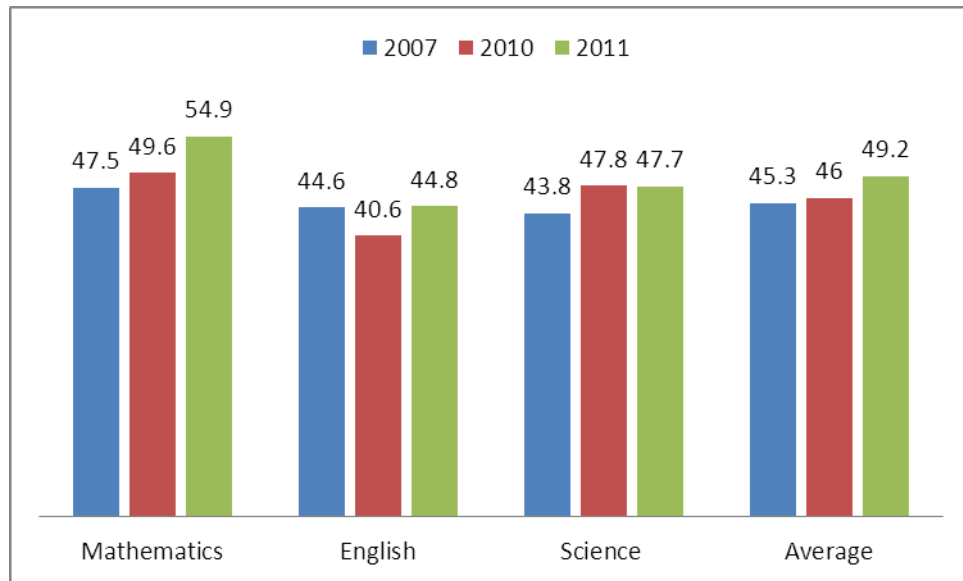


Figure 3. Mean and Standard Deviations Grade 4 Scores by Year

Table 12 below shows Pearson Product Moment correlation between the tested subjects plus the average score. There exist positive relationship in all cases and the correlations were statistically significant at $p < .01$. This shows that students performing well in one subject did the same in the others. English showed the strongest correlation (.934) with the average score indicating that those who did well in English performed better overall.

Table 12. Correlates of Achievement Scores Grade Four Grade 4

	English	Math	Science
Math	.808		
Science	.758	.762	
Average	.934	.923	.909

Table 13 below shows the range of achievements in the three subjects and the average scores at Grade 4. Pupils at the 90th percentile achieved a score of 61.2% in the average. This means only 10% of the candidates scored 61.2% and above. On the other hand, pupil at 10th percentile scored only 40.2% and this means 10% of the examinee scored at or below 40.2%. In English 50% of the students scored less than 43.7% and only 10% were able to score 56.8% and above. In mathematics the median score (or 50th percentile) equals 53.8%. The scores at the 10th percentile show that the most difficult subject for the low achievers was English. In the same way English is also the most difficult subject for the high achievers. Mathematics (46.7%) was relatively easier for the low achievers.

Table 13. Five Key Marker Point of the Achievement Scores (%) Grade 4

Percentiles	English	Math	Science	Average
10 th	36.0	46.7	37.4	40.2
25 th	38.1	49.6	42.6	43.2
50 th	43.7	53.8	47.8	47.6
75 th	47.8	58.5	51.3	52.3
90 th	56.8	64.9	57.5	61.2

4.2 Standardized Scaled Scores

Table 14 shows the summary statistics based on the standardized scale scores for Grade Four. The minimum score ranges from 147.8 (science) to 182.4 (English) while the maximum scores are in the ranges of 422.1 (math) to 445.1 (science).

Table 14. Descriptive Summary Statistics Grade Seven Scaled Scores 2011 Grade 4

	Minimum	Maximum	Mean	Std. Deviation	Skewness	
English	182.4	440.9	250.0	50.0	1.53	.029
Math	166.1	422.1	250.0	50.0	1.07	.029
Science	147.8	445.5	250.0	50.0	.95	.029
Average	159.8	414.5	250.0	50.0	1.02	.029

Table 15 shows that pupils who scored at the 10th percentile achieved a score of 191.9 in the average score, which is 1.09 standard deviations less than the mean. The corresponding score for pupils at the 90th percentile is 309.9 that is 1.16 standard

deviations greater than the mean. The scaled score at the 50th percentile (239.5) is lower than the mean score.

Table 15. Five Key Marker Point of the Scaled Scores Grade 4

Percentiles	English	Math	Science	Average
10 th	201.6	196.2	187.8	191.9
25 th	213.1	215.1	218.6	211.3
50 th	243.8	242.5	250.0	239.5
75 th	266.2	273.2	271.4	270.4
90 th	315.5	315.0	308.6	327.7

4.3 Performance at Varying Levels of Standards

Table 16 and Figure 4 below show that based on the average score 4.6% categorized as *Advanced*, 9.8% *Proficient*, 29.2% as *Basic* and 54.4% as *Below Basic*.

Table 16. Proficiency Levels of the Five Subjects Grade 4

	Belo Basic	Basic	Proficient	Advanced
English	56.5%	30.5%	8.3%	4.6%
Math	60.4%	20.4%	14.6%	4.5%
Science	49.8%	35.2%	10.3%	4.8%
Average	56.4%	29.2%	9.8%	4.6%

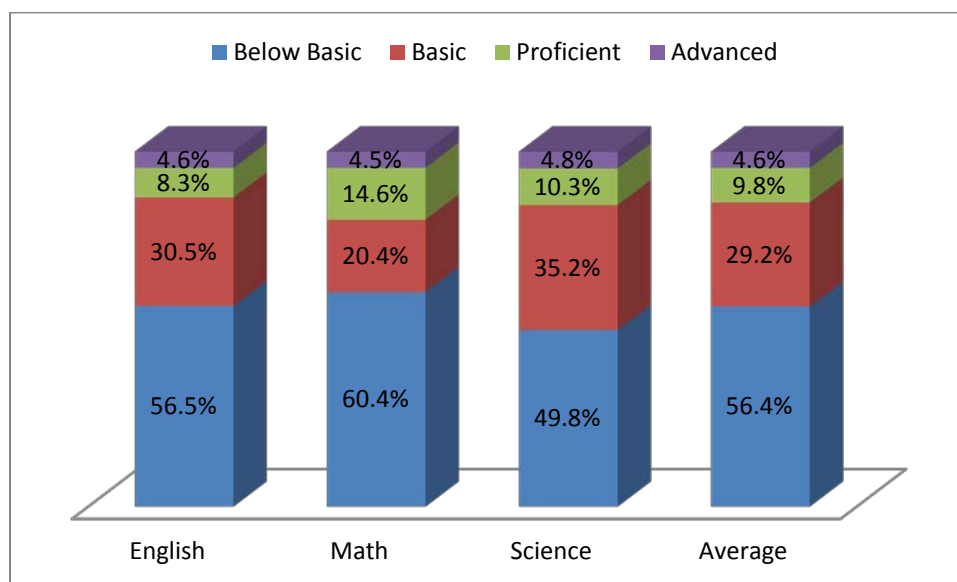


Figure 4. Proficiency Levels of the Five Subjects Grade 4 Phase I

4.4 Achievement across Subgroups

Independent sample t-test was conducted in order to see whether statistically significant mean differences exist between boys and girls. In all the subjects boys performed better than girls and the differences were statistically significant. The mean difference in Science (8.5%) was the highest while in Math (3.1%) was the least (Table 17).

Table 17. Independent Sample t-Test of the Achievement Scores by Sex Grade 4

	Sex	Mean	Std. Deviation	t	MD	Sig
English	Male	47.5	22.3	10.5	5.4	0.000
	Female	42.0	21.0			
Science	Male	51.9	24.5	15.1	8.5	0.000
	Female	43.5	22.4			
Math	Male	56.5	22.5	5.9	3.1	0.000
	Female	53.4	21.9			
Average	Male	52.0	23.1	10.5	5.7	0.000
	Female	46.3	21.8			

Independent sample t-test was conducted in order to see whether statistically significant mean differences exist between Bolosso Sore and Damot Gale. In science and math Damot Gale performed better than Bolosso Sore and the mean differences were statistically significant. The mean differences in English and the average scores between the two woredas were very small and practically not significant (Table 18).

Table 18. Independent Sample t-Test of the Achievement Scores by Woreda Grade 4

	Woreda	Mean	Std. Deviation	t	Sig.	MD
English	Boloso	44.6	8.66	-2.158	.031	-.478
	Damot	45.1	9.75			
Math	Boloso	55.4	7.92	5.909	.000	1.095
	Damot	54.3	7.22			
Science	Boloso	48.3	8.33	6.150	.000	1.232
	Damot	47.0	8.16			
Average	Boloso	49.4	7.73	3.300	.001	.617
	Damot	48.8	7.67			

Table 19 shows mean scores by school for Grade 4 in Bolosso Sore. The average score of the three subjects ranges from 37.7% to 74.5%. The highest achieving six schools scored

from 61.2% to 74.5% while the bottom six schools scored from 38.7% to 42.6%. The average score of 14 schools was found greater than the grand mean (50.9).

Table 19. Achievement Scores by School in Boloso Sore

No	School	English	Math	Science	Average
1	Lome Kae	73.3	81.3	69.0	74.5
2	Dangara Madalcho	66.6	79.8	63.9	70.1
3	Afam Adila	64.3	64.6	65.7	64.9
4	Pulasa Admancho	56.0	63.2	73.5	64.2
5	Mage Tiyo	45.9	58.3	80.1	61.4
6	Chare Homba	59.3	67.9	56.3	61.2
7	Afama Mino	58.1	64.7	50.2	57.7
8	Afama Bancha	49.0	65.8	48.7	54.5
9	Wotagisho	46.8	59.2	54.9	53.6
10	Dangara Selata	53.3	56.7	47.1	52.4
11	Dubbo	41.9	63.8	49.1	51.6
12	Gurumo Koisha	46.2	58.5	49.6	51.4
13	Weyebo	47.6	54.1	51.8	51.2
14	Duleo Hawara	45.2	54.2	53.2	50.9
15	Tokiso Godo	44.3	53.8	54.4	50.8
16	Gara Godo	43.1	56.5	51.3	50.3
17	Chama Hembecho	45.5	54.1	49.8	49.8
18	Hembecho	41.5	54.5	47.8	47.9
19	Korke Doge	43.1	55.9	43.7	47.6
20	Gido Homba	44.2	53.6	43.3	47.0
21	Sore Homba	38.8	53.7	48.2	46.9
22	Hajo Selata	40.8	50.3	49.4	46.8
23	Dache Gofera	40.3	51.7	47.8	46.6
24	Wormuma	36.7	51.9	47.9	45.5
25	Tadisa	37.0	55.4	40.3	44.2
26	Tiyo Hembecho	38.5	52.2	38.5	43.1
27	Legama	38.7	45.5	43.7	42.6
28	Admancho	36.8	47.7	41.1	41.9
29	Dola	37.2	47.9	38.9	41.3
30	Basa Gofera	35.8	44.4	39.8	40.0
31	Yukara	35.4	44.6	37.0	39.0
32	Achura	32.5	46.7	36.8	38.7
	Average	45.7	56.6	50.4	50.9

Table 20 shows mean scores by school for Grade 4 in Damot Gale. The average score of the three subjects ranges from 35.3% to 68.6%. The highest achieving six schools scored from 56% to 68.6% while the lowest achieving six schools scored from 35.3% to 41.9%.

Table 20. Achievement Scores by School in Damot Gale

No	School	English	Math	Science	Average
1	Harto Kontola	79.7	63.3	62.7	68.6
2	Damot Bolosso	55.5	72.2	65.0	64.2
3	Wandara	62.9	72.4	56.7	64.0
4	Harto Burkito	56.8	58.2	61.9	59.0
5	Aro Wegera	49.9	64.4	57.5	57.3
6	Wandara Gale	50.0	64.9	53.2	56.0
7	Ade Ofa	46.2	62.7	56.8	55.2
8	Damot Ofa	46.2	58.8	58.8	54.6
9	Shakesho Shone	53.7	61.4	46.7	53.9
10	Damota	45.6	57.6	53.8	52.3
11	Chocha	45.6	57.4	52.1	51.7
12	Zegre	47.8	55.5	48.1	50.5
13	Fate	40.9	59.6	49.9	50.1
14	Ade Koisha	48.6	55.1	45.3	49.7
15	Sibaye Korke	38.2	64.6	45.0	49.3
16	Gacheno	44.9	51.0	50.4	48.8
17	Bala Koisha	46.4	52.5	44.8	47.9
18	Wegara	44.4	50.4	46.5	47.1
19	ObeJage	39.2	53.2	46.0	46.1
20	Buge	43.7	51.5	43.1	46.1
21	Lifika	46.6	44.1	47.0	45.9
22	Zamine Sibaye	41.9	49.6	45.5	45.7
23	Damot Mokonisa	38.0	51.0	47.4	45.5
24	Ade Cherake	48.5	46.9	36.7	44.0
25	Sha Sha Gale	36.8	51.7	41.1	43.2
26	Taba	39.3	47.0	42.6	43.0
27	Woshe Gale	36.0	46.8	42.9	41.9
28	Konasa	37.1	48.9	37.9	41.3
29	Sibaye	38.1	47.2	37.4	40.9
30	Mokonisa Woige	36.2	48.2	36.3	40.2
31	Ade Damot	32.5	48.3	33.6	38.1
32	Hagaza Doge	32.9	42.1	30.8	35.3
	Average	45.3	55.0	47.6	49.3

Comparison of Phase I and Phase II

5 Summary and Conclusions Phase I

5.1 Grade 7

In Grade 7 the mean score for each subject was found below the passing mark set by the MoE except English. The mean score for physics (32.8%) was the least and 4 points lower than the average score (41.4%). When compared with the 2010 there is no major difference in the average scores. Looking at each subject, gains are observed in English (11.6%), chemistry (7.4%), mathematics (4.6%) while there were declines in biology (11.4%) and physics (10.3%). On the other hand the performance of Grade 7 students in Phase I was found better than that of Phase II.

Students performing well in one subject did the same in the others. Biology showed the strongest correlation to the average score indicating that those who did well in biology performed better overall. The correlation between English and the average score was the least.

Only 10% of the candidates scored 50% and above. On the other hand, and 10% of the examinee scored at or below 34.9%. In mathematics 50% of the students scored less than 36% and only 10% were able to score 45.1% and above. It was only in English the 25th percentile equals 50.1%. The scores at the 10th percentile show that the most difficult subject for the low achievers was physics (25.9%) followed by chemistry (31.5%). The most difficult subject for the high achievers was physics (39.7%) followed by mathematics (45.1%). For both low and high achievers physics was found the most difficult subject.

In terms of proficiency levels, based on the average score 5.5% of Grade 7 students are categorized as *Advanced*, 7.2% as *Proficient*, 20.1% as *Basic* and 67.3% as *Below Basic*.

The mean difference in the average score was found very small in favor of Damot Gale. In mathematics Boloso Sore performed better than Damot Gale. In the other subjects Damot Gale performed better but the mean differences in English and chemistry were very small and statistically not significant. The mean difference in physics (3.75%) was the highest.

In Boloso Sore, the average score of the five subjects by school ranges from 32.1% to 50%. The highest achieving four schools scored from 44.8% to 50%. The lowest achieving three schools scored from 32.1% to 35.7%.

In Damot Gale, the average score of the five subjects by school ranges from 34.1% to 71.7%. The highest achieving three schools scored from 54.2% to 71.7%. The lowest achieving three schools scored from 34.1% to 34.9%.

5.2 Grade 4

In Grade 4 the mean score for English (40.6%) was the least and 5.4 points lower than the average score (46%). Looking at the standard deviation the widest variation is in English (8.28%) and the least is in mathematics (6.66%). When compared with the 2010 there is a gain of 2.8% points in the average score. Looking at each subject the gains are observed in mathematics (5.3%) and English (4.2%). There was no change in the environmental science score. In all the tested subjects, the performance of Grade 4 students in Phase I was found better than that of Phase II.

There exist positive relationship between the tested subjects and the correlations were statistically significant. This shows that students performing well in one subject did the same in the others. English showed the strongest correlation with the average score indicating that those who did well in English performed better overall.

Only 10% of the candidates scored 61.2% and above while 10% of the examinee scored at or below 40.2%. In English 50% of the students scored less than 43.7% and only 10% were able to score 56.8% and above. The most difficult subject for the low achievers as well as high achievers was English. Mathematics was relatively easier for the low achievers.

In science and math Damot Gale performed better than Bolosso Sore and the mean differences were statistically significant. The mean differences in English and the average scores between the two woredas were very small and practically not significant. Based on the average standardized score Grade 4 students were categorized into Advanced (4.6%), Proficient (9.8%), as Basic (29.2%) and Below Basic (54.4%).

In Boloso Sore the average score of the three subjects by school ranges from 37.7% to 74.5%. The highest achieving six schools scored from 61.2% to 74.5% while the bottom six schools scored from 38.7% to 42.6%. The average score of 14 schools was found greater than the grand mean (50.9).

In Damot Gale the average score of the three subjects by school ranges from 35.3% to 68.6%. The highest achieving six schools scored from 56% to 68.6% while the lowest achieving six schools scored from 35.3% to 41.9%.

6 Findings and Discussion Grade 7 Phase II

6.1 Summary Descriptive Statistics

The summary descriptive statistics for Grade 7 shows that the mean score for each subject was found below the passing mark set by the MoE except English (Table 21). The mean score for physics (30.1%) was the least and 7.7 points lower than the average score (37.8%). Looking at the standard deviation the widest variation is in chemistry (7.13%) and the least is in physics (2.96%). The distributions of the scores for all subjects as well as the average score are positively skewed indicating that only very few students were able to score highest scores.

Table 21. Descriptive Statistics Phase II 2011

	Mean	Std. Deviation	Skewness
Math	35.7	2.99	1.91
English	50.5	4.07	1.01
Biology	35.7	5.79	1.49
Chemistry	36.9	7.13	2.16
Physics	30.1	2.96	2.40
Average	37.8	3.71	1.74

Table 22 shows correlations between the tested subjects plus the average score. There exist positive relationship in all cases and the correlations were statistically significant in all cases. This shows that students performing well in one subject did the same in the others. Biology showed the strongest correlation ($r=.916$, $p < .01$) with the average score

indicating that those who did well in chemistry performed better overall. The correlation between biology and the average score ($r = .872$, $p < .01$) was the least.

Table 22. Correlates of Achievement Scores Grade 7

	Mathematics	English	Biology	Chemistry	Physics
English	.432**				
Biology	.226**	.734**			
Chemistry	.296**	.524**	.682**		
Physics	.445**	.760**	.624**	.592**	
Average	.512**	.842**	.872**	.855**	.821**

** . Correlation is significant at the 0.01 level (2-tailed).

Table 23 below shows the range of achievements in the five subjects and the average scores at Grade 7. Pupils at the 90th percentile achieved a score of 41.5% in the average. This means only 10% of the candidates scored 50% and above. On the other hand, pupil at 10th percentile scored only 33.6% and this means 10% of the examinee scored at or below 33.6%. In mathematics 50% of the students scored less than 36.1% and only 10% were able to score 38.7% and above. It was only in English the 50th percentile equals 49.4%. The scores at the 10th percentile show that the most difficult subject for the low achievers was physics (26.6%) followed by chemistry (30.3%). On the other hand the 90th percentile shows that the most difficult subject for the high achievers was physics (32.6%) followed by mathematics (38.7%). For both low and high achievers physics was found the most difficult subject.

Table 23. Five Key Marker Point of the Achievement Scores (%) Grade 7

Percentiles	Math	English	Biology	Chemistry	Physics	Average
10 th	31.8	46.6	30.7	30.3	26.6	33.6
25 th	34.0	48.3	31.8	32.9	28.8	35.6
50 th	36.1	49.4	32.6	35.4	30.2	37.3
75 th	36.7	53.7	38.8	38.6	30.7	38.8
90 th	38.7	55.6	42.9	42.2	32.6	41.5

6.2 Standardized Scaled Scores

Table 24 shows the summary descriptive statistics based on the standardized scale scores for Grade 7. The minimum score ranges from 166.9 (English) to 192.7 (biology) while the maximum scores are in the ranges of 408.6 (English) to 486.8 (physics).

Table 24. Descriptive Summary Statistics Grade Seven Scaled Scores Grade 7

	Minimum	Maximum	Mean	Std. Deviation	Skewness
English	166.9	408.6	250	50	1.007
Mathematics	177.6	480.5	250	50	1.907
Biology	192.7	413.4	250	50	1.485
Chemistry	180.6	446.3	250	50	2.159
Physics	175.1	486.8	250	50	2.4
Average	183.0	433.6	250	50	1.736

Pupils who scored at the 10th percentile achieved a score of 193.9 in the average score, which is 1.14 standard deviations less than the mean. The corresponding score for pupils at the 90th percentile is 300.3 that is 1 standard deviations greater than the mean. The scaled score at the 50th percentile (243.4) is a little less than the scaled mean score (Table 25Table 5).

Table 25. Five Key Marker Point of the Scaled Scores Grade 7

Percentiles	English	Math	Biology	Chemistry	Physics	Average
10 th	202.2	184.6	206.6	203.9	191.8	193.9
25 th	222.7	221.4	216.1	222.0	228.2	221.0
50 th	236.1	256.2	222.9	239.5	252.1	243.4
75 th	288.3	266.6	276.9	262.0	261.6	263.6
90 th	312.5	299.7	312.1	286.9	292.6	300.3

6.3 Performance at Varying Levels of Standards

In order to understand the distribution of scores, the continuum of student's achievement is divided into four levels as '*Below Basic*', '*Basic*', '*Proficient*' and '*Advanced*' and the proportion achieving at each level at Grade 7 is presented below in Table 26 and Figure 5. The classification is based on the scaled scores where '*Advanced*' is greater than 2 standard deviations from the mean '*Proficient*' is between 1 and 2 standard deviations

above the mean, 'Basic' is within 1 standard deviation above the mean and 'Below Basic' is less than the mean score. Accordingly based on the average score 7.5% of the students are categorized as *Advanced*, 4.2% as *Proficient*, 21.2% as *Basic* and 67.4% as *Below Basic*.

Table 26. Proficiency Levels of the Five Subjects Grade 7

	Below Basic	Basic	Proficient	Advanced
English	61.3%	20.3%	14.1%	4.3%
Math	43.4%	49.1%	5.3%	2.2%
Biology	61.2%	21.3%	13.3%	4.3%
Chemistry	50.6%	42.1%	0.0%	7.2%
Physics	49.9%	45.8%	1.9%	2.4%
Average	67.4%	21.2%	4.2%	7.2%

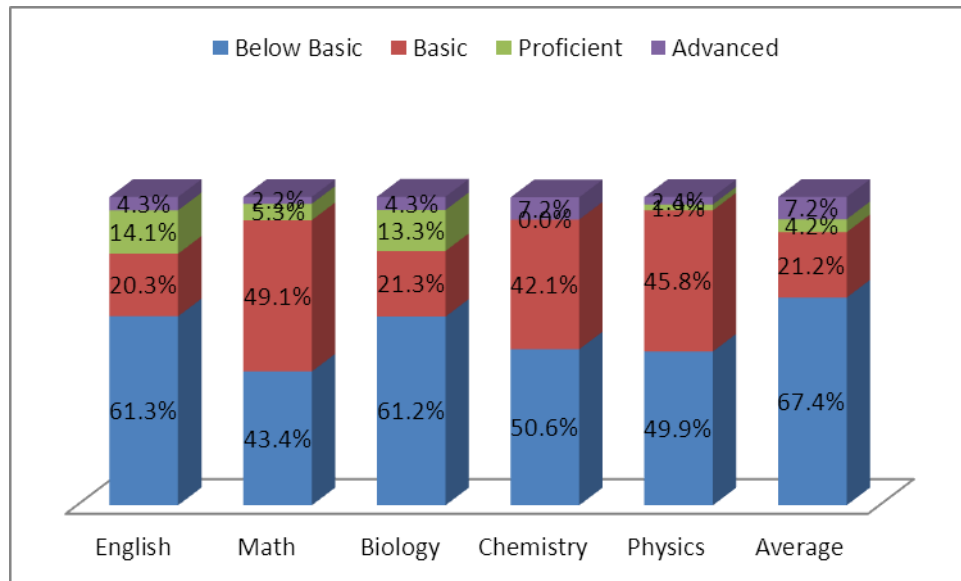


Figure 5. Proficiency Levels of the Five Subjects Grade 7 Phase II

6.4 Achievement across Subgroups

Independent sample t-test was carried out to check whether the existence of statistically significant mean differences between girls and boys. In all the five subjects tested boys performed better than girls and the mean differences were statistically significant (Table 27). The mean difference in chemistry (9.7) was the highest.

Table 27. Independent Sample t-Test of the Achievement Scores by Sex Grade 7

Subject	Gender	Mean	SD	t	Sig.	MD
English	Male	53.7	4.70	41.4	.000	6.2
	Female	47.4	4.09	41.5		
Math	Male	38.7	2.70	51.1	.000	6.0
	Female	32.8	4.03	50.8		
Biology	Male	40.1	6.74	42.1	.000	8.7
	Female	31.3	5.37	42.3		
Chemistry	Male	41.8	7.42	39.1	.000	9.7
	Female	32.1	7.19	39.1		
Physics	Male	33.3	3.79	53.9	.000	6.4
	Female	26.9	3.12	54.1		
Average	Male	41.5	4.22	56.1	.000	7.4
	Female	34.1	3.49	56.3		

Independent sample t-test was carried out in order to see whether statistically significant mean differences exist between Damot Sore and Damot Pulasa. The mean difference between the two woredas in the average score was found negligible. In mathematics Damot Sore performed better than Damot Pulasa and in chemistry the reverse was true (Table 28).

Table 28. Independent Sample t-Test of the Achievement Scores by Woreda Grade 7

Subject	Woreda	Mean	SD	t	Sig.	MD
Mathematics	Damot Sore	37.1	3.25	28.3	.000	2.6
	Damot Pulasa	34.5	2.02			
English	Damot Sore	50.9	4.42	5.9	.000	0.8
	Damot Pulasa	50.1	3.68			
Biology	Damot Sore	35.6	6.21	-0.7	0.508	-0.1
	Damot Pulasa	35.8	5.35			
Chemistry	Damot Sore	35.6	5.35	-10.7	.000	-2.5
	Damot Pulasa	38.1	8.29			
Physics	Damot Sore	30.2	3.44	3.6	.000	0.4
	Damot Pulasa	29.9	2.40			
Average	Damot Sore	37.9	3.83	1.7	0.084	0.2
	Damot Pulasa	37.7	3.58			

Table 29 shows mean scores by school for Grade 7 in Damot Pulasa. The average score of the five subjects ranges from 32.8% to 48.1%. The highest achieving four schools

scored from 40.1% to 48.1%. The lowest achieving three schools scored from 32.8% to 35%.

Table 29. Achievement Scores by School in Boloso Sore Grade 7

School	Math	English	Biology	Chemistry	Physics	Average
Gale Buge	37.2	60.0	54.0	53.6	35.8	48.1
Lera	38.8	53.7	40.8	64.9	32.6	46.1
Tomtome Menta	37.0	55.4	38.1	38.6	31.3	40.1
Busha	34.0	50.6	42.9	42.2	29.7	39.9
Warbira Suke	34.3	54.8	38.8	33.7	29.9	38.3
Shanto	36.2	47.4	34.9	39.8	30.2	37.7
Game Kebecho	36.1	50.7	36.7	32.9	31.3	37.5
Galcha Suke	31.4	48.3	36.2	39.0	30.2	37.0
Gudicho	33.4	49.7	34.1	38.2	28.8	36.8
Hilena Korke	33.6	50.1	32.6	35.4	26.5	35.6
Olola	34.4	51.3	29.1	30.3	32.8	35.6
Zamine Wulisho	33.2	46.9	30.7	37.1	28.6	35.3
Siyara Mahe	35.5	48.2	32.0	33.2	26.1	35.0
Hebret	31.8	44.6	30.8	31.7	25.8	33.0
Abota Ulto	32.2	43.8	31.7	29.7	26.8	32.8

Table 30 shows mean scores by school for Damot Sore. The average score of the five subjects ranges from 33.1% to 51.4%. The highest achieving three schools scored from 40.5% to 51.4%. The lowest achieving three schools scored from 33.3% to 34.8%.

Table 30. Achievement Scores by School in Damot Sore Grade 7

School	Math	English	Biology	Chemistry	Physics	Average
Zamine Nare	40.6	63.5	54.6	54.2	44.1	51.4
Bolola Chawkare	38.7	57.3	42.5	38.5	30.6	41.5
Demba Zamine	36.7	54.1	43.3	38.0	30.5	40.5
Doge Shakisho	49.5	49.9	31.2	32.3	31.1	38.8
Gurumo Ladisa	36.7	48.5	39.0	37.2	28.8	38.0
Gununo Edget	37.6	49.2	32.1	38.6	30.8	37.6
Shayamba	35.4	55.6	31.8	33.1	30.6	37.3
Anchicho Chawkare	36.3	48.9	32.2	33.5	29.5	36.1
Shayamba Kilena	35.7	49.4	31.7	32.3	29.7	35.8
Doge Mashedo	36.4	46.6	29.8	33.7	27.2	34.8
Sunkale	31.4	45.1	35.1	29.2	27.4	33.6
Sore Warmura	34.6	47.3	32.2	27.0	25.6	33.3

7 Findings and Discussion Grade 4 Phase II

7.1 Summary Descriptive Statistics

The mean score for English (40.3%) was the least and 3 points lower than the average score (46.3%) Table 31. Looking at the standard deviation the widest variation is in Science (7.38%) and the least is in English (5.56%). The distributions of the scores for all subjects are positively skewed. Indicating that only very few students were able to score highest scores.

Table 31. Mean and Standard Deviations of Grade 4 Scores

	Mean	Std. Deviation	Skewness
English	40.3	5.56	0.404
Math	53.0	6.45	0.71
Science	45.4	7.38	0.63
Average	46.3	6.12	0.657

Table 32 below shows Pearson Product Moment correlation between the tested subjects plus the average score. There exist positive relationship in all cases and the correlations were statistically significant at $p < .01$. This shows that students performing well in one subject did the same in the others. Science showed the strongest correlation (.952) with the average score indicating that those who did well in English performed better overall.

Table 32. Correlates of Achievement Scores Grade Four

	English	Math	Science
Math	.850**		
Science	.831**	.847**	
Average	.936**	.950**	.952**

Table 33 below shows the range of achievements in the three subjects and the average scores at Grade 4. Pupils at the 90th percentile achieved a score of 56.8% in the average. This means only 10% of the candidates scored 56.8% and above. On the other hand, pupil at 10th percentile scored only 39.2% and this means 10% of the examinee scored at or below 39.2%. In English 50% of the students scored less than 39.9% and only 10% were able to score 48.5% and above. In mathematics the median score (or 50th percentile)

equals 52.8%. The scores at the 10th percentile show that the most difficult subject for the low achievers was English. In the same way English is also the most difficult subject for the high achievers. Mathematics (44.8%) was relatively easier for the low achievers.

Table 33. Five Key Marker Point of the Achievement Scores (%) Grade 4

Percentiles	English	Math	Science	Average
10 th	33.9	44.8	37.9	39.2
25 th	36.7	48.7	40.4	42.1
50 th	39.9	52.8	44.2	45.5
75 th	43.2	55.9	50.0	49.3
90 th	48.5	62.0	54.5	56.8

7.2 Standardized Scaled Scores

Table 34 shows the summary statistics based on the standardized scale scores for Grade Four. The minimum score ranges from 147.8 (science) to 165.6 (math) while the maximum scores are in the ranges of 380 (English) to 411.5 (math).

Table 34. Descriptive Summary Statistics Grade Seven Scaled Scores 2011 Grade 4

	Minimum	Maximum	Mean	Std. Deviation	Skewness
English	147.8	380.0	250	50	0.404
Math	165.6	411.5	250	50	0.71
Science	149.3	407.9	250	50	0.63
Average	158.9	398.5	250	50	0.657

Table 35 shows that pupils who scored at the 10th percentile achieved a score of 192.1 in the average score, which is 1.09 standard deviations less than the mean. The corresponding score for pupils at the 90th percentile is 336.2 that is 1.76 standard deviations greater than the mean. The scaled score at the 50th percentile (243.6) is lower than the mean score.

Table 35. Five Key Marker Point of the Scaled Scores Grade 4

Percentiles	English	Math	Science	Average
10 th	192.7	186.0	198.8	192.1
25 th	217.4	216.5	215.9	215.8
50 th	246.0	248.5	241.8	243.6
75 th	275.6	272.0	281.2	274.8
90 th	324.0	319.3	311.6	336.2

7.3 Performance at Varying Levels of Standards

Table 36 and Figure 6 below show that based on the average score 6.1% are categorized as *Advanced*, 4.1% *Proficient*, 35.1% as *Basic* and 54.7% as *Below Basic*.

Table 36. Proficiency Levels of the Five Subjects Grade 4

	Below Basic	Basic	Proficient	Advanced
English	51.0%	34.6%	9.7%	4.7%
Math	56.0%	30.1%	7.8%	6.1%
Science	56.7%	29.9%	7.4%	6.0%
Average	54.7%	35.1%	4.1%	6.1%

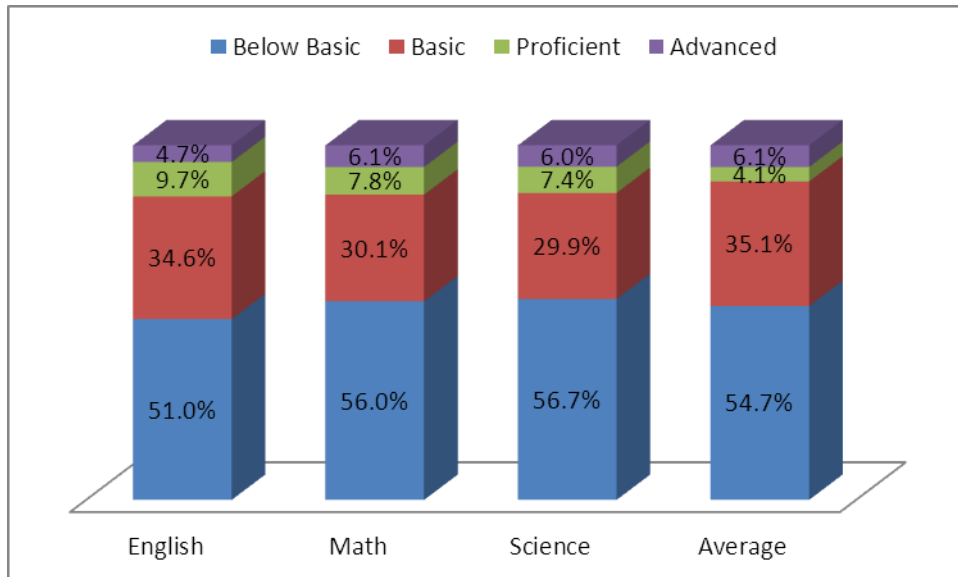


Figure 6. Proficiency Levels of the Five Subjects Grade 4 Phase II

7.4 Achievement across Subgroups

Independent sample t-test was made to check the existence of statistically significant mean differences between boys and girls. In all subjects boys performed better than girls and the differences were statistically significant. The mean difference in Science (8.2%) was the highest (Table 37).

Table 37. Independent Sample t-Test of the Achievement Scores by Sex Grade 4

Subject	Gender	Mean	SD	t	Sig.	MD
English	Male	42.9	6.61	30.5	.000	5.3
	Female	37.6	5.49	30.7		
Math	Male	57.1	6.83	40.8	.000	8.0
	Female	49.1	7.05	40.7		
Science	Male	49.6	9.15	35.7	.000	8.2
	Female	41.3	6.96	36.0		
Average	Male	49.8	7.17	38.1	.000	7.2
	Female	42.7	6.04	38.3		

Independent sample t-test was conducted in order to see whether statistically significant mean differences exist between Damot Sore and Damot Pulasa. In all subjects Damot Sore performed better than Damot Pulasa and the differences are statistically significant. The mean difference in English (4.2%) was the highest (Table 38).

Table 38. Independent Sample t-Test of the Achievement Scores by Woreda Grade 4

Subject	Woreda	Mean	SD	t	Sig.	MD
English	Damot Sore	41.4	4.04	14.4	.000	2.2
	Damot Pulasa	39.1	6.65			
Math	Damot Sore	55.0	5.42	23.7	.000	4.1
	Damot Pulasa	50.9	6.80			
Science	Damot Sore	45.8	7.65	3.7	.000	0.8
	Damot Pulasa	45.0	7.06			
Average	Damot Sore	47.4	5.49	14.0	.000	2.4
	Damot Pulasa	45.0	6.52			

Table 39 shows mean scores by school for Grade 4 in Damot Pulasa. The average score of the three subjects ranges from 35.3% to 60.2%. The highest achieving five schools scored from 50.8% to 60.2% while the bottom five schools scored from 35.3% to 39.4%.

Table 39. Achievement Scores by School in Damot Pulasa

No	School	English	Math	Science	Average
1	Lera	52.7	66.6	61.3	60.2
2	Gale Buge	54.8	68.1	54.5	59.1
3	Damba Gale	46.0	53.5	54.0	51.2
4	Tomtome Menta	42.1	59.2	51.4	50.9
5	Busha	48.5	52.3	51.5	50.8
6	Lemerada	39.4	53.3	52.4	48.4
7	Siyara Mahe	42.5	53.3	46.3	47.4
8	Olola	40.5	53.1	48.2	47.3
9	Gudicho	39.9	52.3	47.0	46.4
10	Warbira Golo	39.5	50.8	43.6	44.6
11	Hilena Korke	36.4	51.5	42.0	43.3
12	Game Kebecho	35.6	47.2	44.2	42.3
13	Galcha Suke	36.6	44.8	44.6	42.0
14	Shanto	37.0	45.4	38.9	40.5
15	Bibiso Olola	29.0	48.7	40.7	39.4
16	Warbira Suke	34.0	44.7	38.8	39.2
17	Abota Ulto	33.9	43.2	37.1	38.1
18	Zamine Wulisho	29.3	46.2	35.4	37.0
19	Hebret	31.7	43.4	30.9	35.3
	Average	39.44	51.45	45.41	45.44

Table 40 shows mean scores by school for Grade 4 in Damot Sore. The average score of the three subjects ranges from 35.1% to 64.4%. The highest achieving six schools scored from 50.5% to 64.4% while the lowest achieving three schools scored from 35.1% to 43.3%.

Table 40. Achievement Scores by School in Damot Sore

No	School	English	Math	Science	Average
1	Gununo Hamus	50.7	73.9	68.8	64.4
2	Doge Anchucho	49.6	64.8	59.2	57.9
3	Zamine Kolbaye	47.7	62.0	60.8	56.8
4	Demba Zamine	44.0	59.8	50.1	51.3
5	Doge Mashedo	44.3	55.9	52.1	50.8
6	Sore Kilena	43.2	55.2	53.2	50.5
7	Doge Shakisho	41.4	57.2	49.3	49.3
8	Koisha Nare	45.8	56.8	44.4	49.0
9	Bolola Chawkare	42.3	57.2	45.8	48.5
10	Shayamba	41.1	52.8	48.5	47.5
11	Zamine Nare	45.5	52.4	40.0	46.0
12	Sunkale	38.9	55.2	43.2	45.8
13	Gurumo Ladisa	38.5	53.7	44.2	45.5
14	Gununo Edget	40.9	51.7	40.4	44.4
15	Anchucho Chawkare	38.2	52.9	41.4	44.2
16	Sore Mashido	38.2	50.7	41.1	43.3
17	Sore Wormura	36.7	51.7	37.9	42.1
18	Shayamba Kilena	32.6	42.1	30.6	35.1
	Average	42.2	55.89	47.28	48.47

8 Comparison between Phase I and Phase II

The mean scores of students in Phase I was found higher than that of Phase II in both Grade 4 and Grade 7. Table 41 shows that in Grade 7 the Phase I average score was found greater than that of Phase II by 3.6%. In the five subjects the mean differences range from 1.7% to 5.9% in favor of Phase I.

Table 41. Comparison between Phase I and Phase II Grade 7

Subject	Phase I		Phase II		Mean Differences
	Mean	Std. Deviation	Mean	Std. Deviation	
English	54.4	7.97	50.5	4.07	3.9
Mathematics	37.4	6.28	35.7	2.99	1.7
Biology	39.6	11.15	35.7	5.79	3.9
Chemistry	42.8	12.79	36.9	7.13	5.9
Physics	32.8	9.80	30.1	2.96	2.7
Average	41.4	8.34	37.8	3.71	3.6

Table 42 shows that in Grade 4 the Phase I average score was found greater than that of Phase II by 2.9%. In the three subjects the mean differences range from 1.9% to 4.5% in favor of Phase I.

Table 42. Comparison between Phase I and Phase II Grade 4

Subject	Phase I		Phase II		Mean Differences
	Mean	Std. Deviation	Mean	Std. Deviation	
English	44.8	9.13	40.3	5.56	4.5
Mathematics	54.9	7.66	53.0	6.45	1.9
Science	47.7	8.28	45.4	7.38	2.3
Average	49.2	7.71	46.3	6.12	2.9

9 Summary and Conclusions Phase II

9.1 Grade 7

The summary descriptive statistics for Grade 7 shows that the mean score for each subject was found below the passing mark set by the MoE except English. The mean score for physics (30.1%) was the least and 7.7 points lower than the average score (37.8%). In all the subjects tested students in Phase II project performed less than that of Phase I. Looking at the standard deviation the widest variation is in chemistry (7.13%) and the least is in physics (2.96%). The distributions of the scores for all subjects as well as the average score are positively skewed indicating that only very few students were able to score highest scores.

There exist positive relationship between the tested subjects and the correlations were statistically significant in all cases. This shows that students performing well in one subject did the same in the others. Biology showed the strongest correlation ($r=.916$, $p < .01$) with the average score indicating that those who did well in chemistry performed better overall. The correlation between biology and the average score ($r = .872$, $p < .01$) was the least.

Only 10% of the candidates scored 50% and above while 10% scored at or below 33.6%. In mathematics 50% of the students scored less than 36.1% and only 10% were able to score 38.7% and above. It was only in English the 50th percentile equals 49.4%. The scores at the 10th percentile show that the most difficult subject for the low achievers was physics (26.6%) followed by chemistry (30.3%). On the other hand the 90th percentile shows that the most difficult subject for the high achievers was physics (32.6%) followed by mathematics (38.7%). For both low and high achievers physics was found the most difficult subject. Based on the average standardized scale score 7.5% of the students are categorized as *Advanced*, 4.2% as *Proficient*, 21.2% as *Basic* and 67.4% as *Below Basic*.

The mean difference between the two woredas in the average score was found negligible. In mathematics Damot Sore performed better than Damot Pulasa and in chemistry the reverse was true. In Damot Pulasa, the average score of the five subjects by school ranges from 32.8% to 48.1%. The highest achieving four schools scored from 40.1% to 48.1%.

The lowest achieving three schools scored from 32.8% to 35%. In Damot Sore, the average score of the five subjects ranges from 33.1% to 51.4%. The highest achieving three schools scored from 40.5% to 51.4%. The lowest achieving three schools scored from 33.3% to 34.8%.

9.2 Grade 4

The mean score for English (40.3%) was the least and 3 points lower than the average score (46.3%). In Grade 4 in all the subjects tested students in Phase II project performed less than that of Phase I. Looking at the standard deviation the widest variation is in Science (7.38%) and the least is in English (5.56%). The distributions of the scores for all subjects are positively skewed. Indicating that only very few students were able to score highest scores.

There exist positive relationship between the tested subjects and the correlations were statistically significant at $p < .01$. This shows that students performing well in one subject did the same in the others. Science showed the strongest correlation (.952) with the average score indicating that those who did well in English performed better overall.

Only 10% of the candidates scored 56.8% and above while 10% scored at or below 39.2%. In English 50% of the students scored less than 39.9% and only 10% were able to score 48.5% and above. In mathematics the median score (or 50th percentile) equals 52.8%. The scores at the 10th percentile show that the most difficult subject for the low achievers was English. In the same way English is also the most difficult subject for the high achievers. Mathematics (44.8%) was relatively easier for the low achievers. Based on the average standardized scale score 6.1% are categorized as *Advanced*, 4.1% *Proficient*, 35.1% as *Basic* and 54.7% as *Below Basic*.

In all the subjects Damot Sore performed better than Damot Pulasa and the differences were statistically significant. The mean difference in English (4.2%) was the highest. In Damot Pulasa, the average score of the three subjects by school ranges from 35.3% to 60.2%. The highest achieving five schools scored from 50.8% to 60.2% while the bottom five schools scored from 35.3% to 39.4%. In Damot Sore, the average score of the three

subjects by school ranges from 35.1% to 64.4%. The highest achieving six schools scored from 50.5% to 64.4% while the lowest achieving three schools scored from 35.1% to 43.3%.

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