Elimu kwa Teknolojia

a BRIDGE*it* program

SUMMATIVE EVALUATION
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Full Report

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Executive Summary

The International Youth Foundation (IYF) is implementing BridgeIT in 17 districts in Tanzania in partnership with the Ministry of Education and Vocational Training (MoEVT), the U.S. Agency for International Development (USAID) Mission in Tanzania, the Nokia Corporation, Nokia Institute for Technology (INdT), Pearson Foundation and Vodacom Foundation. The goal of the BridgeIT program is to significantly increase the educational quality and achievement among students at primary school level in mathematics, science and life skills through the innovative use of cell phones and digital technology. In addition, IYF had the following objectives:

1) To deepen collaboration and build capacity within the MoEVT and local communities to enrich BridgeIT in Tanzania and lay the foundation for long-term sustainability of the approach;

2) To create a system for integrating BridgeIT into Tanzanian primary school classrooms to improve the quality of interaction and teaching and learning in the classroom;

3) To demonstrate learning gains between Standard V and VI students in Mathematics, Science, and Life Skills in BridgeIT classrooms in comparison to schools without the technology, especially for girls.

This evaluation used math and science tests in conjunction with attitude questionnaires and classroom observation to measure the learning gains, teacher classroom performance and attitude changes for both teachers and students. Data were collected from a total of 18 BridgeIT schools and 18 control schools. The sample size (# of students) was sufficient for the evaluator to make valid statistical comparisons between students' performance in math and science in BridgeIT classrooms with those who were not exposed to the approach;[1] however, the sample size was not large enough to make comparisons in overall school performance. The initial data were collected at the beginning of the 2010 academic year in Tanzania (January/February), and a second round of data was collected at the end of the academic year (November/December).

Context – Quality of Education in Tanzania

In Tanzania, enormous strides have been undertaken to meet the Millennium Development Goals, especially in education. The budgets for schooling have been tripled over the last ten years.[2] Despite such venerable efforts, there are still challenges that have to be overcome.

[1] The number of students tested in each school was large enough to provide 95% confidence levels and 5% margin of error.

[2] Uwezo Main Report- Tanzania
http://www.uwezo.net/uploads/files/Uwezo%20Main%20Report.pdf

While access to a basic education has improved significantly in many countries in East Africa as a result of the 1990 Education for All (EFA) bill guaranteeing universal primary schooling, other challenges still linger. According to a research paper published by Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ), one of the primary challenges faced by primary school students, standards 1-7 is the lack of learning for students enrolled in classes.[3] In addition, repetition of grades was not that uncommon, with the national average for repetition standing at 23.3%.[4] Student absenteeism was about 2.1 days per month, or about 19 days in the school year. Textbook ownership is very low, with the proportions standing at about 6% and 7% for Reading and Mathematics texts, respectively.[5]

A recent survey on the quality of education was conducted by Uwezo in May 2010 by visiting over 20,000 households throughout the country, which includes 38 districts, and is one of the largest educational surveys undertaken in Tanzania. The assessment reports that less than half (42%) of primary school students surveyed were able to read in the national language of Swahili fluently.[6] Also, almost half of the students (49.1%) could not read a story in the English language. More than 30% of students finishing primary school could not do basic mathematics (including multiplication). The report comes to the conclusion that despite huge investments in basic education made by the Tanzanian government, children are still not learning. While children should have basic skills in reading and mathematics by grade 3 (Standard 3), only 30% can read in basic Swahili, 10% can read English, and 20% can do basic mathematics.[7] In a comparable study, only 21.4% of Tanzanian Standard 6 students reached a Level 5 for Interpretive Reading (from a scale of 1 of Pre-Reading to 8 Insightful Reading) competency.[8] The level of competency in mathematics paints a starker picture. The largest chunk of Standard 6 students, 35%, was in Level 3 Basic Numeracy (from a scale of 1 of Pre-Numeracy to 8 Abstract Problem Solving) and around 25% of Standard 6 students reached the 1st and 2nd levels.[9] Overall, Uwezo found that Tanzanian students still face an uphill battle: "Standard (grade) 6 pupils were under achieving, grappling with less complex levels that required recall and comprehension."[10]

Principal Findings of this Evaluation

Test scores of students in BridgeIT and BridgeIT + Life Skills in both math and science showed significant gains during the 2010 academic year in comparison to test scores of

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[3] Mrutu, A., Ponera, G., & Nkumbi, E., "Equity The SACMEQ II Project in Tanzania: A Study of the Conditions of Schooling and the Quality of Education.," *SACMEQ Educational Policy Research Series*, 2005 http://www.sacmeq.org/downloads/sacmeqII/Tanzania.zip
[4] Mrutu, A., Ponera, G., & Nkumbi, E., Page 62
[5] Mrutu, A., Ponera, G., & Nkumbi, E., Page 89
[6] Uwezo Main Report- Tanzania page 8
http://www.uwezo.net/uploads/files/Uwezo%20Main%20Report.pdf
[7] Uwezo Main Report- Tanzania page 22
http://www.uwezo.net/uploads/files/Uwezo%20Main%20Report.pdf
[8] Mrutu, A., Ponera, G., & Nkumbi, E., Page 198
[9] Mrutu, A., Ponera, G., & Nkumbi, E., Page 201
[10] Mrutu, A., Ponera, G., & Nkumbi, E., Page 225

students in the control schools who did not benefit from BridgeIT. On average, test scores for students in BridgeIT schools was in the range of 10-20 percentage points higher, representing very positive results. Annex 1 provides the mean test results by grade and subject area.

However, the distributions of the mean scores show that many students were left behind and the increases in the means were due to groups of students who excelled while others showed more modest gains or no gains at all. This has especially been the case for students in the BridgeIT schools with the added Life Skills curriculum, who performed the best academically. However, this indicates that one group of students have advanced considerably while others have not.

No significant gender differences were found in the test scores. Overall, girls' scores were somewhat lower but these were not statistically significant differences. There is vast experience from programs in other countries of strategies to improve girls' learning skills in relation to boys. These include the formation of girls' learning groups that meet after school, peer tutoring by girls who are doing well, special training for teachers to work more with girls and to encourage their participation in cooperative learning groups, adaptation of math and science texts and assignments to be more relevant to girls, just to mention a few. While not of grave concern given the results of this evaluation, BridgeIT may wish to experiment with some of these approaches in the future to ensure girls benefit equally.

Initially, teachers were skeptical about whether or not the videos would help students learn math and science, but this skepticism was drastically diminished by the end of the year. In addition, post-test results show that nearly all the teachers felt the videos integrated quite well with their lessons. Teachers sometimes are reluctant to try something new, especially if it may require extra preparation or activities, but if teachers are shown during their initial training sessions that the BridgeIT equipment and activities are actually a tool to improve the effectiveness of their teacher, any initial reluctance can be greatly reduced. In addition, if guides could be designed and produced to show how the video lessons are relevant, how they specifically integrate with the teachers' lesson plans, and how the videos can help improve these lessons plan this initial resistance could be reduced.

The teacher interviews found that teachers' satisfaction with their job and school facilities has decreased. Their satisfaction with the BridgeIT phone and video equipment has gone down slightly, while satisfaction with the BridgeIT education model has increased.

More than 90% of the teachers said that they received appropriate support from head teachers and colleagues in their schools; a large majority said they received adequate support from the school inspectors in their districts, and that they received visits from the school inspectors. Nearly all of the teachers said they got adequate support from the BridgeIT help desk.

As far as students' opinions of the BridgeIT lessons, most of the 5th and 6th graders felt that the video lessons were boring when asked at the beginning of the year; both groups of students drastically changed their attitudes after nearly a year of using the lessons. Overall, the percentage of students who felt that the videos made math and science easier to understand increased by about 10-20% over the one year period.

When the students considered the statement that going to work after completing primary school was a good idea, about one-third of the BridgeIT and control school students thought this was a good idea; less than 19% the BridgeIT schools where Life Skills was taught felt this way in the pre-test. In the post-test, this dropped to 11% for the BridgeIT students and 14% for the control schools; students in the BridgeIT schools where Life Skills was offered were the lowest with this opinion at less than 10%. Thus, it appears that the Life Skills program is having an effect on attitudes towards entering the workforce post-primary (when students should be encouraged to continue their education in secondary).

The observations of the school facilities and educational materials availability found that adequate storage space has increased, space for children to work has also gone up, and more importantly having a functional Nokia cell phone and TV has also increased. Materials for enrichment and extra help continue to be in short supply as do both workbooks and text books; only in about one-third of the visited classrooms were there enough textbooks available.

The classroom visits also observed improvements in student-teacher behavior and interaction, most notably, children (both boys and girls) were asking more questions, and there has been an increase in children who need help getting that help from both teachers and their peers. An important finding is that very few teachers were observed to communicate in a local language other than Swahili and that there has been a large increase in teachers encouraging silent students to participate in the class by calling on them more often. Also, there has been an increase in the number of teachers who know their students by name (often a challenge in Tanzanian schools where class sizes often range from 60-100 students).

An important finding was that at the beginning of the school year, a little more than half the teachers used the video lessons during the observation visit; this increased to almost three-quarters by the end the school year in the BridgeIT and to four-fifths in the BridgeIT + Life Skills classrooms. In the classrooms where the videos were shown, a little more than half of the teachers prepared the students for the lesson at the beginning of the year; this increased to two-thirds for the BridgeIT classes and 80% for the BridgeIT + Life Skills classrooms by the end of the year. Additionally, when the video lessons were completed, 60% of the teachers offered activities related to the video lessons to the class at the beginning of the year; this increased to three-quarters of the teachers for the BridgeIT classes and 81% for the BridgeIT + Life Skills classes by the end of the year.

The teachers' movement around the classroom to check students' work decreased in BridgeIT but increased in the BridgeIT + Life Skills classrooms. The very same pattern was observed on whether or not the teachers check for students' understanding before assigning practice work, and a similar pattern was observed in whether or not the teacher marks the students' work and provides other feedback to the students. Also, the preparation of activities based on children's abilities increased over the year, but the increase was largest in the BIT+ Life Skills classrooms. Cooperative learning in the form of group work with the teacher circulating among the groups and related activities have all increased.

Of all the items on the student attitude test, the single item that significantly affected test scores (based on regression analysis) in a positive manner was the response to whether or

not the teacher helped students understand the video lessons. None of the other items accounted for any significant variance in the test scores. These possible relationships should be examined in detail to determine how teacher training activities related to use of the videos in the classroom can be strengthened, as well as if there are any cost-effective ways to make the lessons even more understandable for students. At the same time, efforts should be made to make the lessons more entertaining and relevant to students' daily lives.

I. Introduction[11]

In 2007, the International Youth Foundation (IYF) was awarded a two-year cooperative agreement by USAID/Tanzania to implement the BridgeIT program in Tanzania. Following the two-year "pilot" program, USAID/ Tanzania granted the project a 15-month extension through December 2011 to carry out a second phase. IYF is implementing BridgeIT in partnership with the Ministry of Education and Vocational Training (MoEVT), the Nokia Corporation, Nokia Institute for Technology (INdT), Pearson Foundation and Vodacom Foundation. The main goal of the BridgeIT program is to significantly increase the educational quality and achievement among students at primary school level in mathematics, science and life skills through the innovative use of cell phones and digital technology.

The second phase of the project had three key objectives:

1) To deepen the collaboration with the MoEVT and local communities to build their management capacity in order to expand and enrich BridgeIT in Tanzania and lay the foundation for long-term sustainability of the project;

2) To create a system for integrating BridgeIT approaches into Tanzanian primary school classrooms to improve teacher performance, as determined by changes within the quality of interaction and teaching and learning in the classroom;

3) To increase learning gains among Standard V and VI students in Mathematics, Science, and Life Skills in BridgeIT classrooms, with a particular emphasis on girls.

This evaluation used math and science tests in conjunction with attitude questionnaires and classroom observation to measure the learning gains, teacher classroom performance and attitude changes for both teachers and students.

II. Scope of Work

The purpose of responsibilities of consultancy, is to work with IYF/Baltimore and IYF/Tanzania, a local evaluation team and representatives from the MOEVT to update the evaluation plan, adapt appropriate instruments, gather data, analyze pre and post data, and write the evaluation report. Under the supervision of IYF/Baltimore and in coordination with the Bridge IT staff in Tanzania, the international consultant was responsible for the following specific tasks:

- Develop evaluation plan based on the 2009 evaluation design and updated objectives and indicators proposed in the BIT project document and based on guidance from IYF;
- Adapt current qualitative and quantitative evaluation tools, based on new objectives and results from 2009 evaluation;

[11] Adapted from EvaluationPlan, January-December 2010, International Youth Foundation, December 15, 2009

- Oversee pretesting of data collection instruments;
- Finalize evaluation instruments in collaboration with Bridge IT TZ staff, local evaluation experts and MOEVT;
- Provide guidance on monitoring tools and systems and assist with adaptation, as needed;
- Lead workshop to train local data collectors, Bridge IT staff, local evaluation experts, and MoEVT counterparts;
- Oversee collection of data for pre-test and post-test in experimental and control sites;
- Provide guidance to data entry process/system for compiling data for analysis;
- Analysis of data collected in January/February (pretest) and November/December 2010(posttest);
- Lead in writing evaluation report and coordinating inputs to report from local evaluation experts;
- Participate in phone/skype calls with IYF/Baltimore and TZ staff, as needed, in order to ensure effective communication and planning.

III. Evaluation Methodology

A. Data Collection Instruments

The data collection instruments used in the previous BridgeIT evaluation[12] carried out in 2009 were reviewed, modified and field-tested. These instruments consisted of math and science test for grades 5 and 6, a classroom observation protocol, teacher and student attitude questionnaires.

The math and science tests had been used in the previous evaluation, covered the first half of the annual curriculum and consisted of 40 questions each. In order to make the exams more comprehensive, three primary school teachers were contracted to write additional questions.The revised exams have 50 questions each and can be found in Annex III.

A new observation protocol was designed, and a considerable number of new questions/items were added to the attitude scales; these were then reviewed with the BridgeIT staff, field tested and revised for use (See Annex IV and V).

B. Data Collection Personnel and Instrument Field Testing

BridgeIT contracted five data collection/interviewers, and the initial training was done in a workshop held at the BridgeIT offices. The workshop consisted of a detailed review of all the instruments, followed by discussions of data collection procedures and the scheduling

[12] Summative Evaluation of the BRIDGE IT Project in Tanzania, by Josefina N. Natividad, SCD, November 30, 2009.

of school visits. All five data collectors had extensive fieldwork experience, and their input was invaluable for providing a local context for the rather generic observation protocol and to add items to the attitude scales for both teachers and students.

The first of two school visits to test the instruments was to the Mianzini primary school in the Mburahati section of Dar es Salaam. Here the math test was given to 5th graders and it was noted that many of the students could not add fractions without a common denominator. It was decided to have the students fill in the questionnaires/scales since individual face-to-face interviews would take much too long and drastically increase the cost of the fieldwork. A few students asked questions, and they appeared to take the entire exercise quite seriously. The interviewers checked each form for completeness, as they were collected.

The second school visited was to the Manzese primary school, also in the Dar es Salaam metropolitan area. Here the team observed a very traditional math class where the teacher did all of the talking while occasionally calling on students; students initiated no questions. In this class, the teacher used the cell phone to show a BridgeIT lesson, but he had a little trouble making the cell phone connection to the TV;one of the IYF staff helped solve the problem. It turned out that another teacher had trained this teacher. Frequently during the lesson, the teacher stopped the program to ask the students questions. After the lesson, he asked students to come to the blackboard to solve math problems, but the problems appeared unrelated to the video lesson.

At the end of the field-testing of the evaluation instruments, discussions were held with the interviewers about questions or attitude statementsthat were not understood, and the instruments were revised accordingly. In addition, two of the interviewers with previous experience entered the test data in MS Excel question by question as correct or incorrect (1,0), and a reliability item analysis was done to test the internal consistency of the exams. These results were used to revise and eliminate some of the questions.

C. Sampling Design

For the previous evaluation (2009), a sample of 15 schools was used, which with a 90% confidence level resulted in a margin of error of ±20. This was considered to be too high for collecting pre- and post-test data within a narrow time frame of about 10 months (February and November, 2010). In order for the margin of error to be reduced to ±10%, the sample would have to be increased to 47 schools. However, cost and time considerations did not allow for such a large sample. After much discussion, it was agreed to use roughly a middle point between the two with a sample of 28 schools; this would result in a margin of error of approximately ±14% and a 90% confidence level. In the end, data were collected from a total of 18 BridgeIT schools and 18 controls, which are highlighted in bold in the two tables below. The reduced sample size increased the margin of error to ±18% at the school level, but the large number of students who took the math and science tests in the 5th and 6th grades does permit valid statistical comparisons between BridgeIT (BIT), BridgeIT+life skills (BIT+LS) and the control schools with a 95% confidence levels and 5% margin of error.

In summary, those findings pertaining to student performance in math and science for the academic year have a high degree of reliability; findings pertaining to school-level performance should be interpreted with a much lower degree of confidence.

Table 1: BIT Sample Schools—January and November 2010

ID #	District	Study School	Math 5	Sci 5	Math 6	Sci 6	Obs 5	Obs 6	Teacher Attitude	Student Attitude
32	**MWANGA**	Mwanga	√	√	√	√	Math	Sci	√	√
34		**Kilongwe**	√	√	√	√	Sci	Math	√	√
35		**Kalambasha**	√	√	√	√	Math	Sci	√	√
36		Mramba	√	√	√	√	Sci	Math	√	√
51	**KOROGWE**	**Boma***	√	√	√	√	Math	Sci	√	√
52		Manundu Mazoezi*	√	√	√	√	Sci	Math	√	√
53		Kwasemangube*	√	√	√	√	Math	Sci	√	√
54		Zumnat*	√	√	√	√	Sci	Math	√	√
67	**KILWA**	**Masoko**	√	√	√	√	Math	Sci	√	√
69		Ukombozi	√	√	√	√	Sci	Math	√	√
70		Kivinje	√	√	√	√	Math	Sci	√	√
95	**CHAMWINO**	**Chamwino Ikulu**	√	√	√	√	Sci	Math	√	√
96		Mvumi Mission	√	√	√	√	Math	Sci	√	√
98		Mvumi Makulu	√	√	√	√	Sci	Math	√	√
99	**BAGAMOYO**	Majengo	√	√	√	√	Math	Sci	√	√
101		Mwanamakuka	√	√	√	√	Sci	Math	√	√
102		**Mdaula**	√	√	√	√	Math	Sci	√	√
103		**Msorwa**	√	√	√	√	Sci	Math	√	√
105		Mbegani	√	√	√	√	Math	Sci	√	√
115	**ILALA**	**Mirambo***	√	√	√	√	Sci	Math	√	√
116		**Bunge***	√	√	√	√	Math	Sci	√	√
118		Mkoani*	√	√	√	√	Sci	Math	√	√
120		**Muhimbili***	√	√	√	√	Sci	Math	√	√
121		**Airwing**	√	√	√	√	Math	Sci	√	√
122		**Ilala**	√	√	√	√	Sci	Math	√	√
124		**Segerea**	√	√	√	√	Math	Sci	√	√
126		Msimbazi mseto	√	√	√	√	Sci	Math	√	√

ID #	District	Study School	Math 5	Sci 5	Math 6	Sci 6	Obs 5	Obs 6	Teacher Attitude	Student Attitude
1	KINONDONI	Mianzini*	√	√	√	√	Math	Sci	√	√
5		Manzese*	√	√	√	√	Sci	Math	√	√
6	TEMEKE	**Mji Mwema***	√	√	√	√	Math	Sci	√	√
7		Keko Magurumbasi*	√	√	√	√	Sci	Math	√	√
13	TANGA	**Chumbageni***	√	√	√	√	Math	Sci	√	√
14		**Maweni***	√	√	√	√	Sci	Math	√	√
15		**Ukombozi***	√	√	√	√	Math	Sci	√	√
21	MOSHI	Maring'a chini*	√	√	√	√	Sci	Math	√	√
22		**Ashira***	√	√	√	√	Math	Sci	√	√
24		**Azimio***	√	√	√	√	Sci	Math	√	√
25		Mawenzi*	√	√	√	√	Math	Sci	√	√

* life skills schools

Table 2: Control Schools—Jan and November/October 2010

ID#	District	Control School	Math 5	Sci 5	Math 6	Sci 6	Obs 5	Obs 6	Teacher Attitude	Student Attitude
200	MWANGA	**Mwangondi Primary**	√	√	√	√	Math	Sci	√	√
201		Kivindu	√	√	√	√	Sci	Math	√	√
202		Lomwe	√	√	√	√	Math	Sci	√	√
203		**Kawawa**	√	√	√	√	Sci	Math	√	√
204	KOROGWE	New Korogwe	√	√	√	√	Math	Sci	√	√
205		**Mbeza Mazoezi**	√	√	√	√	Sci	Math	√	√
206		**Magunga**	√	√	√	√	Math	Sci	√	√
207		**Kilimani**	√	√	√	√	Sci	Math	√	√
208	KILWA	**Mkwanyule**	√	√	√	√	Math	Sci	√	√
209		Kisiwani	√	√	√	√	Sci	Math	√	√
210		Singino	√	√	√	√	Math	Sci	√	√
211	CHAMWINO	**Mkapa**	√	√	√	√	Sci	Math	√	√
212		Nyerere	√	√	√	√	Math	Sci	√	√
213		Chakule	√	√	√	√	Sci	Math	√	√
214	BAGAMOYO	**Mbaruku**	√	√	√	√	Math	Sci	√	√
215		Kaole	√	√	√	√	Sci	Math	√	√

ID#	District	Control School	Math 5	Sci 5	Math 6	Sci 6	Obs 5	Obs 6	Teacher Attitude	Student Attitude
216		Mdaula B	√	√	√	√	Math	Sci	√	√
217		Bomani	√	√	√	√	Sci	Math	√	√
218		Pande	√	√	√	√	Math	Sci	√	√
219	**ILALA**	Lumumba	√	√	√	√	Sci	Math	√	√
220		**Mnazi Mmoja**	√	√	√	√	Math	Sci	√	√
221		Boma	√	√	√	√	Sci	Math	√	√
223		**Umoja wa Mataifa**	√	√	√	√	Sci	Math	√	√
224		**Minazi Mirefu**	√	√	√	√	Math	Sci	√	√
225		**Kasulu**	√	√	√	√	Sci	Math	√	√
226		**Maendeleo**	√	√	√	√	Math	Sci	√	√
227		Msimbazi Wavulana	√	√	√	√	Sci	Math	√	√
228	**KINONDONI**	Karume	√	√	√	√	Math	Sci	√	√
229		Ukombozi	√	√	√	√	Sci	Math	√	√
230	**TEMEKE**	**Maweni**	√	√	√	√	Math	Sci	√	√
231		Keko Mwanga	√	√	√	√	Sci	Math	√	√
232	**TANGA**	**Changa**	√	√	√	√	Math	Sci	√	√
233		Kongwe	√	√	√	√	Sci	Math	√	√
234		Msanyuni	√	√	√	√	Math	Sci	√	√
235	**MOSHI**	Mwika	√	√	√	√	Sci	Math	√	√
236		**Kotela**	√	√	√	√	Math	Sci	√	√
237		**Kaloleni**	√	√	√	√	Sci	Math	√	√
238		**Shauri Moyo**	√	√	√	√	Math	Sci	√	√

D. Data Collection and Data Entry

The initial data were collected at the end of January and February 2010 as shown and stored at the BridgeIT office for coding. Since sending the questionnaires out of the country for coding was prohibitively expensive, BridgeIT decided to recruit a local team for the data entry. The second round of data collection was done in November and December of 2010.

IV. Findings

The first four sections present the results on the math and science tests given to 5th and 6th grade students at the beginning and end of 2010. Sections A and B compare the changes in the mean scores between the BridgeITschools and the control schools. Significant differences have been highlighted and the results are presented both in tabular and graphic formats. The number of students tested in each school was large enough to provide 95% confidence levels and 5% margin of error.

Section C examines the tests results to determine any significant gender difference. This was done by running one sample and independent samples t-tests.

Since mean scores give only a partial view of the central tendencies, additional analyses have been done and include the following: mean, median, mode, S.D., minimum score, maximum score, skewness, kurtosis and quartiles. This shows the distribution of the results around the mean and the shift of these distributions between the pre and the post-tests. These tables are in Section D. Furthermore, histograms with normal curves were also generated to present a clearer picture of the distributions, especially those that were bimodal. These can be found in Annex I.

A. Math and Science Tests—Standard 5

Table 3: Pretest STD 5—Number of Students

Gender	Number of Students			
	BridgeIT	BridgeIT+LS	Control	Total
Male	404	137	397	938
Female	442	137	423	1002
Total	846	274	820	1940

Table 4: Posttest STD 5—Number of Students

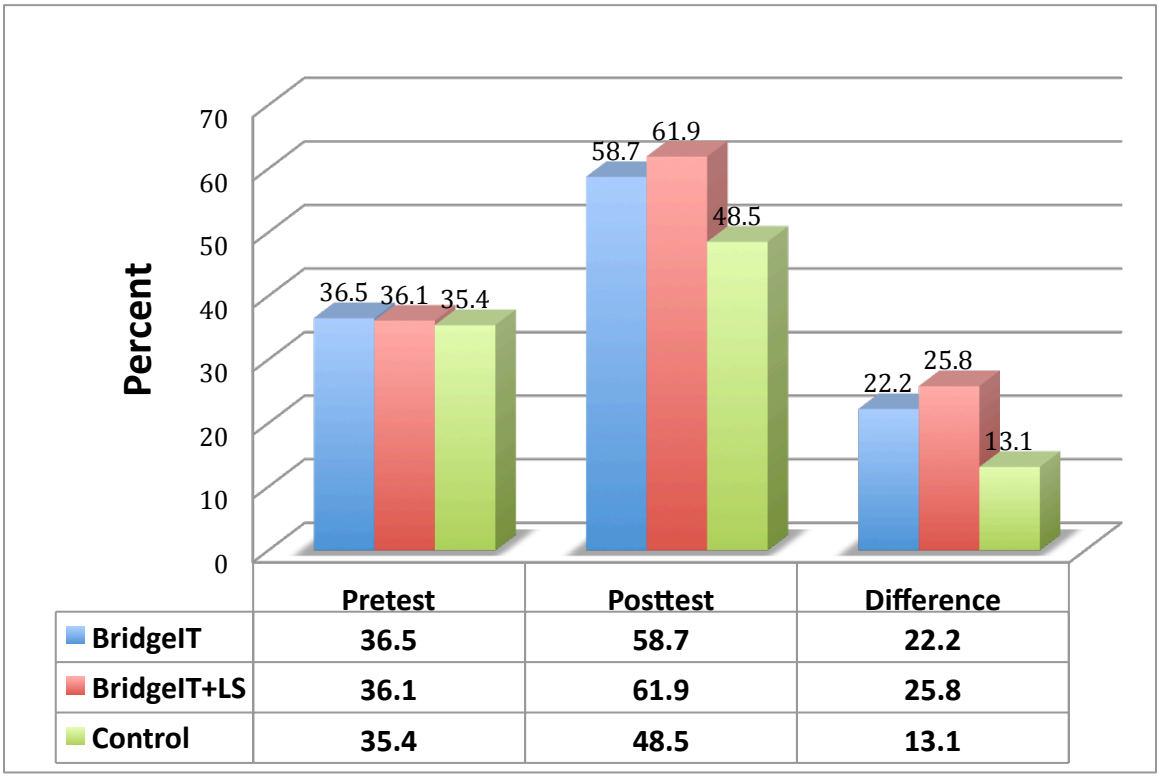
Gender	Number of Students			
	BridgeIT	BridgeIT+LS	Control	Total
Male	247	98	472	817
Female	267	147	480	894
Total	514	245	952	1711

The most important indicators are the learning gains in math and science for STD 5 and STD6. The evaluation design calls for statistically significant learning gains between BridgeIT study schools and the controls, and statistically significant differences in post-test

scores between the BridgeIT study and control schools. The four figures and tables below show the pre and post-test scores in math and science by grade[13].

As shown below, the STD 5 pre-test math scores were not significantly different between the BIT, BIT+LS, and the control students; for all practical purposes these score were virtually identical. The second set of bars show the post-test scores, and all three groups increased their mean scores and the differences between the pre-test and post-test scores are shown in the third column. The overall gains in all three groups were statistically significant over the pre-tests. However, the BIT students who also were given the Life Skills curriculum achieved the greatest gains. These scores were all significantly different from each other (F=87.52, p=0.000).

Figure 1: Math STD 5



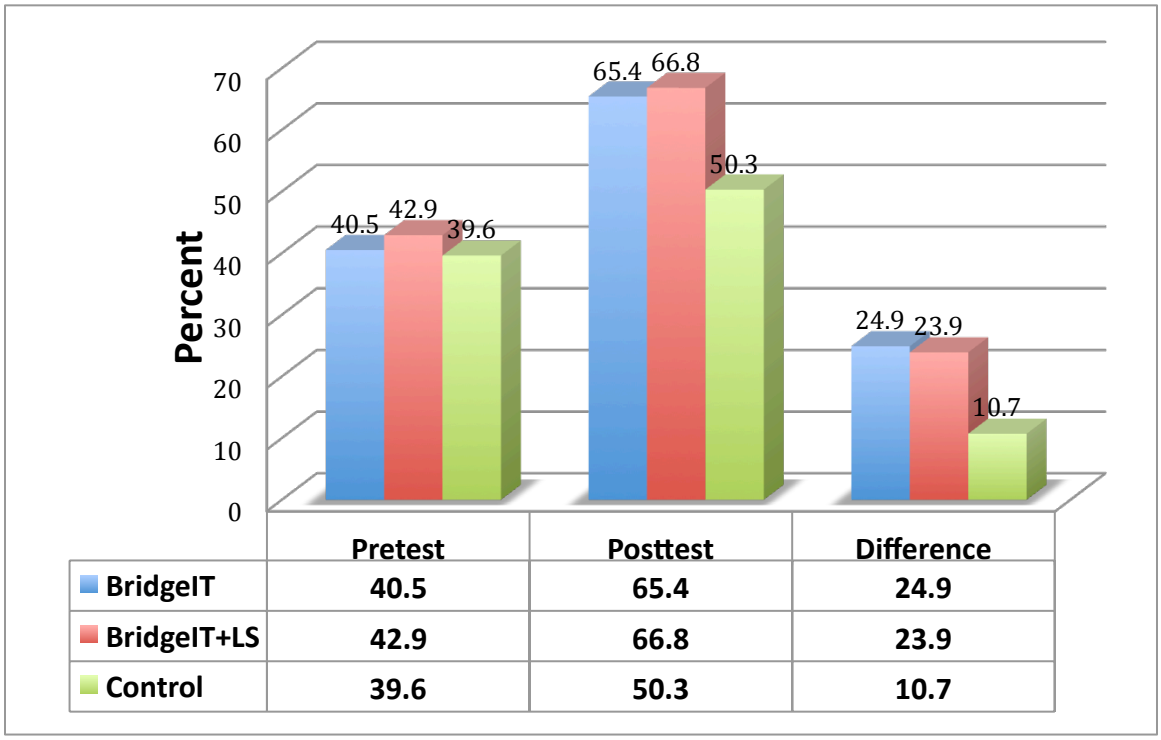
	Pretest	Posttest	Difference
BridgeIT	36.5	58.7	22.2
BridgeIT+LS	36.1	61.9	25.8
Control	35.4	48.5	13.1

The STD 5 science tests show a similar overall pattern but with significant differences in the pre-test scores as well. Although the scores for the three groups are similar at around 40% correct responses with the BIT+LS scoring the highest, the analyses showed that the BIT+LS were significantly higher than the other two groups (F=4.33, p=0.013). The pre and post-test scores for all three groups were significantly different from each other. The post-

[13]In order to contextualize the percentage scores presented here, it is important to keep in mind the grading scale used in Tanzanian primary schools:86-100% = A, 71-85% = B, 55-70% = C, 30-54% = D, 0-29% = E - failing grade.

test scores of the BIT and BIT+LS are both significantly higher than the controls, but not significantly different from each other (F=168.6, p=0.000).

Figure 2: Science STD 5



B. Math and Science Tests—Standard 6

Table 5: Pretest Standard 6—Number of Students

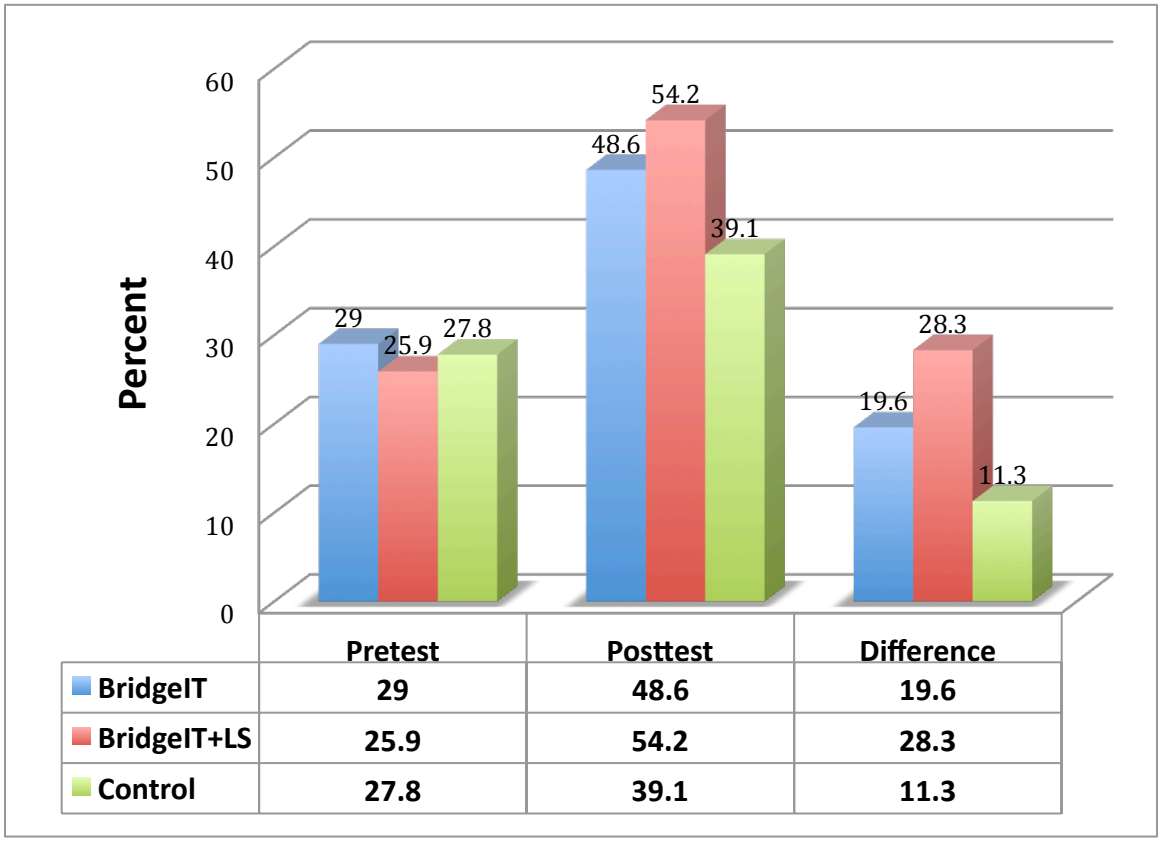
Gender	Number of Students			
	BridgeIT	BridgeIT+LS	Control	Total
Male	331	117	468	916
Female	412	110	565	1087
Total	743	227	1033	2003

Table 6: Posttest Standard 6—Number of Students

Gender	Number of Students			
	BridgeIT	BridgeIT+LS	Control	Total
Male	293	171	562	1026
Female	323	198	575	1096
Total	616	369	1137	2122

The STD 6 math pre-tests scores were in the middle and high 20s with the BridgeIT+LS scoring the lowest (mean=25.9), and this was significantly lower than both BridgeIT and the control students. As the graph and table below shows, all three groups made significant gains over the pre-test scores, and BridgeIT+LS went from having the lowest mean score to the highest. Furthermore, all the post-test scores are significantly different from each other (F=109.9, p=0.000).

Figure 3: Math STD 6

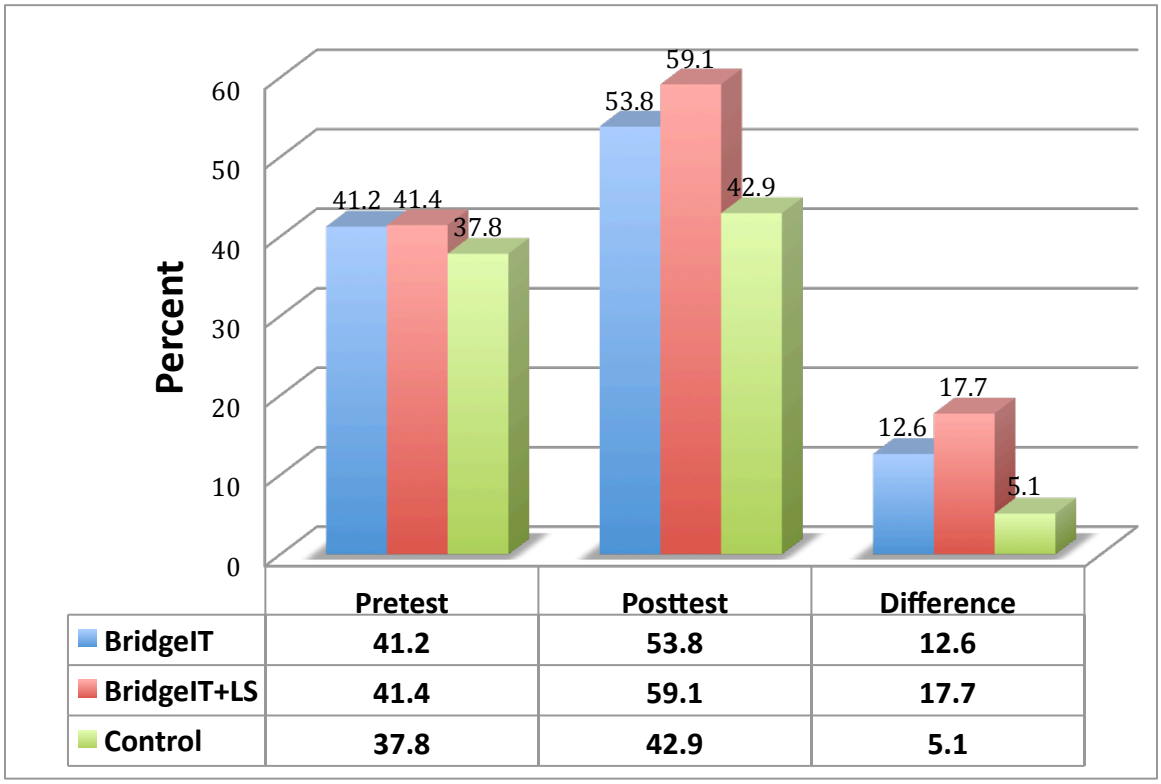


	Pretest	Posttest	Difference
BridgeIT	29	48.6	19.6
BridgeIT+LS	25.9	54.2	28.3
Control	27.8	39.1	11.3

The STD 6 science pre-test scores show that BridgeIT and BridgeIT+LS were virtually identical at 41% and the controls almost 4% lower; this difference is significantly lower in comparison to the two study groups (f=19.9, p=0.00). All three groups made significant gains over the time between the pre and the post-tests, and the highest mean score was for

the BridgeIT+LS students, followed by BridgeIT and then the controls. All three groups were significantly different from each other (F=176.7, p=0.000).

Figure 4: Science STD 6



	Pretest	Posttest	Difference
BridgeIT	41.2	53.8	12.6
BridgeIT+LS	41.4	59.1	17.7
Control	37.8	42.9	5.1

Regression analysis of the test scores as the dependent variables and the video related items on the student attitude scale were carried out. Of all the items on the student attitude test, the single item that significantly affected test scores in a positive manner was the response to whether or not the teacher helped students understand the video lessons. None of the other items accounted for any significant variance in the test scores.

C. Test Results: Gender Differences:

The analyses of gender differences show that girls consistently score lower than boys in both the math and science post-tests. The only significantly lower differences are between boys and girls in the STD 5 math and science post-tests, as indicated by the bolded means in the table below.

Table 7: Gender Differences in STD 5 Math and Science Scores

Type of School		gender	N	Mean	Std. Deviation	Std. Error Mean
BIT	Post-Test_Science 5	boys	247	**67.9838**	17.81019	1.13324
		girls	267	**62.9363**	19.07503	1.16737
	Post-Test_Math 5	boys	247	**61.1903**	17.63013	1.12178
		girls	267	**56.4419**	18.78728	1.14976
BIT+LS	Post-Test_Science 5	boys	98	67.7347	21.39397	2.16112
		girls	147	66.1633	21.14725	1.74420
	Post-Test_Math 5	boys	98	63.3469	19.90446	2.01065
		girls	147	60.9660	21.11982	1.74193
control	Post-Test_Science 5	boys	472	50.9025	15.39980	.70883
		girls	479	49.6576	15.83280	.72342
	Post-Test_Math 5	boys	471	48.3779	16.25703	.74908
		girls	478	48.6904	16.67447	.76267

The test results for math and science in STD 6show no significant difference between boys and girls, but girls do score slightly lower except for three instances, which are shown in bold in the table below. However, these differences are not statistically significant.

Table 8: Gender Differences in STD 6 Math and Science Scores

School Type		gender	N	Mean	Std. Deviation	Std. Error Mean
BIT	Post-Test_Math 6	boys	340	48.4824	21.73105	1.17853
		girls	382	**48.4921**	21.19745	1.08456
	Post-Test_Science 6	boys	340	53.5235	18.43611	.99984
		girls	382	**54.0471**	17.80170	.91081
BIT+LS	Post-Test_Math 6	boys	170	54.9294	23.69745	1.81751
		girls	199	53.5075	23.82467	1.68889
	Post-Test_Science 6	boys	170	58.2471	21.72033	1.66587
		girls	199	**59.7487**	21.16308	1.50021
Control	Post-Test_Math 6	boys	524	39.6756	16.00602	.69923
		girls	611	38.5532	14.75311	.59685
	Post-Test_Science 6	boys	524	43.5305	13.62489	.59521
		girls	607	42.4382	12.82321	.52048

D. Test Data: Central Tendencies

Table 9 through Table 14 show the central tendencies of the mean test scores discussed above. Furthermore, skewness and kurtosis have been added to show the shape of the distributions around the mean. The quartiles have been added to show the shift in the test scores across the distributions. For example, in Table 9 the math pretest mean, median and mode are quite close, indicating a near normal distribution with a slight left tail towards the lower scores, and kurtosis indicates that relative to the normal distribution, the values are tighter around the mean. Values of a quantitative variable that divide the ordered data into groups so that a certain percentage is above and another percentage is below. Quartiles (the 25th, 50th, and 75th percentiles) divide the observations into four groups of equal size.The same observations can be made for all six tables that follow.

Table 9: Central Tendencies: BIT Tests STD 5 Math and Science

Statistics		BIT Schools: STD 5			
		Pre-test Math	Post-test Math	Pre-test Science	Post-test Science
N	Valid	864	514	971	514
	Missing	9	3	3	3
Mean		36.4583	58.7237	40.4882	65.3619
Median		36.0000	58.0000	42.0000	70.0000
Mode		34.00	68.00	40.00	82.00
Std. Deviation		13.98934	18.37676	15.33289	18.63190
Skewness		-.071	-.154	-.124	-.725
Kurtosis		.890	-.322	-.556	-.052
Range		90.00	94.00	82.00	88.00
Minimum		.00	2.00	.00	8.00
Maximum		90.00	96.00	82.00	96.00
Percentiles	25	30.0000	46.0000	30.0000	52.0000
	50	36.0000	58.0000	42.0000	70.0000
	75	44.0000	70.0000	52.0000	80.0000

Table 10: Central Tendencies: BIT+ Life Skills Curriculum—Tests STD 5 Math and Science

Statistics		BIT+ Life Skills STD 5			
		Pre-test Math	Post-test Math	Pre-test Science	Post-test Science
N	Valid	585	245	248	245
	Missing	5	0	5	0
Mean		36.1402	61.9184	42.8710	66.7918
Median		36.0000	60.0000	44.0000	68.0000
Mode		36.00	46.00	48.00	90.00
Std. Deviation[14]		11.59597	20.63404	13.11609	21.21652
Skewness[15]		-.824	-.059	-.265	-.254
Kurtosis[16]		1.269	-1.235	-.118	-1.114
Range		64.00	86.00	70.00	78.00
Minimum		.00	12.00	4.00	22.00
Maximum		64.00	98.00	74.00	100.00
Percentiles	25	30.0000	44.0000	34.0000	50.0000

[14]**Standard Deviation.** A measure of dispersion around the mean. In a normal distribution, 68% of cases fall within one standard deviation of the mean and 95% of cases fall within two standard deviations. For example, if the mean age is 45, with a standard deviation of 10, 95% of the cases would be between 25 and 65 years of age in a normal distribution.

[15]**Skewness.** A measure of the asymmetry of a distribution. The normal distribution is symmetric and has a skewness value of 0. A distribution with a significant positive skewness has a long right tail. A distribution with a significant negative skewness has a long left tail. As a guideline, a skewness value more than twice its standard error is taken to indicate a departure from symmetry.

[16]**Kurtosis.** A measure of the extent to which observations cluster around a central point. For a normal distribution, the value of the kurtosis statistic is zero. Positive kurtosis indicates that, relative to a normal distribution, the observations are more clustered about the center of the distribution and have thinner tails until the extreme values of the distribution, at which point the tails of the leptokurtic distribution are thicker relative to a normal distribution. Negative kurtosis indicates that, relative to a normal distribution, the observations cluster less and have thicker tails until the extreme values of the distribution, at which point the tails of the platykurtic distribution are thinner relative to a normal distribution.

Statistics		BIT+ Life Skills STD 5			
		Pre-test Math	Post-test Math	Pre-test Science	Post-test Science
	50	36.0000	60.0000	44.0000	68.0000
	75	44.0000	81.0000	52.0000	86.0000

Table 11: Central Tendencies: Control Schools—Tests STD 5 Math and Science

Descriptive Statistics		Control Schools STD 5			
		Pre-test Math	Post-test Math	Pre-test Science	Post-test Science
N	Valid	1093	950	729	952
	Missing	6	5	3	3
Mean		35.6285	48.5368	39.6104	50.2563
Median		36.0000	46.0000	40.0000	50.0000
Mode		40.00	46.00[a]	44.00[a]	44.00
Std. Deviation		11.15546	16.45206	15.34983	15.62661
Skewness		-.119	.364	-.086	-.183
Kurtosis		.884	.061	-.919	-.524
Range		78.00	92.00	72.00	86.00
Minimum		.00	.00	2.00	2.00
Maximum		78.00	92.00	74.00	88.00
Percentiles	25	28.0000	38.0000	26.0000	38.0000
	50	36.0000	46.0000	40.0000	50.0000
	75	42.0000	58.0000	52.0000	62.0000

Table 12: Central Tendencies: BIT Schools—Tests STD 6 Math and Science

Descriptive Statistics		BIT Schools STD 6			
		Pre-test Math	Post-test Math	Pre-test Science	Post-test Science
N	Valid	417	729	701	729
	Missing	0	1	1	1
Mean		28.9688	48.5597	41.2240	53.7860
Median		28.0000	52.0000	40.0000	54.0000
Mode		28.00	22.00[a]	38.00	32.00
Std. Deviation		10.43300	21.49379	12.30852	18.05024
Skewness		.193	.031	.010	-.019
Kurtosis		.071	-1.121	.049	-1.091
Range		54.00	92.00	74.00	84.00
Minimum		4.00		2.00	8.00
Maximum		58.00	96.00	76.00	92.00
Percentiles	25	22.0000	28.0000	34.0000	38.0000
	50	28.0000	52.0000	40.0000	54.0000
	75	36.0000	64.0000	50.0000	68.0000

Table 13: Central Tendencies: BIT + Life Skills Schools—Tests STD 6 Math and Science

Descriptive Statistics		BIT + Life Skills STD 6			
		Pre-test Math	Post-test Math	Pre-test Science	Post-test Science
N	Valid	155	369	283	369
	Missing	0	0	0	0
Mean		25.8710	54.1626	41.4134	59.0569
Median		26.0000	52.0000	40.0000	62.0000
Mode		24.00	26.00	40.00	72.00
Std. Deviation		8.11821	23.74446	10.85994	21.40549
Skewness		.041	.022	.296	-.246
Kurtosis		.663	-1.445	.436	-1.041
Range		52.00	90.00	76.00	92.00
Minimum		.00	4.00	12.00	6.00
Maximum		52.00	94.00	88.00	98.00
Percentiles	25	20.0000	32	34.0000	41.0000
	50	26.0000	52.0000	40.0000	62.0000
	75	32.0000	76.0000	50.0000	78.0000

Table 14: Central Tendencies: Control Schools—Tests STD 6 Math and Science

Descriptive Statistics		Control Schools STD 6			
		Pre-test Math	Post Math	Pre-test Science	Post Science
N	Valid	518	1137	914	1133
	Missing	10	1	2	5
Mean		27.8069	39.0783	37.8206	42.9373
Median		28.0000	36.0000	38.0000	42.0000
Mode		28.00	28.00[a]	36.00	38.00
Std. Deviation		10.85055	15.33505	12.03803	13.19548
Skewness		.521	.865	.344	.066
Kurtosis		1.207	.432	.818	-.349
Range		70.00	90.00	84.00	76.00
Minimum		.00	6.00	.00	4.00
Maximum		70.00	96.00	84.00	80.00

Percentiles	25	22.0000	28.0000	30.0000	42.9373
	50	28.0000	36.0000	38.0000	42.0000
	75	34.0000	48.0000	46.0000	38.00

E. Teacher Attitudes

Table 15 shows the changes in teachers' attitudes about using video lessons in class, views on student learning, student gender differences, and their lessons plans. The first statement indicates that relatively few teachers felt that videos can be distracting, and in comparison larger percentages of the control teachers felt that way.

Statements 2, 4, and 6 deal specifically with how teachers perceive the differences between boys and girls. One of the largest changes was that the pre-test teachers felt that boys understood the videos better than girls, but after almost a year, this attitude was greatly diminished to 9% for the BIT teachers, and 0 for the BIT+Life Skills, but remained at over 20% for the control teachers. Statement 4 indicates that there has been a decrease in agreement that boys and girls understand the videos equally well. On the other hand, statement 6 shows that the teachers have changed their attitudes considerably about how the videos help both boys and girls learn; there was an impressive increase for the BridgeIT teachers.

Statement 3 stating that it is better to teach without videos show that skepticism on the part of almost ¾ of the BridgeIT teachers has been drastically reduced to near zero. Initially, the teachers also felt that using cell phone technology would be an unreliable way to show videos; negative attitudes in this regard went from almost 100% down to under 5% for the BridgeIT and BridgeIT+LS teachers.

Initially, none of the BridgeIT teachers felt that the videos would integrate with their lesson plans, but this became near unanimous after almost a year of using the video lessons.

Table 15: Teacher Attitudes on Video Lessons

Statements: Use of video lessons (percent agreement)	Teachers: Pre and Post-test				
	BIT	BIT	BIT+LS	Control	
	Pre	Post	Post	Pre	Post
Videos can be distracting	8.2%	.0%	10.5%	20.0%	14.0%
Boys understand videos better than girls	87.2%	9.1%	.0%	95.5%	21.3%
Students should learn how to use tools and resources	6.1%	97.0%	100.0%	.0%	88.5%
It is better to teach without videos	72.9%	.0%	5.3%	63.2%	7.8%
Boys and girls understand the videos equally well	100.0%	90.9%	78.9%	100.0%	78.0%

Statements: Use of video lessons (percent agreement)	Teachers: Pre and Post-test				
	BIT	BIT	BIT+LS	Control	
	Pre	Post	Post	Pre	Post
Use of technology can enhance learning among students	100.0%	100.0%	100.0%	100.0%	96.2%
Videos help both girls and boys learn	26.5%	100.0%	100.0%	15.0%	88.5%
Videos work well together with other teaching aids	98.0%	100.0%	94.7%	100.0%	85.1%
Cell phones are unreliable for showing videos	98.0%	6.3%	.0%	68.4%	40.9%
The videos integrate well into the lesson plans	.0%	97.0%	100.0%	.0%	84.4%
Videos are just for entertainment and not for learning	12.8%	.0%	.0%	16.7%	2.0%
Girls understand the videos better than boys	100.0%	3.0%	5.3%	88.2%	4.2%
Students learn better and faster with the video lessons	100.0%	100.0%	100.0%	90.5%	91.3%

Table 16: Teacher Attitudes on Classroom Activities

Statements: View on Teaching (percent agreement)	Teachers: Pre and Post-test				
	1 BIT	BIT	BIT+LS	Control	
	Pre	Post	Post	Pre	Post
A teacher should be serious and not joke too much	35.5%	97.0%	100.0%	58.3%	96.2%
Students should be encouraged to speak as much as possible	22.9%	63.6%	68.4%	18.2%	60.0%
Only teachers should use tools and resources for demonstrations	58.3%	9.1%	.0%	36.4%	13.5%
Teaching boys and girls sometimes requires different strategies	45.8%	72.7%	83.3%	52.4%	46.9%
Students should only speak when called upon	2.2%	65.6%	68.4%	5.9%	50.0%
Students should do independent group work at least twice a week	98.0%	87.9%	84.2%	95.5%	86.5%
Students frequently break or destroy resources	95.8%	30.3%	10.5%	89.5%	32.7%
Girls are more reluctant to participate in class than boys	6.1%	12.1%	10.5%	33.3%	21.6%
Students learn better when they work together in groups	100.0%	100.0%	100.0%	100.0%	94.2%
Boys and girls should be encouraged to participate equally in class	6.3%	100.0%	100.0%	4.8%	100.0%

Attitudes about a wide range of topics relating to classroom activities also underwent numerous changes (

Table 16). In the pre-tests, about one third of the BridgeIT teachers and about half of the control teachers felt that teachers should be serious and avoid joking too much. Surprisingly, the post-test shows that nearly all the teachers should be serious and limit their joking behavior.

At the same time, there was about a three-fold increase in the number of teachers who felt that students should be encouraged to speak as much as possible; this was the case for all three types of teachers, indicating that more active classroom practices were being encouraged during 2010 in these schools.

When it came to the use of tools and resources such as models, globes, mechanical devices, etc. in the classroom, about half the BridgeIT teachers and a little more than one third of the control teachers felt that for doing classroom demonstrations, teachers should only use these resources. In the BridgeIT schools there was a drastic drop in this attitude and less so in the case of the control school teachers. The BridgeIT+LS teachers were unanimous in expressing this attitude.

In the pre-test, about half the teachers had the attitude that different strategies should be used when teaching boys and girls, and the post-test result show that this increased to almost three quarters for the BridgeIT teachers and more than four-fifths for the BridgeIT+LS. The control teachers expressed an opposite trend by decreasing to less than 50%.

When confronted with the statement that students should only speak when called upon, about 2% of the BridgeIT and 6% of the control teachers agreed. In the post-test, this increased to about two-thirds, which is a surprising finding, especially since active teaching methods encourage students to speak up more in class. Is this a sign of more rigid discipline in these classrooms?

Doing group work is considered to be the centerpiece of active learning methodologies, and the teachers interviewed for this evaluation showed that they are in favor of having students do independent work at least twice a week. However, in the post-test this attitude decreased by 10% or a little more. What does this mean? Teachers would like students to do more or less independent work? This topic needs additional investigation, and it is recommended that the Bridgeit team carry out more structured classroom observation and more in-depth teacher interviews to better understand and strategize ways to continue to encourage the adoption of active learning methodologies to complement the BridgeIT video learning resources.

The widely held teacher attitude that students have a tendency to break or destroy resources was nearly unanimous in the pre-test while the post-test showed a drastic decrease for the BIT and control teachers, but the BIT+LS teachers had the largest decrease, dropping to about 10%.

The commonly held idea that girls are reluctant to participate in class was certainly not the case for the BIT teachers, but one-third of the control teachers felt this way. In the post-test, this attitude increased slightly for the BIT teachers, but decreased by over 10% for the control teachers.

Virtually all the teachers felt that students learn better when they work in groups. And there were no changes for the BIT teachers but there was a 6% drop in the case of the control teachers.

Finally, teachers were confronted with the statement that boys and girls should participate equally in class, and the pre-test results were surprisingly low, but equally surprising was that this went to a unanimous 100% for all the teachers when they took the post-test.

F. Student Attitudes

Table 17: Video Lessons—Student Attitudes

Video Lessons: Statements About the Video Lessons (percent agreement)		BIT		BIT+LS		Control	
		pre	post	pre	post	pre	post
STD 5	S10 Videos lessons in class are boring	91.0%	8.0%	94.9%	6.8%	79.5%	12.5%
	S12 Videos lessons are confusing	88.3%	19.8%	84.4%	10.4%	87.9%	23.2%
	S13 The teacher helps students understand the video lessons	98.3%	93.2%	99.3%	96.2%	96.6%	72.8%
	S17 Videos lessons make learning math easier	76.2%	87.1%	69.5%	92.2%	55.9%	63.9%
	S19 The videos make science easier to understand	87.2%	92.7%	93.6%	97.8%	74.2%	81.9%
STD 6	S10 Videos lessons in class are boring	91.1%	4.4%	96.5%	6.8%	81.7%	10.8%
	S12 Videos lessons are confusing	89.5%	12.2%	84.2%	13.7%	86.4%	16.9%
	S13 The teacher helps students understand the video lessons	98.7%	99.00	97.8%	98.9	98.2%	97.0
	S17 Videos lessons make learning math easier	84.5%	90.5%	74.7%	88.9%	65.0%	63.8%
	S19 The videos make science easier to understand	88.7%	95.9%	92.1%	96.9%	82.5%	77.4%

Initially, most of both the 5th and 6th graders felt that the video lessons were boring; both groups of students drastically changed their attitudes as shown in statement 1. The same tendency can be seen in statement 2 that the videos are confusing, but some 10 to 20% still felt the videos were confusing after watching them for almost a year. Overall, the percentage of students who felt that the videos made math and science easier to understand increased by about 10-20% in the period of time between the pre and the post-tests (Table 17).

Table 18: STD 5—Student Attitudes about School and Classroom Activities

STD 5 General Statements About School and the Classroom (percent student agreement)	BIT		BIT+LS		control	
	Pre	Post	Pre	Post	Pre	Post
Parents should make children go to school even if do not want to	91.3%	96.6%	94.9%	98.7%	92.6%	95.3%
It is important to have time to play games in school	33.5%	97.6%	21.9%	96.2%	44.4%	97.1%
Working with other students in a group improves understanding	96.2%	93.5%	93.0%	94.4%	93.5%	92.5%
Students should put up their hands to ask questions often	97.0%	96.4%	98.9%	98.7%	96.6%	95.5%
It is important to listen carefully to what others have to say	97.7%	90.5%	97.8%	94.0%	97.0%	84.8%
It is important to go on to secondary school	95.4%	97.6%	97.1%	98.3%	96.3%	95.9%
Working in groups is really a waste of time	29.1%	7.9%	28.3%	6.4%	23.6%	12.1%
The teacher should call equally on boys and girls	86.0%	94.8%	86.4%	97.9%	86.2%	93.5%
As soon as students finish primary school, they should go to work	39.3%	15.4%	44.8%	10.3%	43.5%	16.0%
A good time to get married is right after finishing primary school	30.0%	11.9%	20.3%	8.5%	22.6%	12.6%
The teacher should do most of the talking	86.1%	64.4%	90.8%	55.4%	88.6%	81.8%

Virtually all the students said that their parents should make them go to school even if they did not want to go; this attitude did not change much between the pre- and the post-test. What did change considerably was that the students felt it was important to play games in schools. In the pre-test, less than one third of the BIT students felt this way but by the time the post-test was given, this attitude was nearly universal. For the control students, almost half felt they should play games in the pre-test and in the post-test, they were also nearly in unanimous agreement.

On the importance of work in groups to learn better, putting up their hands to ask questions often, and the importance of carefully listening to what others have to say, well over 90% of all the students in all three categories felt this way in the pre-test and continue feeling the same way in the post-test.

On the importance of going to secondary school there was near unanimity across the board for all three groups with no significant changes between the pre and the post-tests.

When confronted with the statement that working in groups is a waste of time about one-fifth of all the students agreed with this statement, but in the post-test this dropped to under 10% for all three groups of students.

Well over 80% of all the pre-test students agreed with the statement that the teachers should call equally on boys and girls. In the post-test, this had dropped a little for the BIT students, increased to 95% for the BIT+LS and reached 90% for the controls. The only difference that was significant was for the increase shown by the BIT+LS students.

When the students considered the statement that going to work after primary school was a good idea, about one third of the BIT and control school students thought this was a good idea; less than 19% of the BIT+LS felt this way in the pre-test. In the post-test, this dropped to 11% for the BIT students and 14% for the controls, but again, the BIT+LS students were the lowest at 7.6%.

Early marriage continues to be a persistent problem in many parts of Africa and Tanzania is no exception. On the pre-test, about 16% of the BIT and the control students though it was a good idea to get married right after primary school. Less than 10% of the BIT+LS felt this way. In the post-test, the BIT attitude on early marriage actually increased to nearly 20%. For the control student, this feeling decreased slightly while for the BIT+LS it dropped by a little more than 2% to 7.6%.

The final statement was that the teachers should do most of the talking, and the overall pre-test showed that three-quarters to about 80% of all the students felt this way. In the post-test there were moderate decreases for the BIT and control students, but the BIT+LS students had a small increase.

Table 19: STD 6—Student Attitudes about School and Classroom Activities

STD 6 General Statements About School and the Classroom (percent student agreement)	BIT		BIT+LS		control	
	Pre	Post	Pre	Post	Pre	Post
Parents should make children go to school even if do not want to	96.1%	97.6%	95.6%	96.8%	94.2%	96.8%
It is important to have time to play games in school	15.8%	96.5%	17.1%	94.7%	32.9%	97.2%
Working with other students in a group improves understanding	97.6%	95.5%	95.7%	93.9%	96.2%	93.5%
Students should put up their hands to ask questions often	97.8%	98.1%	100.0%	97.3%	97.7%	96.2%
It is important to listen carefully to what others have to say	97.9%	87.0%	97.4%	88.4%	97.9%	87.2%
It is important to go on to secondary school	97.7%	99.0%	96.9%	96.7%	96.6%	97.8%

Working in groups is really a waste of time	22.8%	9.2%	17.4%	7.6%	17.5%	7.1%
The teacher should call equally on boys and girls	85.6%	82.9%	84.7%	94.8%	87.9%	89.9%
As soon as students finish primary school, they should go to work	28.9%	11.1%	18.7%	7.6%	32.3%	13.6%
A good time to get married is right after finishing primary school	16.8%	19.5%	9.6%	7.3%	16.0%	14.8%
The teacher should do most of the talking	74.7%	69.0%	80.8%	81.4%	83.0%	76.6%

G. Teacher Training

Prior to the classroom observation, the teachers were asked a series of questions about their BridgeIT training and whether or not they had trained additional teachers to use the video/cell phone technology.

In the pre-test, the results show that a little over half the teachers who were observed giving video lessons had not been trained to be master teachers, the same number said they had been trained by master teachers, 11% had been trained by another teacher—not a master teacher. Almost three-quarters said they had trained other teachers in BIT, and a large majority (87%) reported that their training had been appropriate.

Well over 90% said that they received appropriate support from head teachers and colleagues in their school, 87% said they received adequate support from the school inspectors in their districts, and that they received visits from the school inspectors (92%). Some 90% of the teachers said they got adequate support from the BridgeIT helpdesk.

An interesting finding was that half the teachers shared their BridgeIT resources with teachers and classes at other schools. This is probably an indication of a degree of contamination of the control schools by BridgeIT technology and actual use.

In the post-test overall training, except for master teachers, decreased. And the other changes are displayed below.

Table 20: Teacher Training

Teachers Training	Pre BIT	Post BIT	Post BIT+LS	Pre Control	Post Control
Trained to be master teacher	53%	22%	24%	4%	2%
Were you trained in BridgeIT by master teachers?	53%	64%	71%	4%	4%
Were you trained in BridgeIT by a fellow teacher? (not a master teacher)	11%	27%	38%	9%	6%
Have you trained other teachers in how to use BridgeIT?	74%	82%	86%	4%	6%
Do you feel that the training to use BridgeIT was	87%	91%	100%	15%	20%

Teachers Training	Pre BIT	Post BIT	Post BIT+LS	Pre Control	Post Control
appropriate?					
Do you feel that you receive appropriate support from the head teacher and colleagues at school?	95%	85%	100%	92%	74%
Do you feel that you receive appropriate support from the school inspectors in your district?	87%	91%	100%	94%	87%
Do you receive visits from the school inspectors?	92%	97%	100%	92%	77%
Do you get prompt responses from the BridgeIT helpdesk?	90%	91%	95%	15%	12%
Do you share your BridgeIT resources with teachers and classes from other schools?	50%	42%	71%	9%	4%

H. Classroom Observations

Prior to administering the math and science tests, the data collectors made the classroom observations. The teachers were informed about the observations just before the data collectors entered the classroom, and the teachers were asked to carry on normal teaching activities. The data collectors sat in the rear of the classroom and did not interfere with any of the activities; the observations were made during one full class period[17].

The data collectors were also instructed to get the actual class enrollment for both boys and girls and then count the actual numbers who were present at the time of the visit. The data were used to calculate enrollment ratios of the pre and post-test visits. A score of 1 would be 100% attendance and .50 would equal 50%. The purpose was to see if there were any notable changes either up or down in these enrollment ratios between the first pre-test and the subsequent post-test visits.

The observation checklist as described below consists of 12 sections that have been divided into three groups with four sections each. Each section has a series of statements that the observer has to mark as either yes or no. In other words, did the condition exist or a particular behavior take place during the full class period observation.

For analytical purposes a yes was coded as 1 and no as 0, giving each section a score, and a mean score was calculated for the three types of schools. The mean scores for the four sections in each of the three groups have been represented graphically with a table of the means. Furthermore, the items in each of the 12 sections are presented in tables showing the percent of classrooms that displayed the described condition or behavior. In other words, the scores per section is an indicator of overall change from the pre to the post-test and the percentages indicate which particular items underwent changes during this time period. Four tables for each of the three groups are presented first followed by the three figures with the mean overall scores for each of the three groups. (The pre and post-test observation schedules can be found in Annex IV).

It should also be noted that, for all tables in this section, the classroom observation data for the pre-test are shown as a combination of the BridgeIT schools and the BridgeIT schools with the life skills curriculum (ie. BIT + BIT+LS).

[17]Experience with similar types of observations have found that after about 5-10 minutes the students generally ignore the visitors and carry on with their scheduled activities.

1. Student Attendance

The percentages shown in Table 21 below do not indicate any significant trend in either improved or worse attendance. More than two class visits, once a month or even weekly, would have greatly improved the reliability of this indicator. Making a record of the attendance when taken by the teacher, if taken at all, tends to be quite unreliable in that inflation of the numbers is a very common practice, and in the case of this evaluation, more than two visits were precluded by budget limitations.

Table 21: Student Attendance on Day of Classroom Visit

Type of School	Total Attendance		Boys' Attendance		Girls' Attendance	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
BIT	81.7	83.6	81.8	78.0	82.7	83.9
Control	87.0	83.9	85.6	86.2	87.9	85.0
Total	84.8	83.7	84.1	82.0	85.7	84.5

2. Group One: Facilities, Teacher Satisfaction, Classroom Environment and Facilities and Materials

The following four tables show the percentage of visited classrooms where the described conditions or behaviors were observed. For example,Table 22 shows that lunch programs have increased, and there are more separate toilet facilities for boys and girls, which were cleaner. On the other hand, there have been decreases in the availability of clean water and classroom security has also decreased.

Table 22: Available Facilities (5)

Facilities	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C30 Lunch program for children (1-from community 2-from outside organization)	40%	46%	71%	28%	38%
C31 Separate toilet facilities for boys and girls.	63%	100%	95%	68%	94%
C32 The toilet facilities are clean	61%	84%	91%	45%	68%
C33 There is reliable clean water.	87%	72%	81%	62%	57%
C34 Classroom is secure (windows, watchman and doors can be locked).	100%	91%	100%	79%	57%

Table 23 shows that teacher job and school facilities satisfaction has decreased. The satisfaction with the BridgeIT phone and video equipment has gone down slightly while satisfaction with the BridgeIT education model has increased.

Table 23: Teacher Satisfaction (4)

Satisfaction	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C35 Although teaching is challenging, do you find your job satisfying?	71%	36%	71%	62%	48%
C36 Are you satisfied with the school facilities? (Physical infrastructure, teaching materials, etc.)?	32%	33%	43%	30%	15%
C37 Are you satisfied with the BridgeIT cell phone and video equipment?	76%	70%	71%	21%	6%
C38 Are you satisfied with the BridgeIT education model?	74%	82%	76%	23%	4%

Overall, the BridgeIT schools' satisfaction with the 10 items related to the classroom environment has increased, but for the control schools the percentage remains generally low.

Table 24: Classroom Environment (10)

Classroom Environment	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C39 There are posters and illustrations on the wall (either teacher's work or commercially produced)	34%	73%	86%	23%	23%
C40 There is a display of children's work in the classroom.	11%	67%	81%	9%	19%
C41 If there are posters/diagrams on the walls, do they have a gender balance?	21%	61%	67%	17%	15%
C42 There is a cooperative atmosphere between students and teacher.	84%	97%	100%	89%	79%
C43 There is adequate light for each child to be able to see the blackboard and read their books.	90%	100%	100%	87%	83%
C44 The children have an unobstructed view of the television	84%	70%	33%	32%	19%

Classroom Environment	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C45 External noise does not interfere with communication and classroom activities	58%	69%	86%	62%	66%
C46 Seating arrangement facilitates participation by all the students (U-shape)	61%	76%	81%	34%	32%
C47 Seating arrangements can be altered to encourage group work	76%	97%	95%	40%	59%
C48 The classroom is clean and tidy. (floor recently swept, desks orderly, no rubbish on the floor)	76%	82%	100%	45%	66%

The nine items in the facilities and materials section shows that adequate storage space has increased, space for children to work has also gone up, and more importantly having a functional Nokia cell phone and TV has also increased. Materials for enrichment and extra help continue to be in short supply as do both workbooks and text books; only in about one-third of the visited classrooms were there enough textbooks available for each child.

Table 25: Facilities and Materials (9)

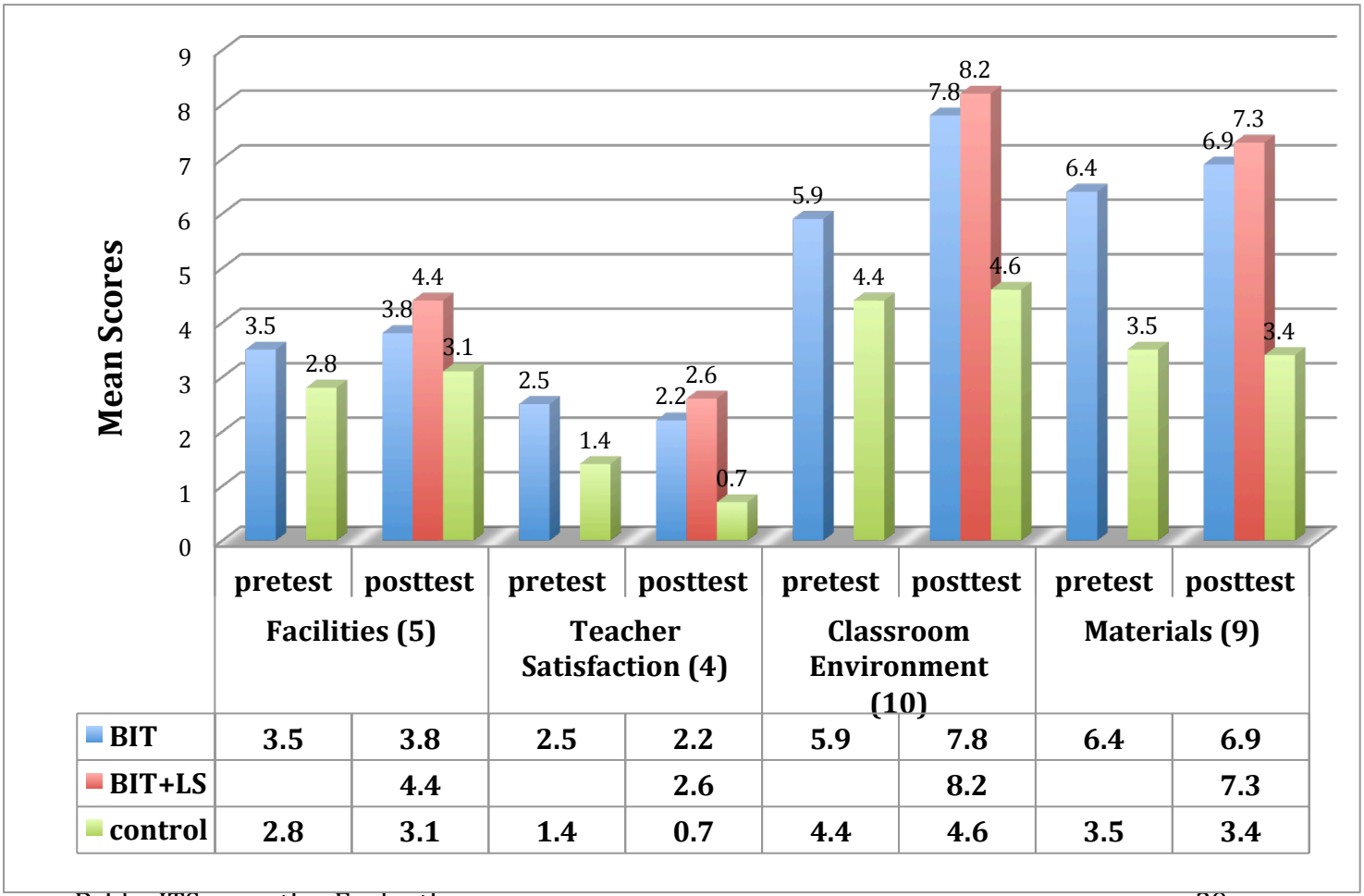
Facilities and Materials	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C49 The school has adequate storage space for teaching/learning materials	53%	85%	76%	36%	59%
C50 Each child has enough space to work (crowded together or have some open space for working)	71%	88%	91%	60%	68%
C51 The classroom has a working television to show BridgeIT videos	90%	88%	95%	19%	6%
C52 The cell phone has a functional security cable	92%	91%	91%	15%	6%
C53 The classroom has a functional Nokia cell phone with hookup to TV	79%	88%	91%	19%	6%
C54 There are materials available for enrichment and extra help (Reference books, maps, globes, diagrams, etc.)	58%	58%	75%	28%	26%
C55 All children have workbooks, note books or slates	76%	61%	86%	75%	43%
C56 There are enough textbooks available for each child	34%	34%	33%	9%	25%

Facilities and Materials	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C57 There is a useable blackboard and chalk	87%	100%	95%	94%	98%

As seen in the four tables above, Group 1 deals with school facilities (lunch program, toilets, cleanliness of toilets, clean water and classroom security), overall teacher satisfaction (for BridgeIT satisfaction with equipment and the education model is important), the classroom environment, general facilities and the availability of materials.

Figure 5 shows that in the facilities category, the mean scores have not changed significantly over the year, but the highest mean is for the BIT+LS classrooms. Also, overall teacher satisfaction has, in fact decreased over the year. The classroom environment scores for the BIT schools have increased and are relatively high as compared to the control schools. In the case of facilities and material, these have increased slightly for the BIT schools but have remained stagnant for the controls.

Figure 5: Group 1—Facilities, Teacher Satisfaction, Classroom Environment and Materials



	Facilities (5)		Teacher Satisfaction (4)		Classroom Environment (10)		Materials (9)	
	pretest	posttest	pretest	posttest	pretest	posttest	pretest	posttest
BIT	3.5	3.8	2.5	2.2	5.9	7.8	6.4	6.9
BIT+LS		4.4		2.6		8.2		7.3
control	2.8	3.1	1.4	0.7	4.4	4.6	3.5	3.4

In summary, the graph and table above shows that in all four sections, for both the pre-test and post-test observations, the means of the BridgeIT and BridgeIT with the life skills curriculum are higher than the corresponding controls.

3. Group 2: Student Observation, Teacher Communication, Lesson Planning and Questioning Skills

In Table 26, all nine items relate to student-teacher behavior. Notable is that children (both boys and girls) ask more questions and that there has been an increase in children who need help getting that help from both teachers and their peers.

Table 26: Observation of Students (9)

Observation of students	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C58 Children pay attention when the teacher gives instructions	97%	100%	100%	98%	91%
C59 Children ask questions (both boys and girls)	29%	76%	81%	30%	47%
C60 Boys ask more questions than girls	8%	3%	14%	19%	13%
C61 Girls ask more questions than boys	13%	12%	10%	13%	17%
C62 Boys and girls are given equal time and attention	92%	79%	91%	87%	76%
C63 Most of the children (more than 80%) participate in class activities	95%	88%	91%	87%	67%
C64 All children are given the opportunity to present ideas/answers to the class	97%	85%	91%	94%	81%
C65 Children who need help get that help from the teacher or their peers	84%	100%	91%	64%	91%
C66 The children are given responsibility for tasks within the classroom	97%	91%	100%	85%	85%

Table 27 shows that very few teachers communicate in a local language other than Swahili and that there has been a large increase in teachers encouraging silent students to participate in the class by calling on them more often. Also, there has been an increase in the number of teachers who know their students by name.

Table 27: Teacher Communication (9)

Teacher Communication	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C67 The teacher speaks so that all children in the class or group can hear	100%	97%	100%	98%	98%
C68 The teacher maintains eye-contact with class or group	100%	97%	95%	98%	87%
C69 The teacher speaks to children in a motivating manner	97%	100%	100%	96%	81%
C70 The teacher talks to the children using normal vocabulary that most students can understand	100%	97%	100%	96%	93%
C71 The teacher communicates in the local language. (in addition to Swahili)	3%	6%	0%	2%	4%
C72 The teacher knows and uses students' names	79%	85%	91%	66%	75%
C73 The teacher writes legibly on the blackboard so that all of the students can see and understand	97%	94%	100%	94%	87%
C74 The teacher listens carefully to all students	97%	85%	91%	96%	87%
C75 The teacher encourages silent students to participate by calling on them	45%	76%	81%	34%	47%

The most important finding in Table 28 was that in the pre-test a little over half the teachers used the video lessons during the data collectors' visit and this increased to almost three-quarters for the post-test in the BIT and to four-fifths in the BIT+LS classrooms.

In the classrooms where the videos were shown, a little more than half of the pre-test teachers prepared the students for the lesson; this increased to two-thirds for the post-test BIT classes and 80% for the BIT+LS.

When the video lessons were done, 60% of the pre-test teachers carried out video lesson related activities, and this increased to three-quarters for the post-test BIT and 81% for the BIT+LS classes.

Table 28: Lesson Planning and Implementation (6)

Lesson Planning	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C76 The teacher has materials, supplies, and equipment for the lesson ready at the start of the lesson	90%	94%	100%	79%	79%
C77 The teacher enters the class with a written plan	87%	91%	95%	57%	62%
C78 While teaching, the teacher makes use of the available space in the classroom instead of remaining in front	87%	94%	91%	64%	71%
C79 A BridgeIT video was shown during the observation	58%	70%	81%	11%	9%
C80 If yes, the teacher prepared the students for the video lesson	55%	67%	81%	13%	6%
C81 Upon completion of the video, the teacher carried out related activities	61%	76%	81%	11%	8%

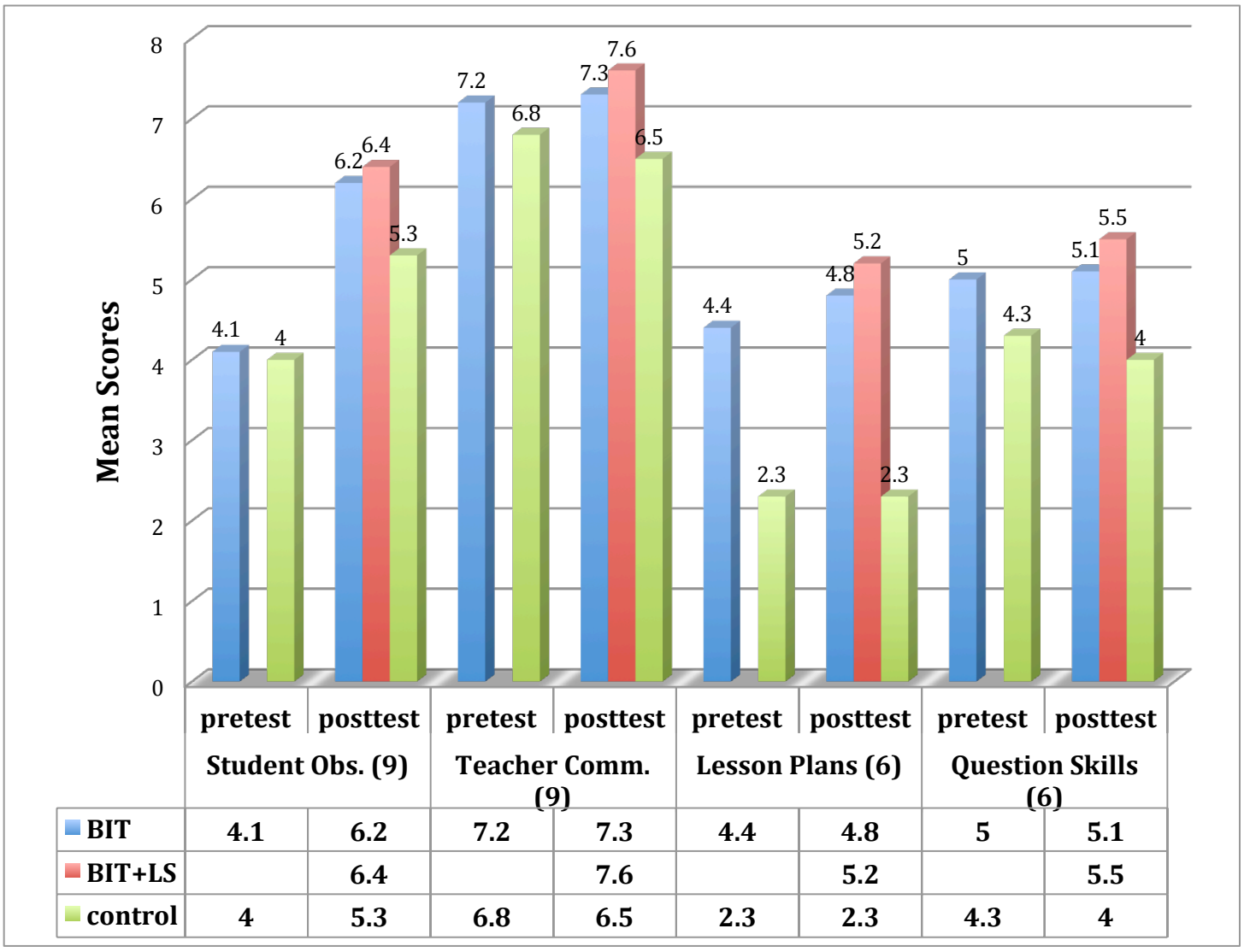
The teachers' questioning skills in the BIT schools showed no major changes in the six categories in Table 29. The most notable exception is that the teachers give students additional time to respond to questions.

Table 29: Questioning Skills (6)

Questioning Skills	**Type of school**				
	1 BIT Pre-test	**1 BIT Post-test**	**2 BIT+LS Post-test**	**2 control Pre-test**	**3 control Post-test**
C82 The teacher gives opportunity to all students, boys and girls, to present individual and group work to the class	92%	97%	91%	83%	64%
C83 The teacher poses questions clearly and one at a time	95%	94%	100%	92%	77%
C84 The teacher provides specific useful feedback after an incorrect, incomplete, or non-response in a helpful way (praise, further probing)	92%	88%	95%	68%	70%
C85 The teacher asks questions that require more than a simple answer	82%	85%	81%	75%	57%
C86 The teacher affirms a correct oral response, probing as necessary to enhance learning	71%	73%	95%	57%	62%
C87 The teacher waits sufficient time for students to respond	68%	79%	91%	60%	70%

In the cases of observing student behavior, the scores have improved in both the BIT and the control schools with a slightly higher increase for the BIT schools in relation to the controls. However, the behavior and communication of the teachers has not changed much over the year but the BIT+LS classrooms continue to have the highest mean scores. Lesson planning has gone up marginally in the BIT schools but remained stagnant for the controls. The same has been the case for the teachers' questioning skills (Figure 6).

Figure 6: Group 2—Student Observation, Teacher Communication, Lesson Planning and Questioning Skills



	Student Obs. (9)		Teacher Comm. (9)		Lesson Plans (6)		Question Skills (6)	
	pretest	posttest	pretest	posttest	pretest	posttest	pretest	posttest
BIT	4.1	6.2	7.2	7.3	4.4	4.8	5	5.1
BIT+LS		6.4		7.6		5.2		5.5
control	4	5.3	6.8	6.5	2.3	2.3	4.3	4

4. Group 3—Practice/Feedback, Grouping, Teaching Methods and Classroom Atmosphere

Of note in table Table 30 is that the teachers' movement around the classroom to check students' work decreased in BIT but increased in the BIT+LS classrooms. The very same pattern can be observed on whether or not the teachers check for understanding before assigning practice activities, and a similar pattern can also be observed in whether or not

the teacher marks student work and provides feedback. The last item on the preparation of activities based on children's abilities increased from the pre to the post-test, but the increase was largest in the BIT+LS classrooms. The patterns were similar but generally much lower in the control schools.

Table 30: Teachers Practice Feedback and Remediation

Practice, Feedback, Remediation	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C88 The teacher moves about the classroom during class work to check performance of all students, and reduce the psychological distance	87%	79%	91%	75%	68%
C89 The teacher checks for understanding before assigning practice	82%	64%	95%	70%	60%
C90 The teacher regularly marks and provides feedback, written or verbal, on students' work	84%	73%	100%	79%	70%
C91 The teacher can prepare activities for children of different abilities	8%	46%	76%	2%	30%

Group work and related activities have increased in all five categories with the largest increases in the BIT+LS and the lowest in the control classrooms.

Table 31: Grouping and Group Work (5)

Grouping	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C92 The teacher sometimes works with particular subgroups of students	66%	72%	91%	40%	42%
C93 Students sometimes work independently in groups on activities	66%	75%	91%	38%	52%
C94 The teacher circulates among the groups to help and monitor activities	74%	76%	95%	40%	45%
C95 Students sometimes work in a co-operative learning group situation (This is distinct from working individually in small groups)	79%	79%	95%	45%	53%
C96 Generally, there is gender balance in the groups organized by the teacher	63%	88%	95%	32%	57%

Using verbal teaching methods appears to have increased for BIT+LS classrooms and decreased slightly for BIT. Math related methods have increased in both types of BIT classrooms and decreased in the controls. The use of spatial/visual methods have gone up for BIT and down in BIT+LS as well as in the control classrooms. The use of music went up in BIT and BIT+LS and remained at a low level in the control classrooms. Physical activities went up in both type of BIT classrooms, and down in the controls. People skills have improved in the BIT schools but a decrease was observed for the controls.

Table 32: General Teaching Methods (6)

Teaching Methods	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C97 Verbal—linguistic (Using written and spoken words)	90%	82%	95%	72%	70%
C98 Logical—mathematical (Using numbers/abstract patterns problem solving)	53%	76%	67%	51%	49%
C99 Spatial—visual (Using visual imageries/graphic diagrams)	53%	70%	52%	36%	26%
C100 Musical—rhythmic (Using rhyme/rhythm/repetition)	42%	50%	48%	13%	13%
C101 Body Kinesthetic-movement (Using physical movement/games)	45%	55%	62%	21%	15%
C102 Interpersonal—people skills (Using group, leadership, co-operative skills)	68%	79%	76%	45%	37%

The classroom atmosphere items listed in

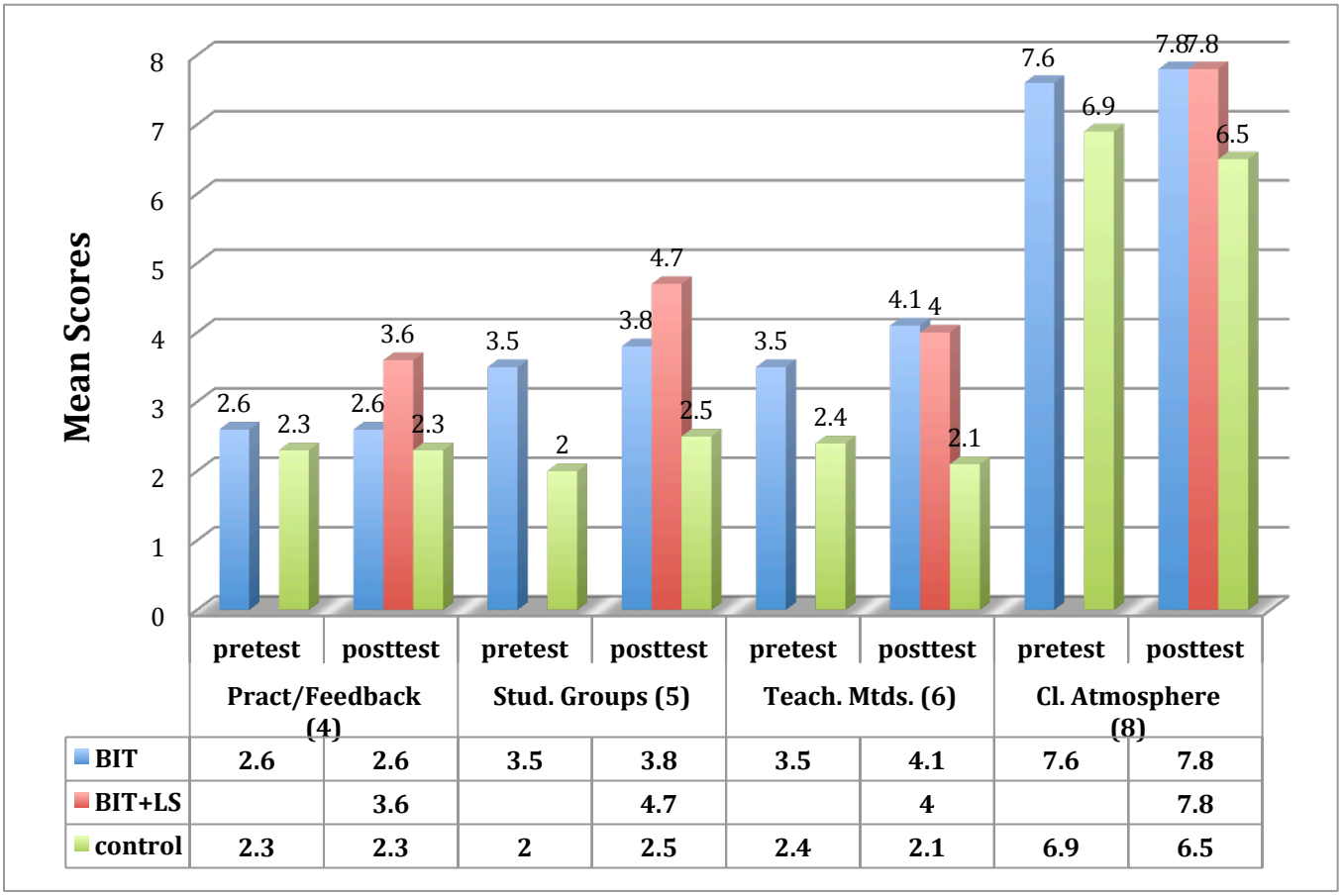
Table 33 are all more than 90% for the BIT schools, but with one exception—a decrease in the teachers talking in a friendly way to the children in the BIT classrooms. The percentages for the control schools were generally lower and there were decreases in five of the eight categories.

Table 33: Classroom Atmosphere (8)

Classroom Atmosphere	Type of school				
	1 BIT Pre-test	1 BIT Post-test	2 BIT+LS Post-test	2 control Pre-test	3 control Post-test
C103 The teacher talks to the children in a positive and friendly way	95%	88%	95%	89%	66%
C104 There appears to be a supportive learning environment in the classroom	100%	97%	100%	87%	74%
C105 The children seem to respect the teacher	97%	97%	100%	96%	91%
C106 The children seem to respect their peers	95%	97%	95%	94%	94%
C107 The teacher uses positive verbal and non-verbal communication	90%	97%	95%	64%	83%
C108 The children appear to enjoy being at school	97%	100%	100%	92%	81%
C109 In general, boys and girls appear to be treated equally	95%	100%	100%	92%	85%
C110 Generally the teacher uses participative teaching methods	92%	100%	95%	75%	77%

As for the amount of practice and feedback provided to students, the scores are generally low and unchanged over the year. The BIT+LS classrooms score higher but there is no basis for comparison. The observation of students working in groups has increased somewhat, the variety of teaching methods have also increased for the BIT schools but have experienced a decrease for the controls. The overall classroom atmosphere appears to have improved and was near the maximum of the index for the BIT schools but has decreased for the controls (Figure 7).

Figure 7: Group 3—Practice/Feedback, Student Groups, Teaching Methods and Classroom Atmosphere



	Pract/Feedback (4)		Stud. Groups (5)		Teach. Mtds. (6)		Cl. Atmosphere (8)	
	pretest	posttest	pretest	posttest	pretest	posttest	pretest	posttest
BIT	2.6	2.6	3.5	3.8	3.5	4.1	7.6	7.8
BIT+LS		3.6		4.7		4		7.8
control	2.3	2.3	2	2.5	2.4	2.1	6.9	6.5

V. Summary and Conclusions

This section summarizes and highlights the most important findings of this evaluation. The figures and data tables can be interpreted from a number of different perspectives, and these findings are what the evaluator considers to be the most salient.

- The test scores in both math and science showed significant gains over the pre-tests given at the beginning of 2010. However, the distributions of the mean scores show that many students were left behind and the increases in the means were due to groups of students who excelled while others showed more modest gains or no gains at all. This can be seen in the quartile differences between the pre and the post-tests and in the histograms where in some cases the post-test distributions are bimodal; this has especially been the case for the BridgeIT schools with the added life skills curriculum. This indicates that one group of students have advanced considerably while others have not, leaving the mean scores between the two modal peaks.

- No significant gender differences were found in the test scores. Overall, girls' scores were somewhat lower but these were not statistically significant differences.

- Teachers' attitudes towards the video science and math lessons were that in the pre-test, they felt that boys understood the lessons best; but after a year of using the lessons, this gap was greatly reduced. Initially the teachers were skeptical about whether or not the videos would help students learn math and science, but this skepticism was drastically diminished. Also, initially few teachers thought the video lessons would integrate well with their lesson plans but the post-test results show that nearly all the teachers felt the lessons integrated quite well with the videos.

- Initially, most of both the 5th and 6th graders felt that the video lessons were boring; both groups of students drastically changed their attitudes after nearly a year of using the lessons. The same tendency was apparent in that many students felt the videos were confusing, but less than one-fifth still felt the videos were confusing after watching them for almost a year. Overall, the percentage of students who felt that the videos made math and science easier to understand increased by about 10-20% in the period of time between the pre and the post-tests.

- When the students considered the statement that going to work after completing primary school was a good idea, about one-third of the BIT and control school students thought this was a good idea; less than 19% of the BIT+LS felt this way in the pre-test. In the post-test, this dropped to 11% for the BIT students and 14% for the controls, but again, the BIT+LS student were the lowest at under 10%.

- Early marriage continues to be a persistent problem in many parts of Africa and Tanzania is no exception. On the pre-test about 16% of the BIT and the control students though it was a good idea to get married right after primary school. Less than 10% of the BIT+LS felt this way. In the post-test, the BIT attitude on early marriage actually increased to nearly 20%. For the control student, this feeling decreased slightly while for the BIT+LS it dropped by a little more than 2% to 7.6%. These results show that the percentages overall are quite low but in the case of the Life Skills Curriculum, they could go even lower.

- Well over 90% of the teachers said that they received appropriate support from head teachers and colleagues in their schools; a large majority said they received adequate support from the school inspectors in their districts, and that they received visits from the school inspectors. Nearly all of the teachers said they got adequate support from the BridgeIT helpdesk.

- An interesting finding was that half the teachers shared their BridgeIT resources with teachers and classes at other schools. This is probably an indication of a degree of contamination of the control schools by BridgeIT technology and actual use.

- After taking attendance during the pre and post-test administration, there was no indication of any significant trend in either improved or worse attendance. More than two class visits, once a month or even weekly, would have greatly improved the reliability of this indicator. Making a record of the attendance taken by the teachers, if taken at all, tends to be quite unreliable in that inflation of the numbers is a very common practice, and in the case of this evaluation, more than two visits to check attendance were precluded by budget limitations.

- The teacher interviews that went along with the classroom observations found that teacher job and school facilities satisfaction has decreased. The satisfaction with the BridgeIT phone and video equipment has gone down slightly while satisfaction with the BridgeIT education model has increased.

- The observations of the facilities and materials availability shows that adequate storage space has increased, space for children to work has also gone up, and more importantly having a functional Nokia cell phone and TV has also increased. Materials for enrichment and extra help continue to be in short supply as do both workbooks and text books; only in about one-third of the visited classrooms were there enough textbooks available for each child.

- Of the items relate to student-teacher behavior. It is notable that children (both boys and girls) ask more questions and that there has been an increase in children who need help getting that help from both teachers and their peers.

- An important finding is that very few teachers were observed to communicate in a local language other than Swahili and that there has been a large increase in teachers encouraging silent students to participate in the class by calling on them more often. Also, there has been an increase in the number of teachers who know their students by name.

- An important finding was that in the pre-test, a little more than half the teachers used the video lessons during the observation visit and this increased to almost three-quarters for the post-test in the BIT and to four-fifths in the BIT+LS classrooms. In the classrooms where the videos were shown, a little more than half of the pre-test teachers prepared the students for the lesson; this increased to two-thirds for the post-test BIT classes and 80% for the BIT+LS.When the video lessons were done, 60% of the pre-test teachers conducted video lesson related activities, and this increased to three-quarters for the post-test BIT and 81% for the BIT+LS classes.

- The teachers' movement around the classroom to check students' work decreased in BIT but increased in the BIT+LS classrooms. The very same pattern was observed on whether or not the teachers' check for students' understanding before assigning practice work, and a similar pattern was observed in whether or not the teacher marks the students' work and provides feedback. Also, the preparation of activities based on children's abilities increased from the pre to the post-test, but the increase was largest in the BIT+LS classrooms.

- Cooperative learning in the form of group work with the teacher circulating among the groups and related activities have all increased from the beginning to the end of the evaluation period of a little less than one year.

- Using verbal teaching methods appear to have increased for BIT+LS classrooms and decreased slightly for BIT. Math related methods have increased in both types of BIT classrooms and decreased in the controls. The uses of spatial/visual teaching methods have gone up for BIT and down in BIT+LS as well as in the control classrooms. The use of music went up in BIT and BIT+LS and remained at a low level in the control classrooms. Physical activities went up in both types of BIT classrooms, and down in the controls. People skills have improved in the BIT schools but a decrease was observed for the controls.

- **SCORES:** The mean scores described here are based on assigning 1 if the condition or behavior was observed and 0 if not; each section of the observation protocol had different numbers of conditions or behaviors to be observed, and the means described here are for each section, comparing pre and post-test classroom visits. The facilities mean scores have not changed significantly over the year, but the highest mean is for the BIT+LS classrooms. Also, overall teacher satisfaction has, in fact decreased over the year. The classroom environment scores for the BIT schools have increased and are relatively high as compared to the control schools. In the

case of facilities and material, these have increased slightly for the BIT schools but have remained stagnant for the controls (Figure 5).

- **SCORES:**In the observations of student behavior, the scores have improved in both the BIT and the control schools with a slightly higher increase for the BIT schools in relation to the controls. However, the behavior and communication of the teachers has not changed much over the year but the BIT+LS classrooms continue to have the highest mean scores. Lesson planning has gone up marginally in the BIT schools but remained stagnant for the controls. The same has been the case for the teachers' questioning skills (Figure 6).

- **SCORES**: As for the amount of practice and feedback provided to students, the scores are generally low and unchanged over the year. The BIT+LS classrooms score higher but there is no basis for comparison. The observation of students working in groups has increased somewhat, the variety of teaching methods have also increased for the BIT schools but have experienced a decrease for the controls. The overall classroom atmosphere appears to have improved and was near the maximum of the index for the BIT schools but has decreased for the controls (Figure 7).

Annex I: Test Scores—Distribution of Means

A. Pre-Tests

Figure 8: STD 5 Math—Distribution of Means—BridgeIT

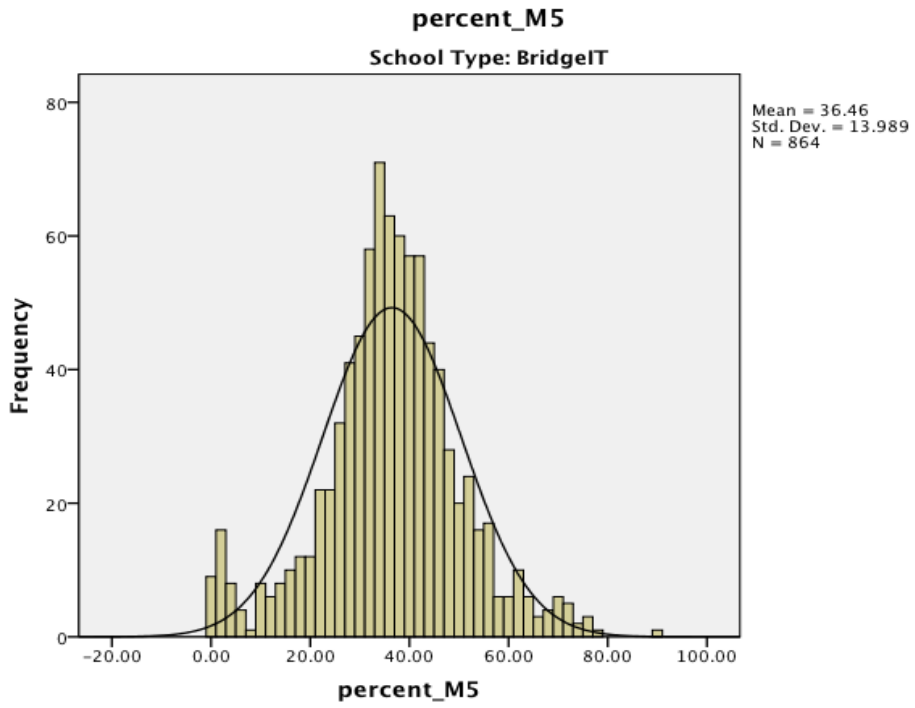


Figure 9: STD 5 Math—Distribution of Means—BridgeIT+LS

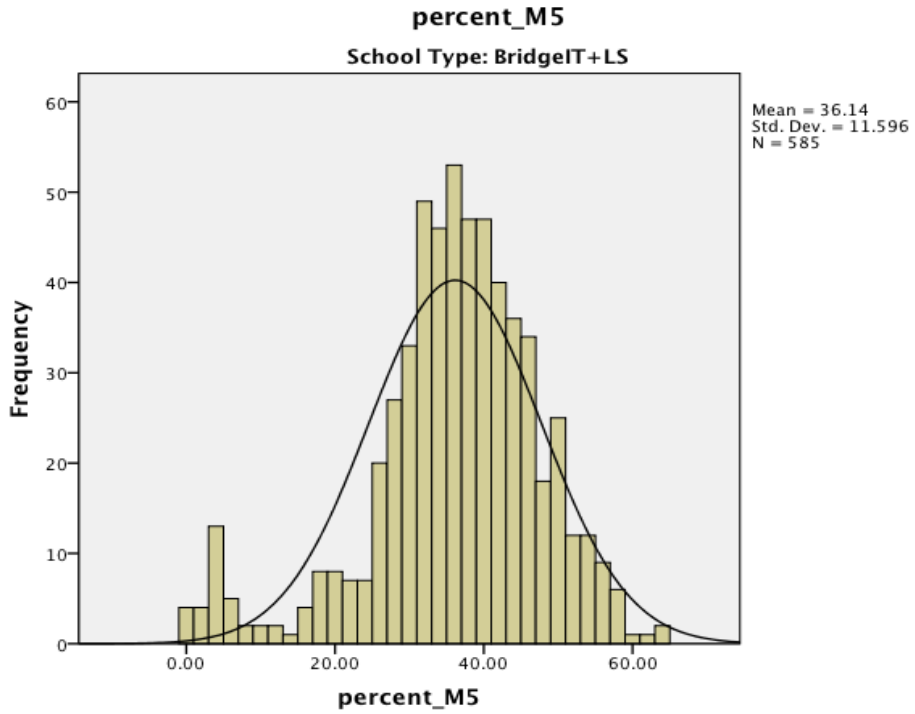


Figure 10: STD 5 Math—Distribution of Means—Control

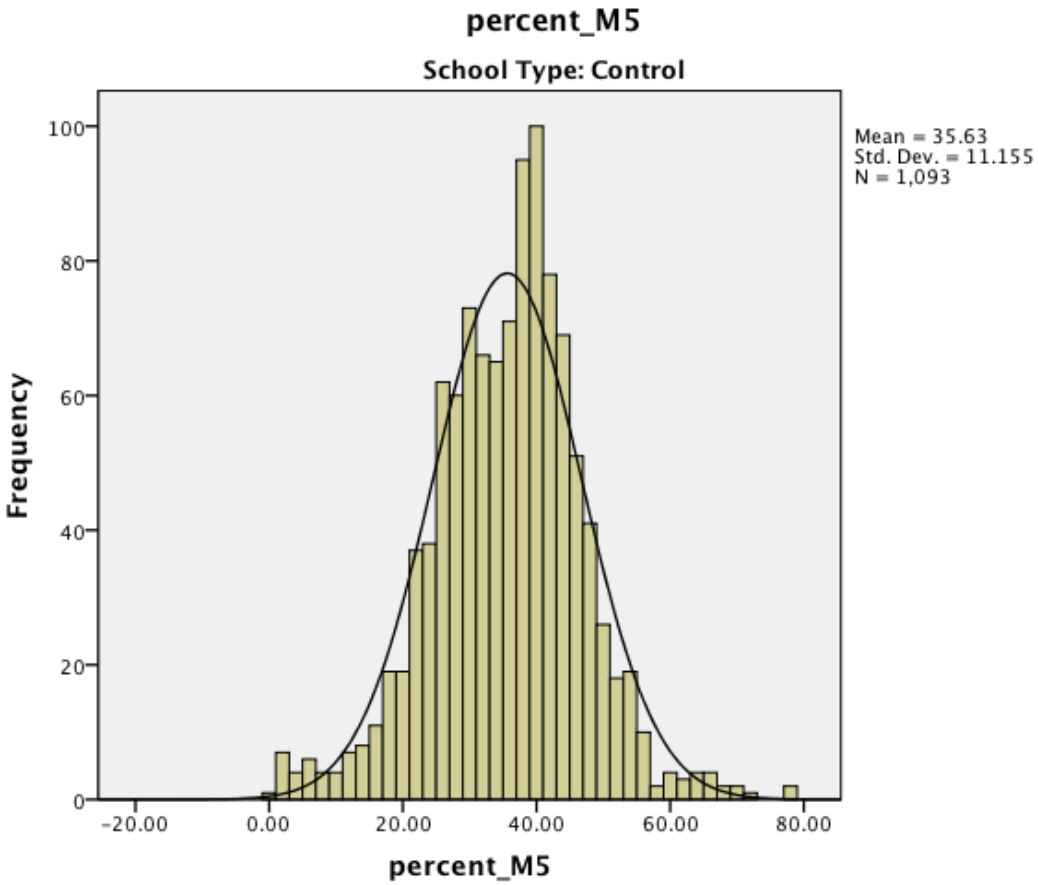


Figure 11: STD 5 Science—Distribution of Means--BridgeIT

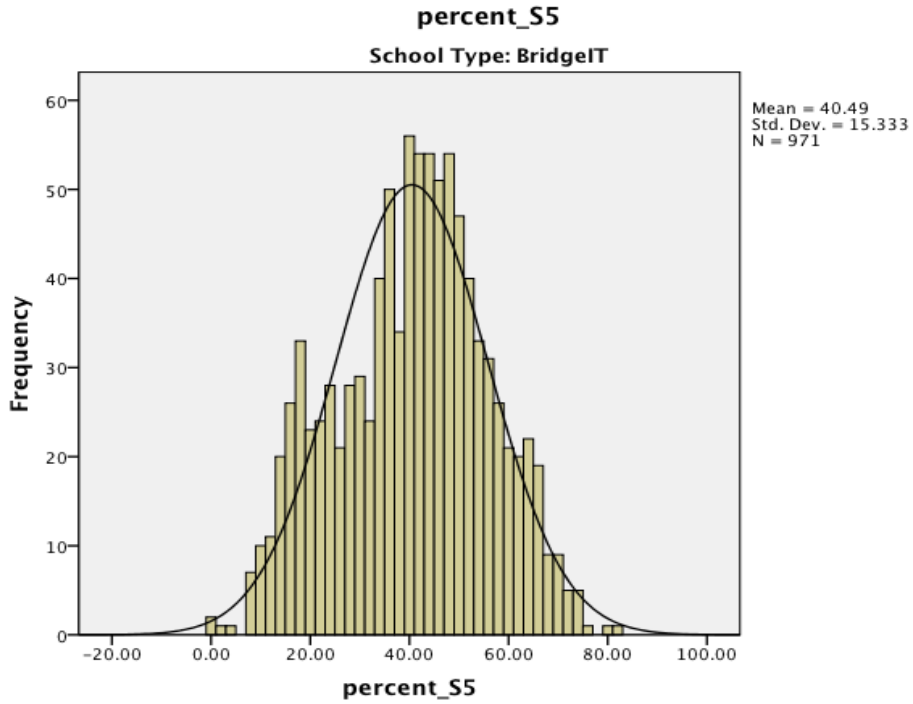


Figure 12:STD 5 Science—Distribution of Means—BridgeIT+LS

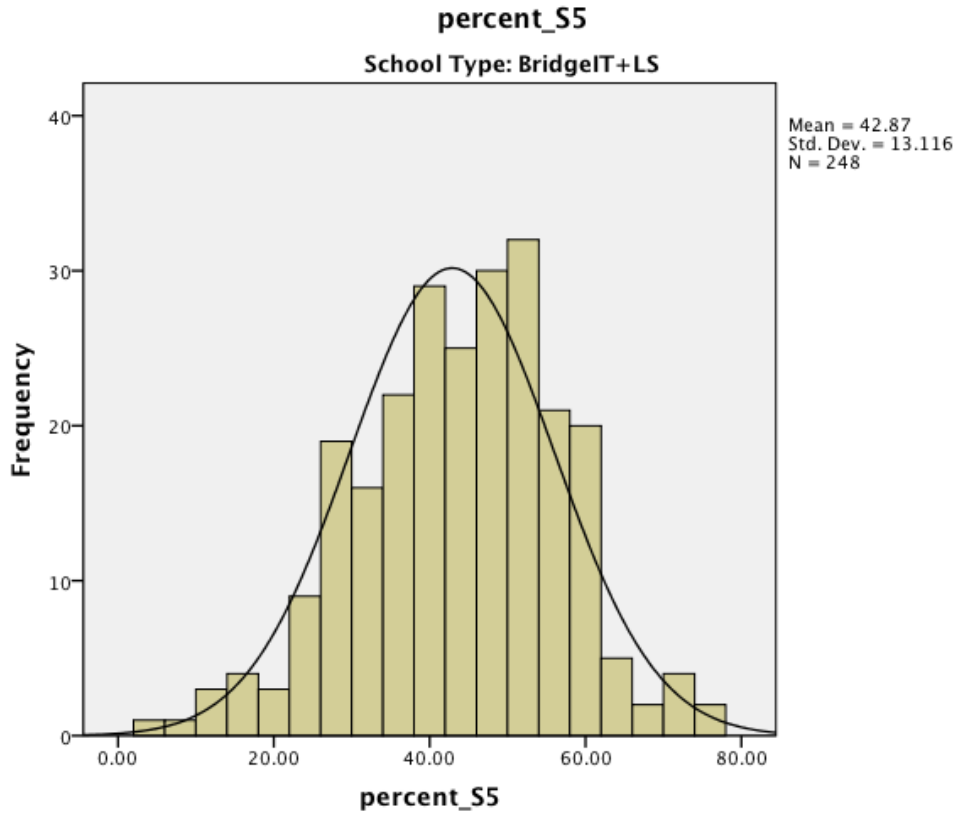


Figure 13: STD 5 Science—Distribution of Means—Controls

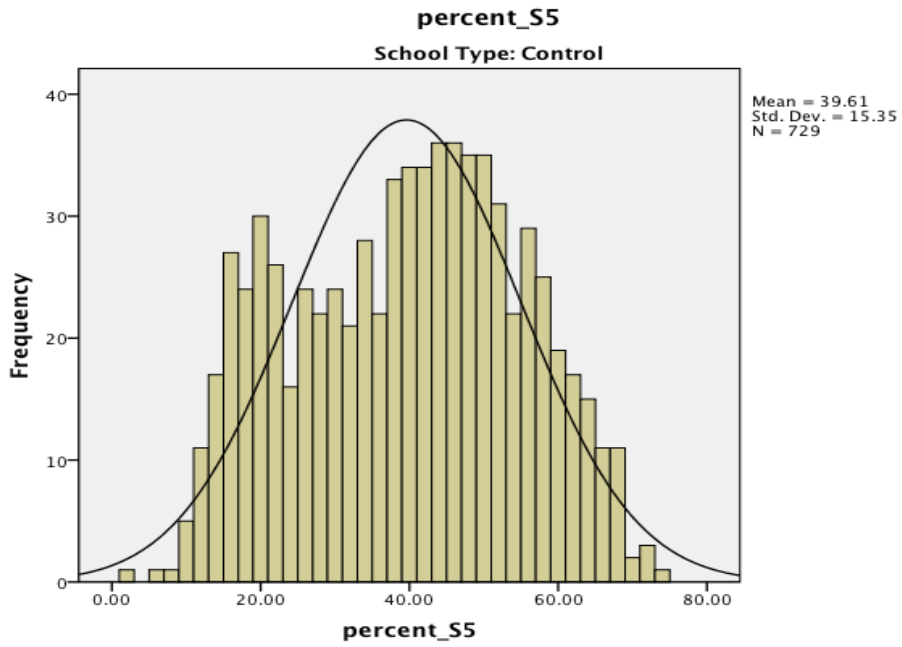


Figure 14: STD 6 Math—Distribution of Means—BridgeIT

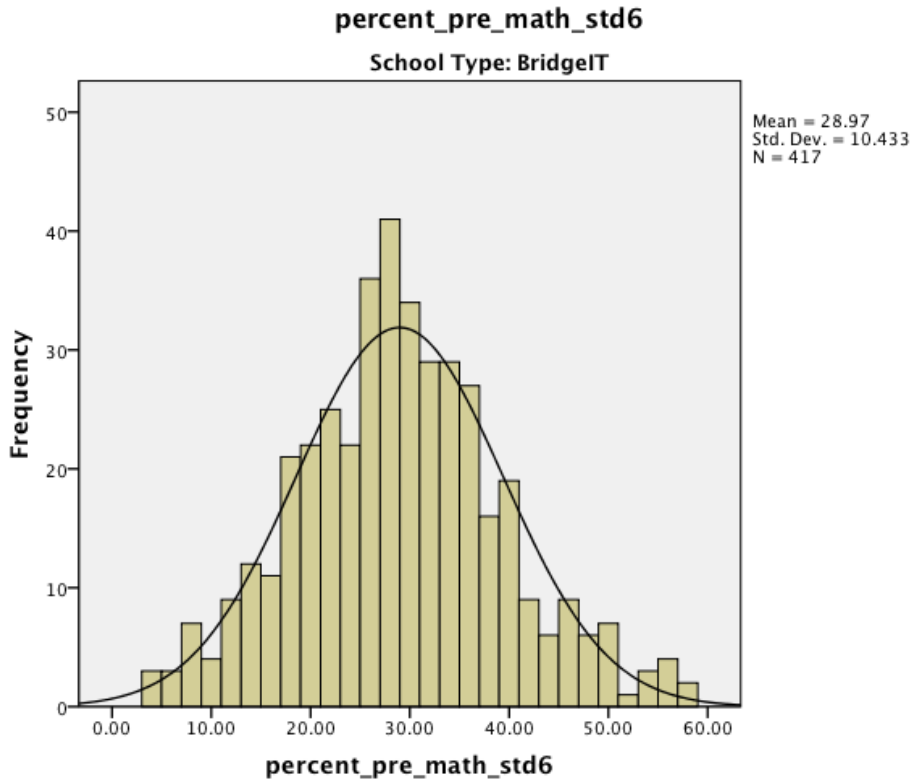


Figure 15: STD 6 Math—Distribution of Means—BridgeIT+LS

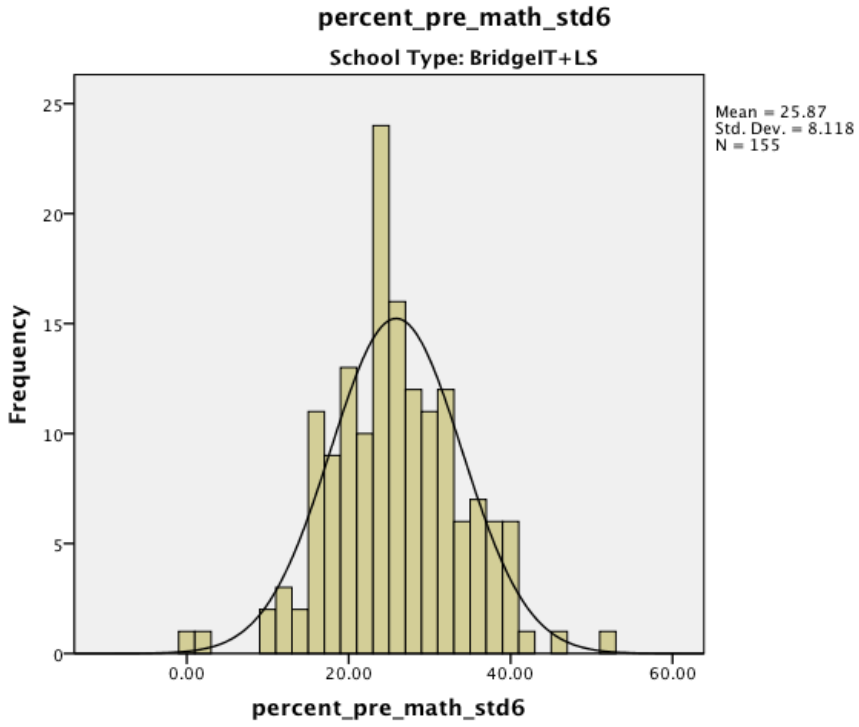


Figure 16: STD 6 Math—Distribution of Means—Control

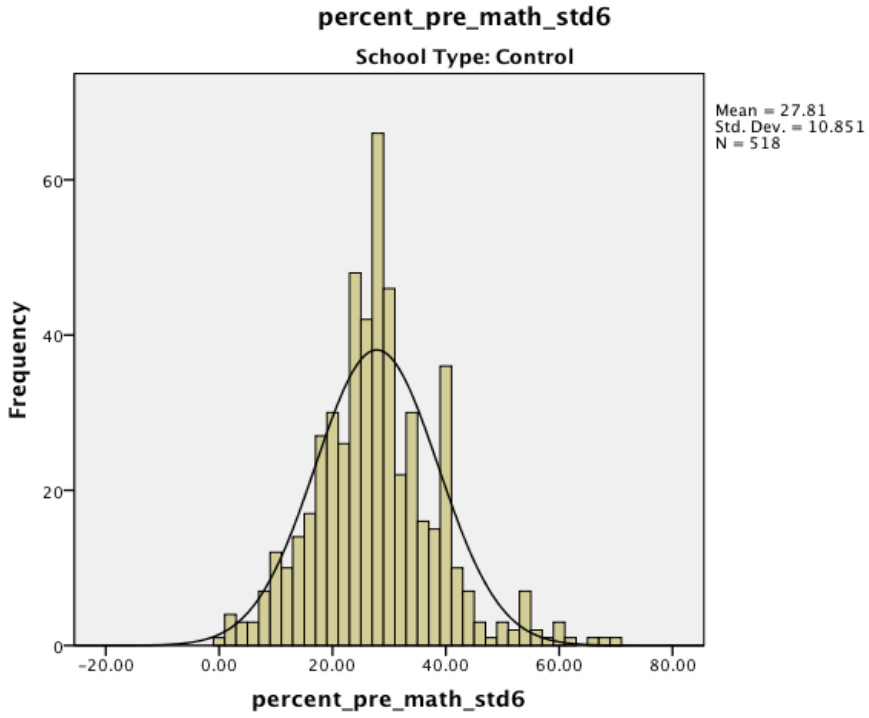


Figure 17: STD 6 Science—Distribution of Means—BridgeIT

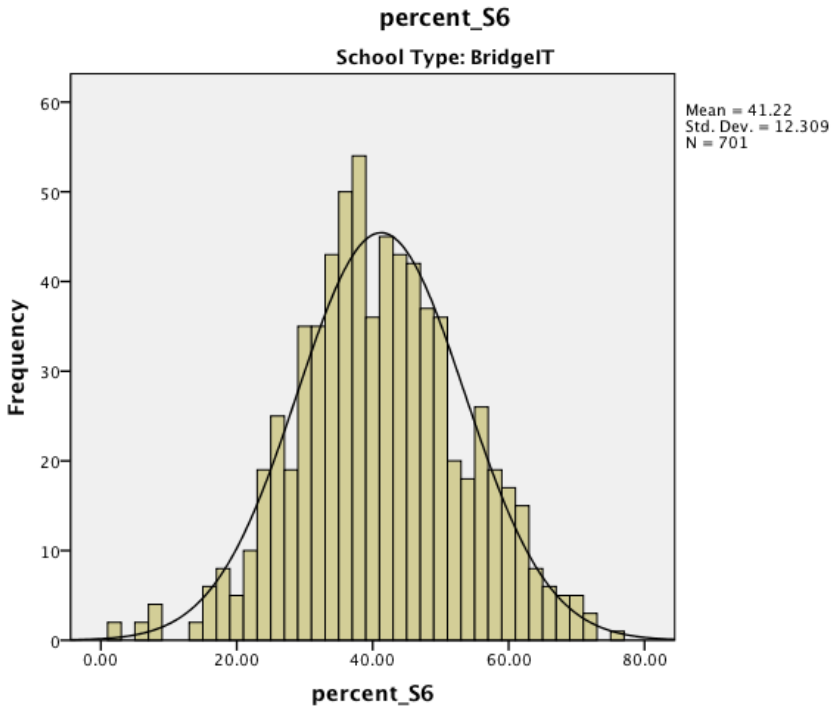


Figure 18: STD 6 Science—Distribution of Means—BridgeIT+LS

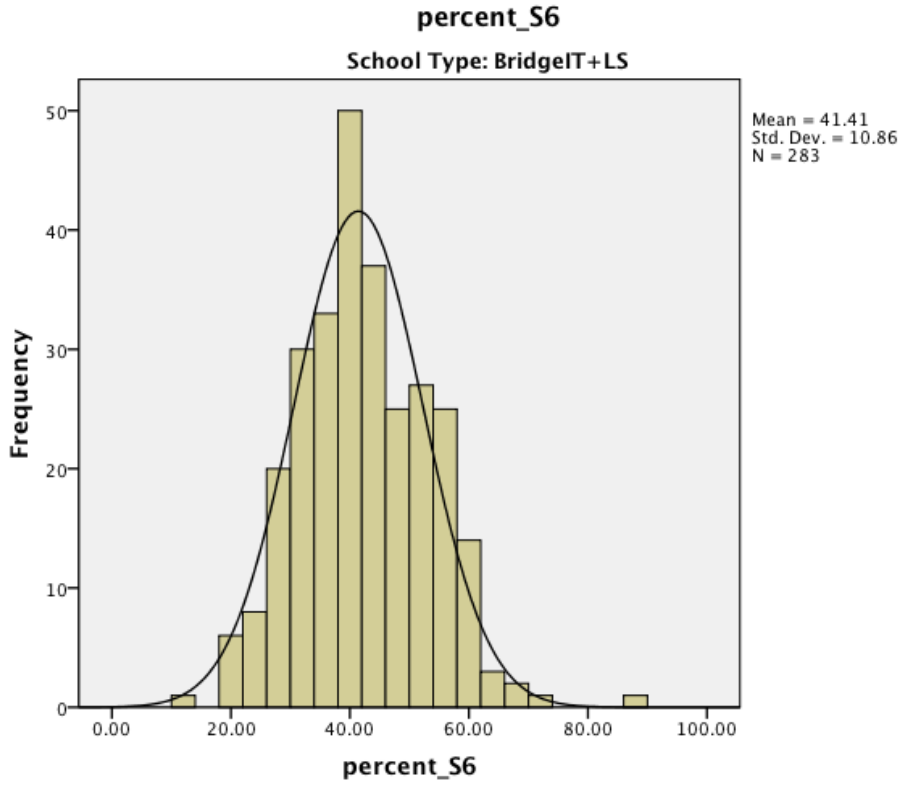
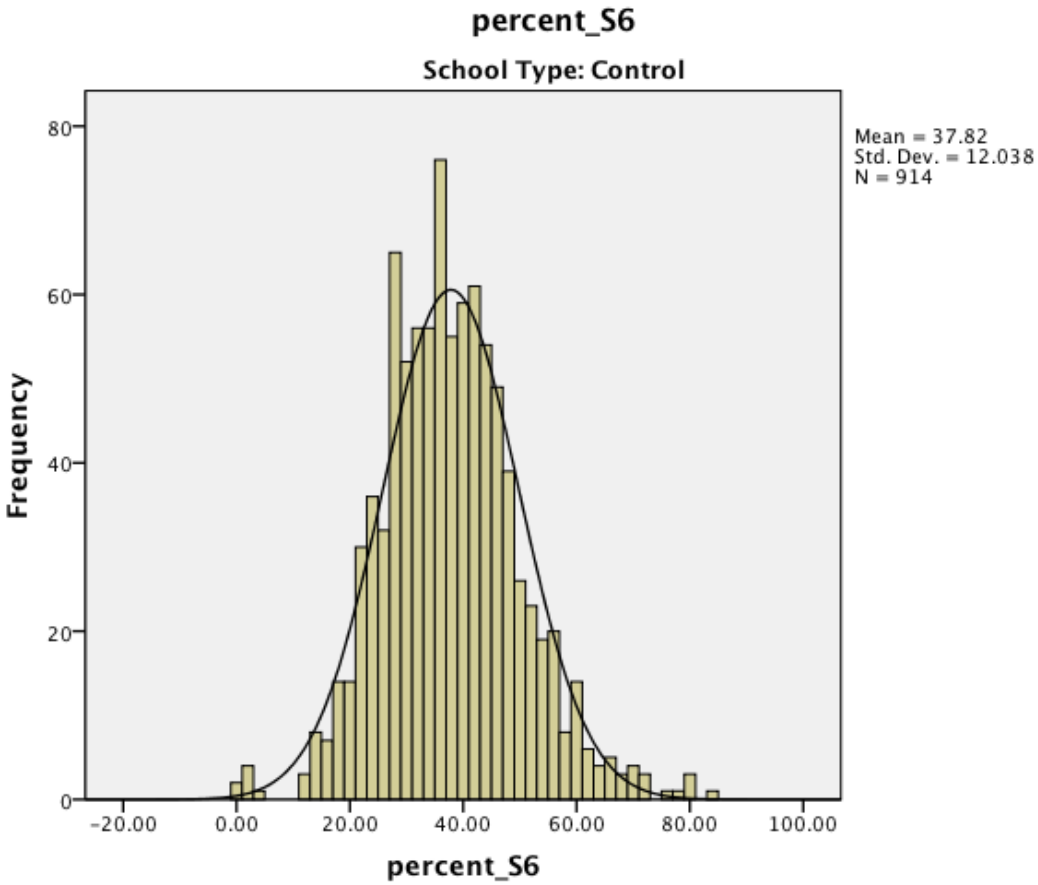


Figure 19: STD 6 Science—Distribution of Means—Control



B. Post-Test

Figure 20: STD 5 Math—Distribution of Means—BridgeIT

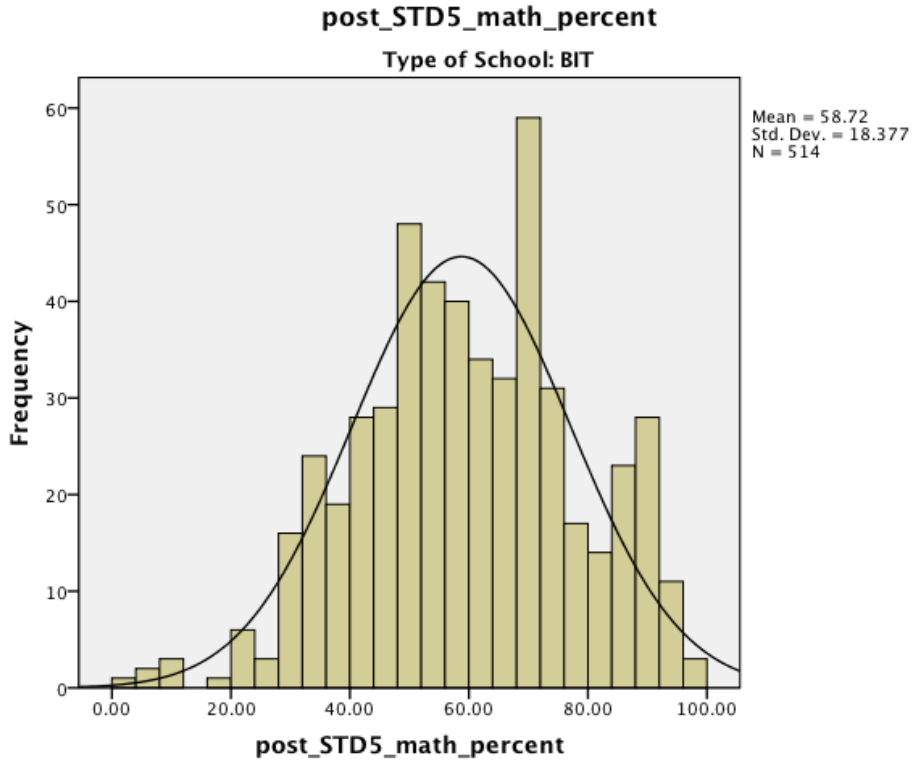


Figure 21: STD 5 Science—Distribution of Means—BridgeIT

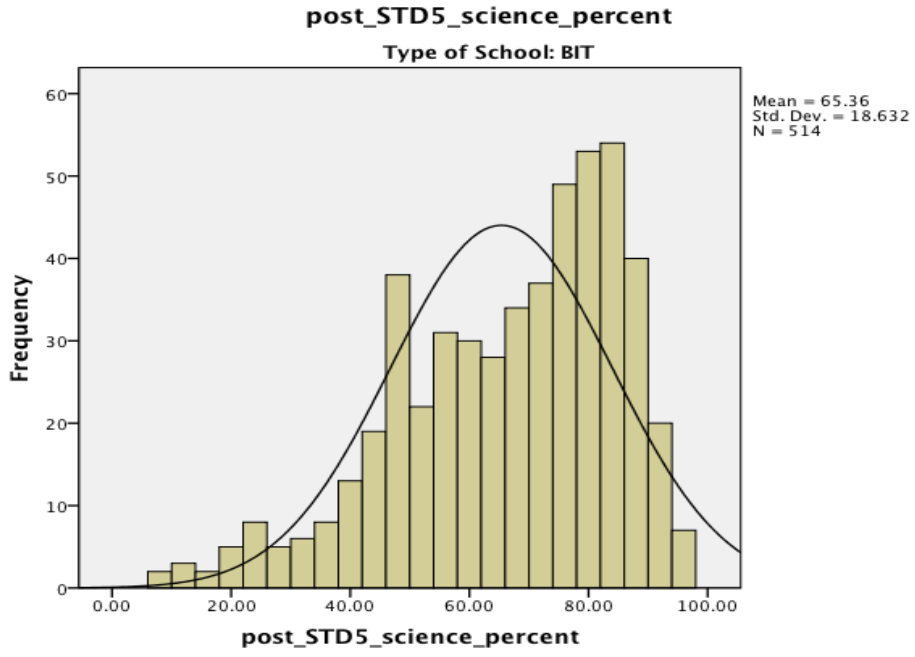


Figure 22: STD 5 Math—Distribution of Means—BridgeIT+LS

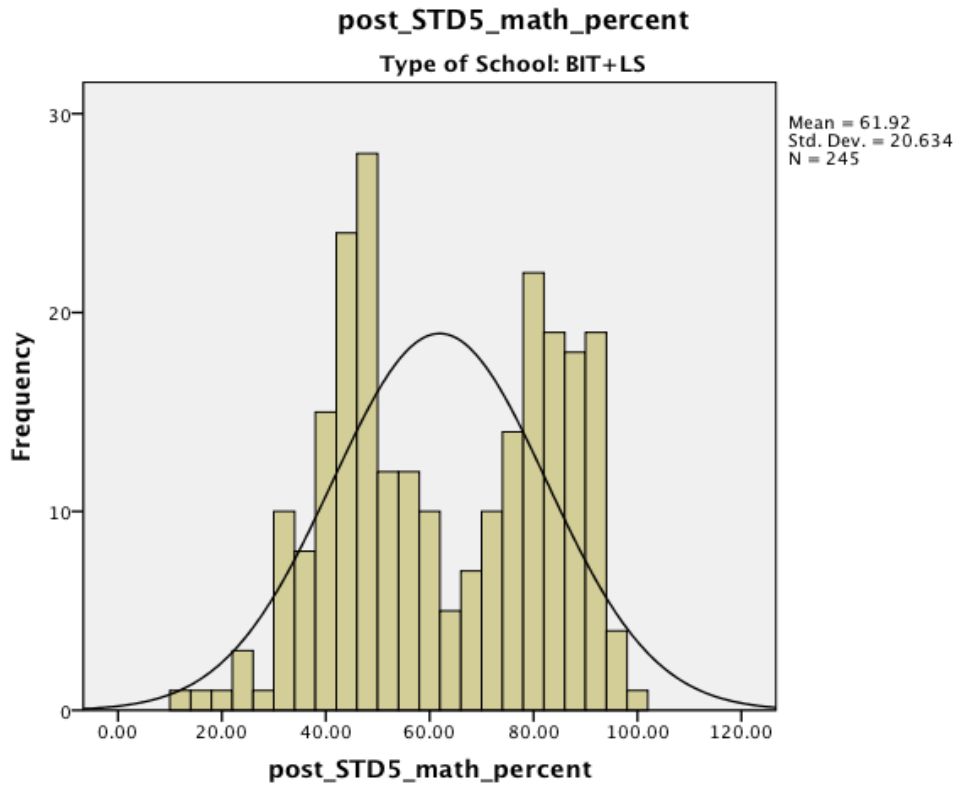


Figure 23: STD 5 Science—Distribution of Means—BridgeIT+LS

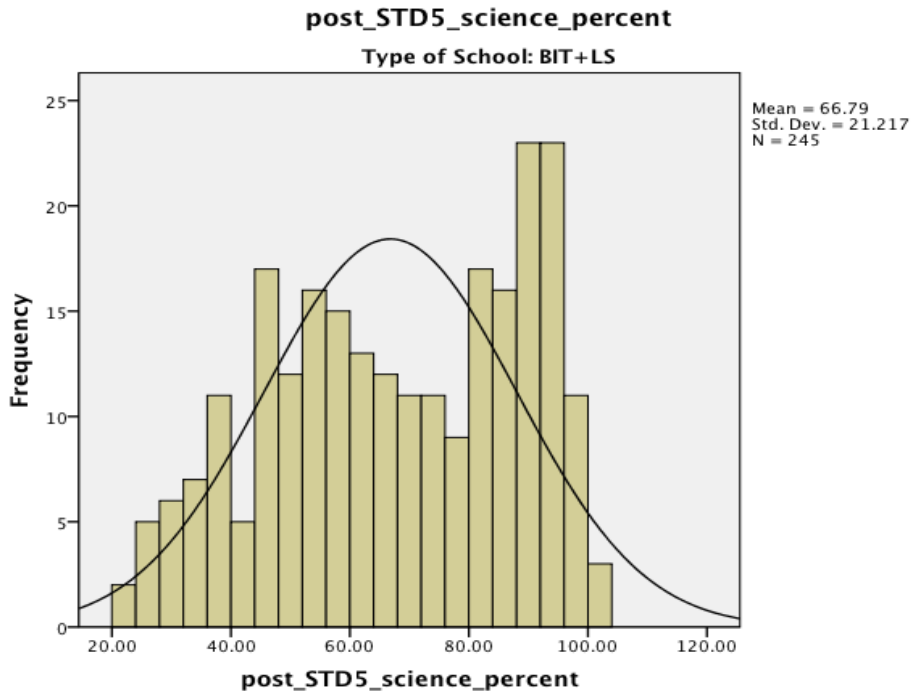


Figure 24: STD 5 Math—Distribution of Means—Control

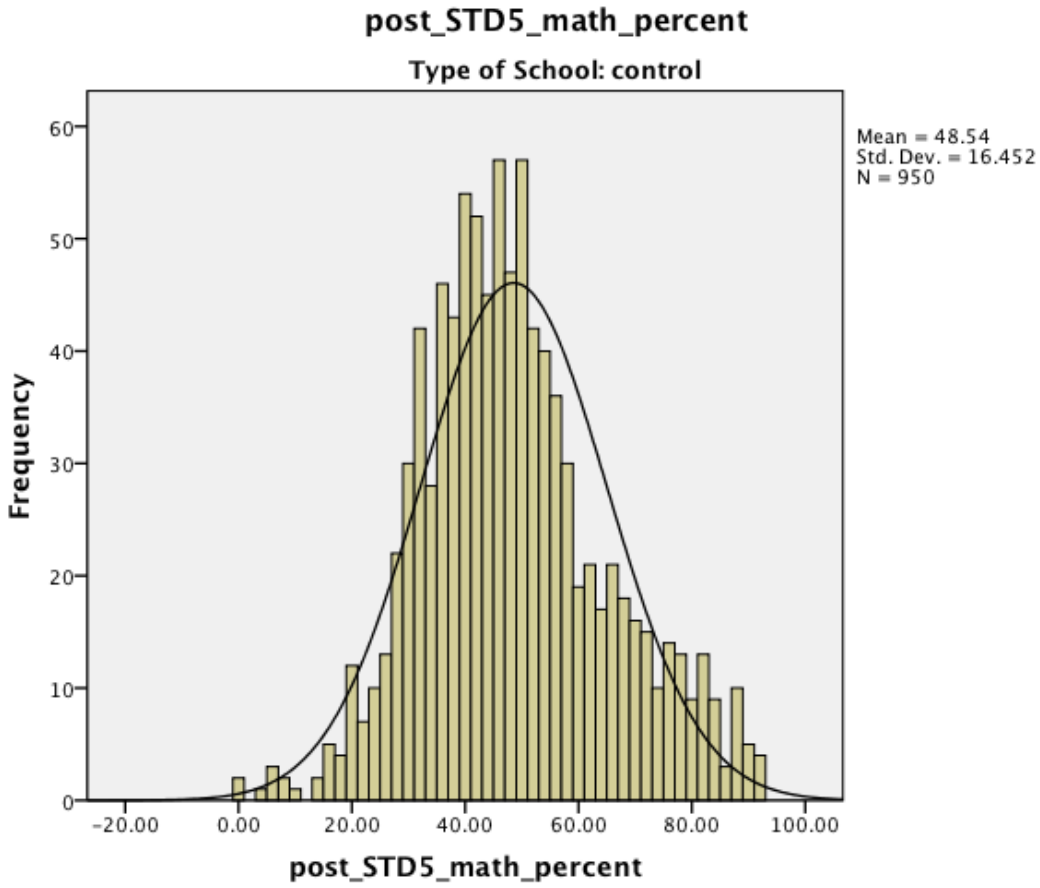


Figure 25: STD 5 Science—Distribution of Means—Control

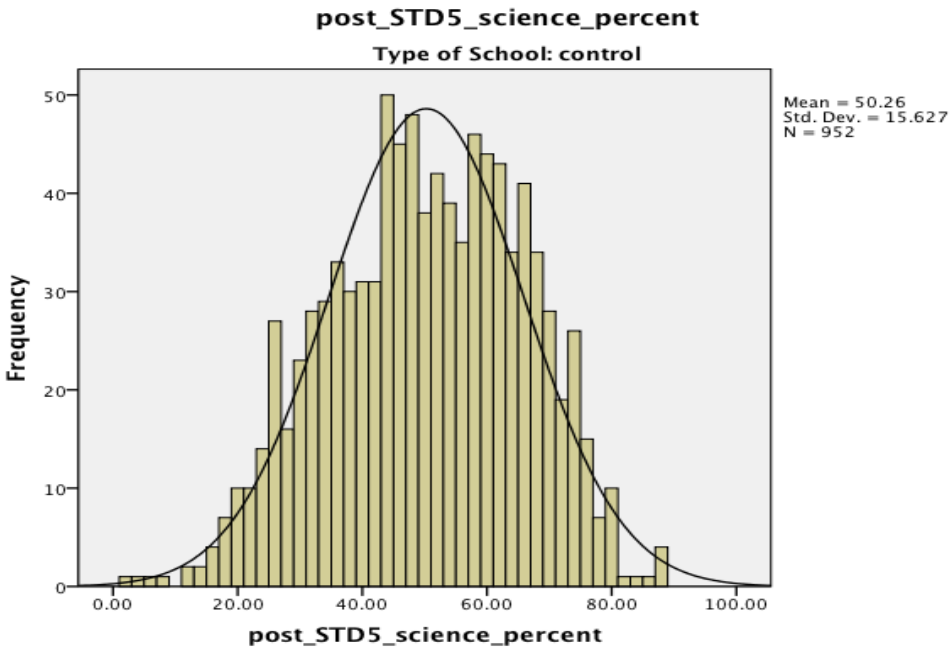


Figure 26: STD 6 Math—Distribution of Means—BridgeIT

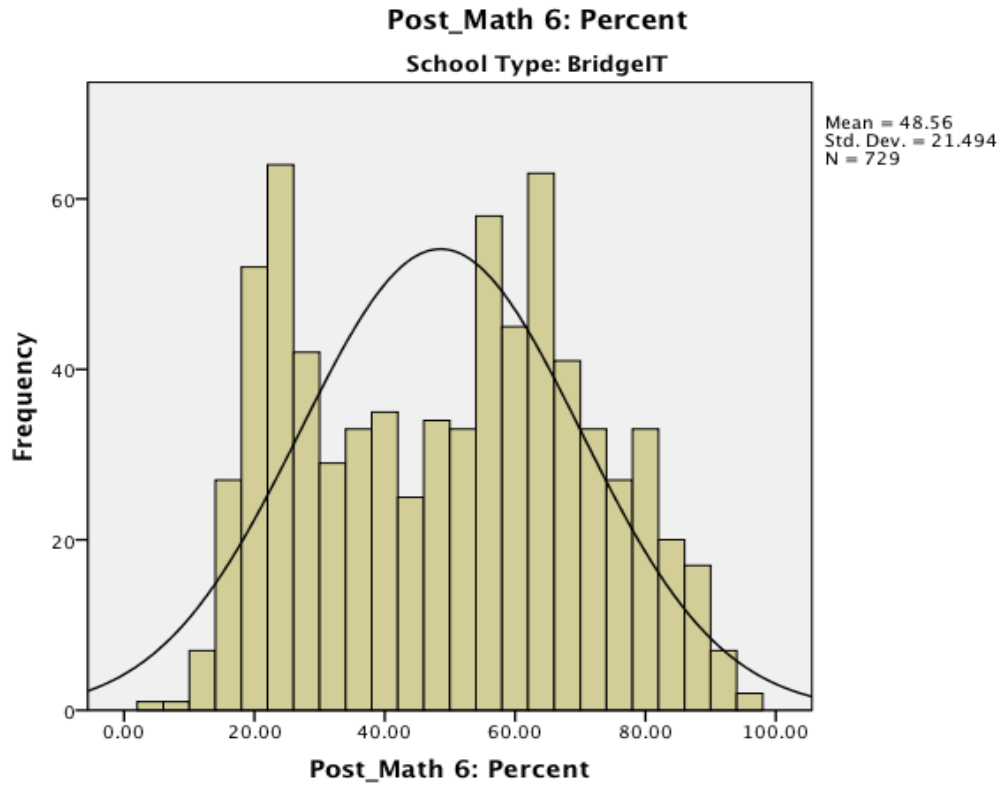


Figure 27: STD 6 Science—Distribution of Means—BridgeIT

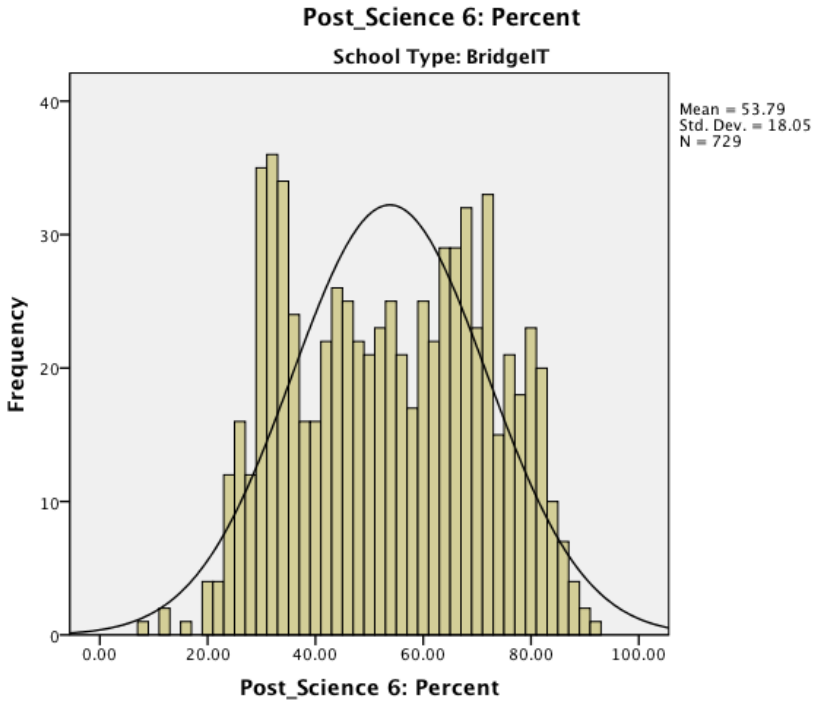


Figure 28: STD 5 Science—Distribution of Means—BridgeIT+LS

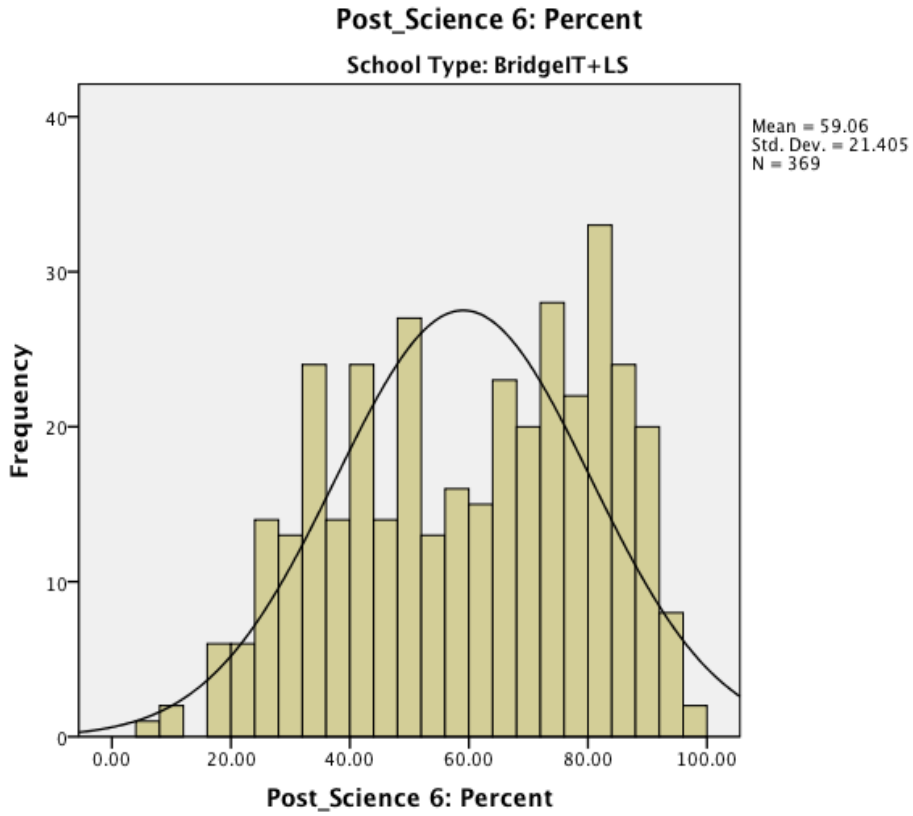


Figure 29: STD 6 Math—Distribution of Means—BridgeIT+LS

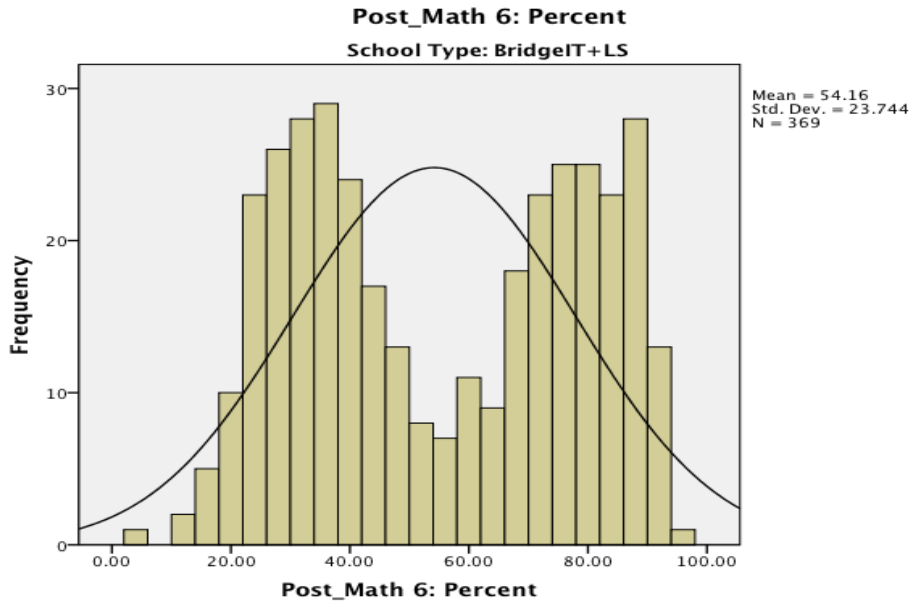


Figure 30: STD 6 Math—Distribution of Means—Control

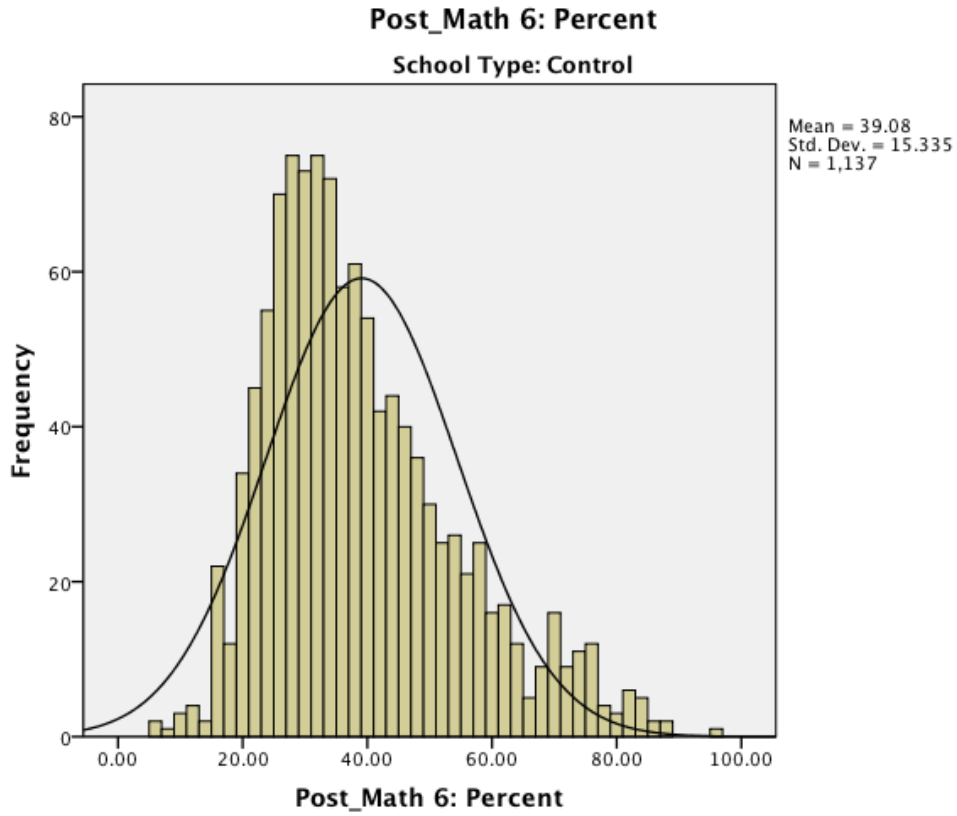
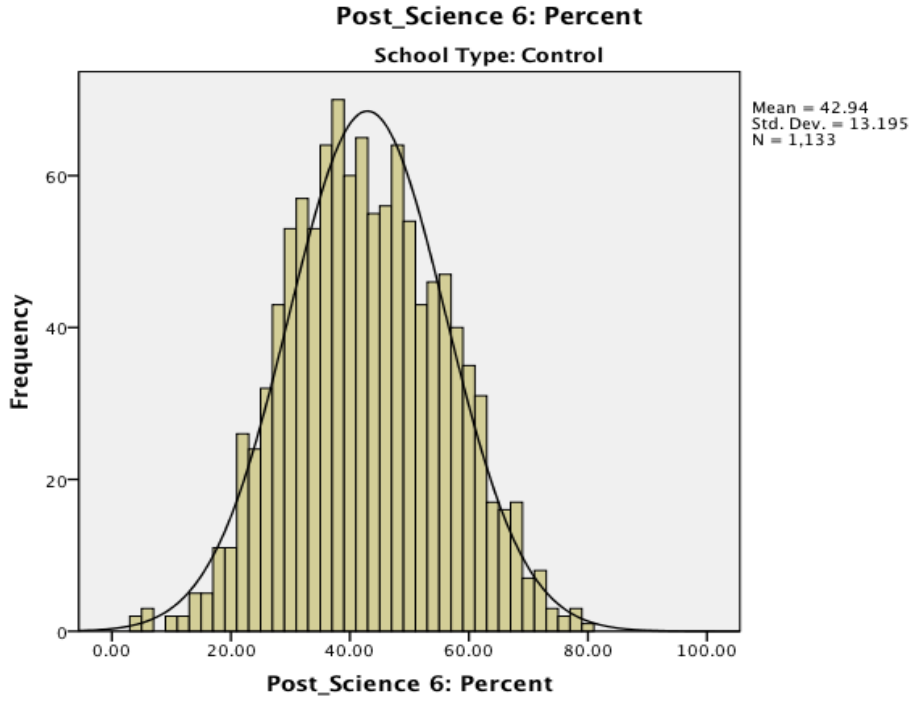


Figure 31: STD 6 Science—Distribution of Means—Control



Annex II: Tests Administered to Students

MTIHANI WA HISABATI DARASA LA V 18/01/2010

1. 5634 + 2245 =

(A) 7879 (B) 7778

(C) 8797 (D) 7877

2. 649462
   + 3749

   ═══

(A) 211356 (B) 787400

(C) 6352 (D) 653211

3. 889 – 726 =

(A) 208 (B) 163

(C) 137 (D) 108

4. 7865
   -4363

   ═══

(A) 3502 (B) 3005

(C) 5033 (D) 1503

5. 376
   x 3

   ═══

(A) 2127 (B) 1128

(C) 4316 (D) 526

6. 1985 x 9 =
(A) 2007 (B) 8765

(C) 17865 (D) 2151

7. 3069 ÷ 99 =
(A) 99 (B) 48

(C) 31 (D) 51

8. Gawanya kipeuo cha pili cha 144 kwa kipeuo cha pili cha 16
(A) 9 (B) 27

(C) 3 (D) 313

9. $\frac{7}{12} + \frac{2}{3}$ =

(A) $1\frac{1}{4}$ (B) $\frac{3}{4}$

(C) $\frac{8}{9}$ (D) $\frac{2}{3}$

10. $4\frac{1}{2} - 3\frac{3}{4}$ =
(A) $\frac{1}{4}$ (B) 3/6

(C) -2/5 (D) $\frac{3}{4}$

11. $1\frac{3}{4} \times 2\frac{4}{7} =$

(A) $2\frac{1}{4}$ (B) $3\frac{1}{2}$

(C) $4\frac{1}{2}$ (D) $5\frac{3}{4}$

12. $1/5 \div 10 =$

(A) 1/20 (B) 1/5

(C) 1/8 (D) 1/50

13. 0.9 + 0.1 =

(A) 0 (B) 1

(C) 2 (D) 4

14. 0.13
<u>-0.07</u>

———

(A) 0.6 (B) 0.06

(C) 0.8 (D) 0.02

15. 2.2
<u>x 8</u>

——

(A) 12.6 (B) 13.8

(C) 17.6 (D) 21.8

16. 6.5 ÷ 13

(A) 0.4 (B) 2.5

(C) 1.5 (D) 0.5

17. Orodhesha namba shufwa iliyopo kati ya 19 na 21
(A) 20 (B) 18

(C) 22 (D) 17

18. Andika namba witiri inayokosekana katika mfululizo huu 1, 3, _____, 7, 9.
(A) 7 (B) 9

(C) 5 (D) 10

19. Andika namba tasa inayofuata 2, 3,35,7, _____.
(A) 9 (B) 11

(C) 13 (D) 15

20. Andika XCIX kwa namba ya kawaida
(A) 54 (B) 99

(C) 79 (D) 89

21. Tafuta kipeuo cha pili cha 25.
(A) 625 (B) 500

(C) 225 (D) 5

22. Tafuta thamani ya $7 + \sqrt{225}$
(A) 52 (B) 42

(C) 32 (D) 22

23. Tafuta namba mraba ya 18
(A) 324 (B) 248

(C) 524 (D) 369

24. Tafuta wastani wa 85, 25, 46
(A) 52 (B) 24

(C) 72 (D) 102

25. Tafuta KKS cha 8 na 12
(A) 8 (B) 4

(C) 12 (D) 24

26. Tafuta KDS cha 16 na 24
(A) 48 (B) 36

(C) 24 (D) 72

27. Mjomba aliuza machungwa kwa siku mbili, siku ya kwanza alipata shilingi 3500/-, siku ya pili alipata shikingi 4000/-, Jumla alipata shilingi ngapi?

(A) 8500/- (B) 4500/-

(C) 7500/- (D) 5500/-

28. Kijiji kimoja kilivuna magunia 25670 ya mahindi, kiliuza magunia 13872, Je, kilibakiwa na magunia mangapi?
(A) 10700 (B) 14283

(C) 9798 (D) 11798

29. Sophia huchapa maneno hamsini kwa dakika, Je atachapa maneno mangapi kwa saa moja?
(A) 58 (B) 3000

(C) 2850 (D) 3001

30. Wanafunzi 4464 walipangwa idadi sawa katika vikosi 24, kila kikosi kilikuwa na wanafunzi wangapi?
(A) 1680 (B) 864

(C) 414 (D) 186

31. Ng'ombe watano walikuwa na uzito wa kilogramu 350, 415, 375, 421, na 389 kwa wastani wa ng'ombe mmoj alikuwa na uzito kiasi gani?
(A) 380 (B) 425

(C) 257 (D) 390

32. Namba ambayo ni tsa na pia shufwa ni;
(A) 2 (B) 3

(C) 5 (D) 7

33. $2\ ^{1}/_{3} + 3\ ^{3}/_{8} =$
(A) $3\ ^{2}/_{5}$ (B) $5\ ^{17}/_{24}$

(C) $2\ ^{1}/_{13}$ (D) $3\ ^{1}/_{4}$

34. Namba ipi kati ya hizi zifuatazo imeandikwa katika asilimia?
(A) 3.5 (B) 45%

(C) 4.67 (D) 46

35. Badili $^{3}/_{4}$ kuwa asilimia
(A) 25% (B) 45%

(C) 75% (D) 65%

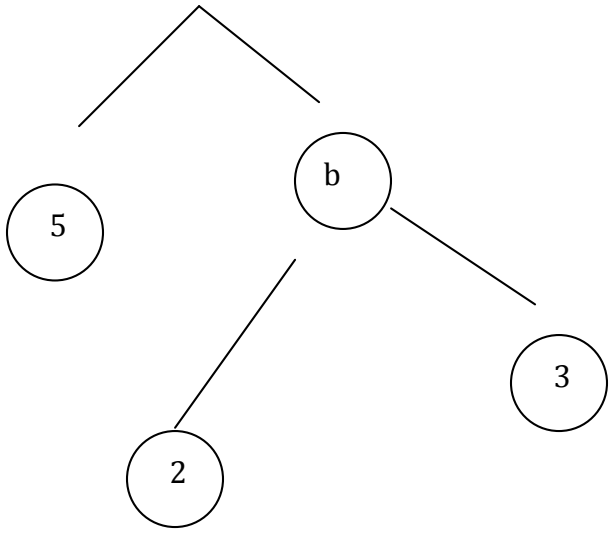
36. Badili 0.05 kuwa asilimia
(A) 10% (B) 50%

(C) 5% (D) 500%

37. $5^2 \times 4^2 =$
(A) 400 (B) 401

(C) 346 (D) 225

38. Tafuta b; 30



(A) 4 (B) 12

(C) 6 (D) 8

39. Andika 49 kwa namba za kirumi
(A) XLIV (B) CMIX

(C) LLIV (D) XLIX

40. Andika namba zifuatazo kwa tarakimu; Elfu Nane Mia Saba Sitini na Mbili
(A) 8762 (B) 8672

(C) 8267 (D) 5762

41. ¼ ya meta 1000, ni meta ngapi?
(A) 140 (B) 280

(C) 500 (D) 250

42. Badili 20% kuwa sehemu;
(A) $^1/_4$ (B) $^1/_2$

(C) 1/5 (D) 3/8

43. Tafuta eneo la mstatili ufuatao;

Sm 14

Sm 28

(A) Sm 84 (B) Sm 42

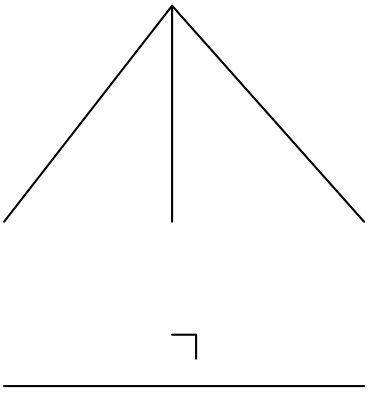
(C) Sm 252 (D) Sm 126

44. Eneo la mraba ni sm^2 256, nini urefu wa upande mmoja?
(A) Sm 24 (B) Sm 16

(C) Sm 18 (D) Sm 14.

45. Tafuta eneo la pembetatu hii;

Sm 9



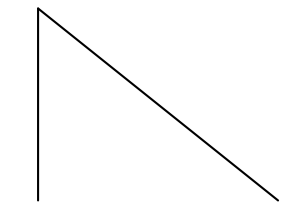
Sm 70

(A) Sm^2 817 (B) Sm^2 504

(C) Sm^2 315 (D) Sm^2 218

46. Katika umbo lifuatalo , ipi ni pembe mraba ?

S



N T

(A) $\angle NT$ (B) $\angle TSN$

(C) $\angle STN$ (D) $\angle SNT$

47. Barabara ina urefu wa meta 7800 na upana wa meta 8. Nini eneo la barabara hiyo?

(A) m^2 7808 (B) m^2 808

(C) m^2 62400 (D) m^2 40065

48. Gramu 8000 ni sawa na kilogramu ngapi?

(A) Kilogramu 80000 (B) Kilogramu 80

(C) Gramu 800 (D) Kilogramu 8

49.

m	sm	mm
8	3	1
- 2	4	8

(A)	m	sm	mm	(B)	m	sm	mm
	5	108	3		10	7	9
(C)	m	sm	mm	(D)	m	sm	mm
	6	1	7		16	12	8

50. Mfaume alinunua vitu hivi;
Matofali 1500@170/= , mifuko 10 ya saruji@1800/= na mabati 10@shilingi 2900/=.
Je, alilipa kiasi gani?

(A) 344,500/= (B) 272,000/=

(C) 182,600/= (D) 225,000/=

HISABATI STD VI 18/01/2010

1. 456 + 7954 =
(A) 8410 (B) 8510

(C) 7410 (D) 8634

2. 5475 – 6000 =
(A) 11576 (B) 12753

(C) -525 (D) 11475

3. 175 X 14 =
(A) 2451 (B) 2450

(C) 2575 (D) 2452

4. 7575 ÷ 25 =
(A) 33 (B) 330

(C) 303 (D) 75

5. 200 – 41.86 =
(A) 241.86 (B) 158.14

(C) 341.8 (D) 241.96

6. 861.4 – 159.21 =
(A) 702.19 (B) 1200

(C) 1020 (D) 1020.61

7. 115.6 X 2.4 =
(A) 672.4 (B) 276.44

(C) 277.44 (D) 276.14

8. 1.44 ÷ 0.12 =
(A) 12 (B) 6.6

(C) 6 (D) 1.2

9. $3\frac{1}{2} + 1\frac{3}{4}$ =
(A) $6\frac{1}{4}$ (B) $5\frac{1}{4}$

(C) $6\frac{1}{2}$ (D) $4\frac{1}{4}$

10. $\frac{7}{8} - \frac{3}{4}$ =

(A) $\frac{1}{8}$ (B) $\frac{3}{6}$

(C) $\frac{7}{8}$ (D) $\frac{4}{4}$

11. 15 ÷ $\frac{3}{4}$ =
(A) $\frac{5}{4}$ (B) $1\frac{1}{4}$

(C) 20 (D) 60

12. (-12) X (-6) =
(A) +72 (B) -72

(C) -27 (D) +124

13. (+75) ÷ (+25) =
(A) 100 (B) 75

(C) +3 (D) -90

14. (-112) – (-125) =
(A) 31 (B) -13

(C) +13 (D) +14

15. $\frac{4}{5}$ a – 3 = 13

(A) 20 (B) 0.2

(C) -20 (D) 21

16. 5n – 6 = 4
(A) 5 (B) 4

(C) 3 (D) 2

17. Badili $^{3}/_{8}$ kuwa desimali
(A) 0.3 (B) 0.075

(C) 0.375 (D) 0.8

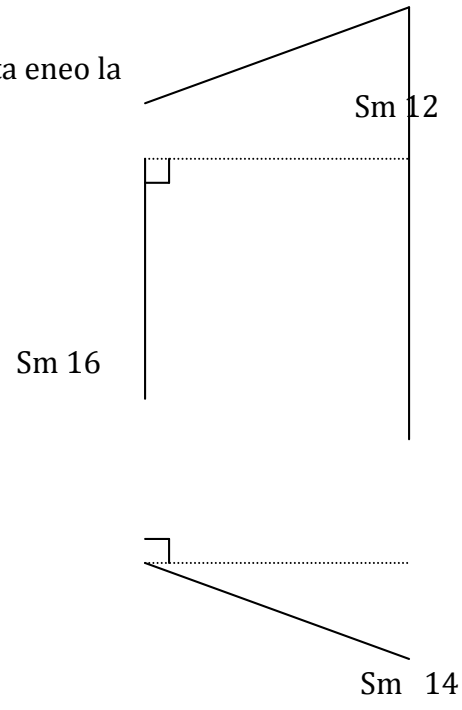
18. Tafuta KDS cha 12, 24 na 36
(A) 24 (B) 96

(C) 144 (D) 72

19. Tafuta KKS cha 18, 32 na 25
(A) 3 (B) 5

(C) 2 (D) 1

20. Tafuta eneo la



(A) $sm^2 124$ (B) sm^2 223

(C) $sm^2 232$ (D) sm^2 212

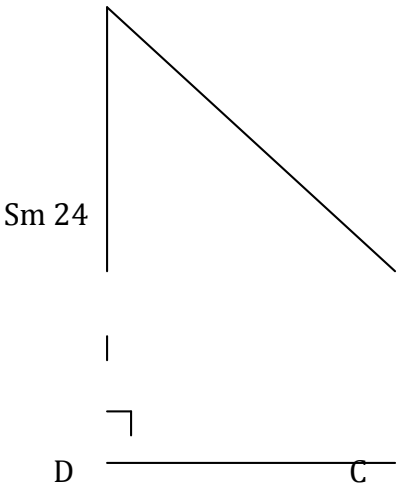
21. Papaa alitumwa sokoni akiwa na shilingi 6000/= kununua yafuatayo , Nazi 6 @ Shs 120/= , Karoti mafungu 4 @ Shs 150/=, nyanya 5 @ Shs 240/=, vitunguu mafungu 6 @ mafungu 2 Shs 200/=, Je manunuzi hayo alirudisha Shs ngapi?

(A) Shs 3860 (B) Shs 2880

(C) Shs 1741.60 (D) Shs 4121

22. Eneo la umbo hili ni Sm^2 120, tafuta urefu wa CD

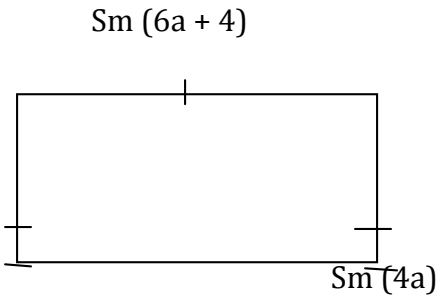
A



(A) Sm 14 (B) Sm 6

(C) Sm 10 (D) Sm 8

23. Tafuta eneo la



Sm (2a + 20)

(A) Sm ^{2} 448 (B) Sm ^{2} 360

(C) Sm^{2}136 (D) Sm ^{2} 128

24. Tafuta kipeuo cha pili cha 1089
(A) 14 (B) 17

(C) 33 (D) 26

25. Halima alikuwa na kuku 600 aliuza ^{1}/3 yake je walibakia wangapi?
(A) Kuku 200 (B) Kuku 250

(C) Kuku 400 (D) Kuku 175

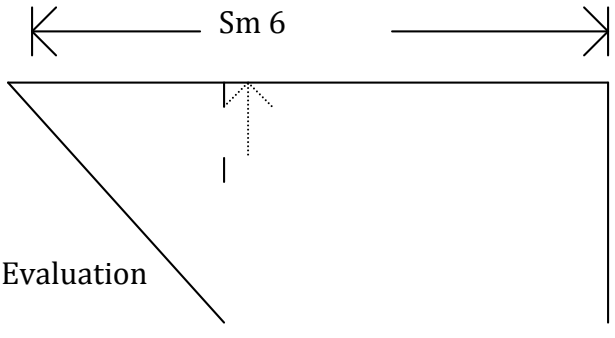
26. Jumlisha ^{1}/3 ya sh 9000/= na^1/5 ya sh 4000/=
(A) Sh 13000/= (B) Sh 8000/=

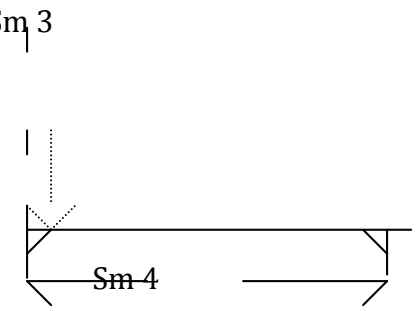
(C) Sh 3000/= (D) Sh 3800/=

27. Bei ya redio ni sh. 488/= ikiwa kipunyuzi cha 20%kitatolewa, nini bei mpya?
(A) Sh 1500 (B) Sh 960

(C) Sh 3840 (D) Sh 390.40

28. Tafuta eneo la umbo hili





(A) Sm^2 60 (B) Sm^2 25

(C) Sm^2 15 (D) Sm^2 72

29. Tafuta namba mraba ya $(3)^3$ =
(A) 169 (B) 196

(C) 729 (D) 289

30. Andika namba inayofuata 1,8, 27, 64 _____
(A) 81 (B) 125

(C) 169 (D) 100

31. Andika kwa kirumi 1725
(A) MDCLX (B) MDXXV

(C) MDLX (D) MDCCXXV

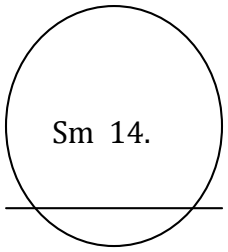
32. Andika katika vipeo 256
(A) 2^8 (B) 2^6

(C) 2^4 (D) 2^7

33. Eneo la mraba ni Sm^2 49, tafuta mzingo wake
(A) Sm 28 (B) Sm 30

(C) Sm 60 (D) Sm 70

34. Tafuta mzingo wa



(A) Sm 44 (B) Sm 88

(C) Sm 22 (D) Sm 154

35. Ashura aliweka Shs 3600/= kwenye benki inayotoa riba 10%, baada ya miaka 2 nini fida yake?

(A) Sh 560 (B) Sh 144

(C) Sh 720 (D) Sh 840

36. Bei ya ng'ombe w 3 ni shilingi 1800/=, tafuta bei ya ng'ombe wa 5;

(A) Sh 1500 (B) Sh 4500

(C) Sh 6000 (D) Sh 3000

37. Kuna $^{1}/_{3}$ ngapi katika 27

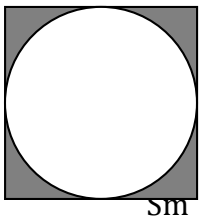
(A) 9 (B) 81

(C) $^{1}/9$ (D) 27

38. Wastani wa namba 4 ni 18, ikiwa namba tatu ni 26, 18, 12. Tafuta namba ya nne;
(A) 15 (B) 16

(C) 12 (D) 10

39. Tafuta eneo lenye kivuli;



(A) Sm^2 68 (B) Sm^2 168

(C) Sm^2 42 (D) Sm^2 140

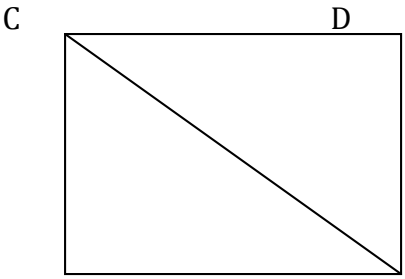
40. Andika namba tasa zote kati ya 56 na 60
(A) 59 (B) 57, 59

(C) 58, 56 (D) 57

41. Tafuta jumla ya namba witiri kati ya 71 na 77
(A) 152 (B) 148

(C) 75, 73 (D) 72, 74

42. Tafuta urefu wa CN



dm 12

Y N

dm 9

(A) Sm 25 (B) Sm 20

(C) Sm 9 (D) Sm 15

43. Duara lina mistari mingapi ya picha;
(A) Mmoja (B) Mitatu

(C) Hakuna (D) Mingi

44. $\frac{4}{3}a = 12$, Tafuta 'a'

(A) a = 36 (B) a = 4

(C) a = 9 (D) a = 12

45. Kuku hutaga mayai 125 kwa siku, Je kwa wiki 3 atataga mayai mangapi?
(A) Mayai 37 (B) Mayai 2000

(C) Mayai 112 (D) Mayai 2625.

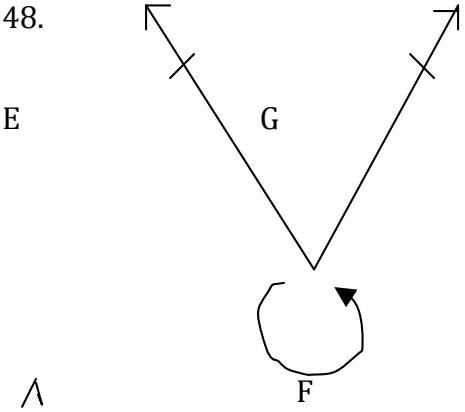
46. Rubani aliondoka Entebe saa 1645 kuelekea Nairobi, akafika baada ya dk 30. Andika muda aliofika kwa mpango wa saa ya kawaida
(A) 5:15 AM (B) 0500 PM

(C) 11:15 Jioni (D) 1715

47. Zidisha tani 2, kilogramu 30 na gramu 120 kwa 10.
(A) Tani 21, Kg 30, g 200 (B) Tani 200, Kg 70, g 310

(C) Tani 120, Kg 40, g 200 (D) Tani 20,Kg 301, g 200

48.

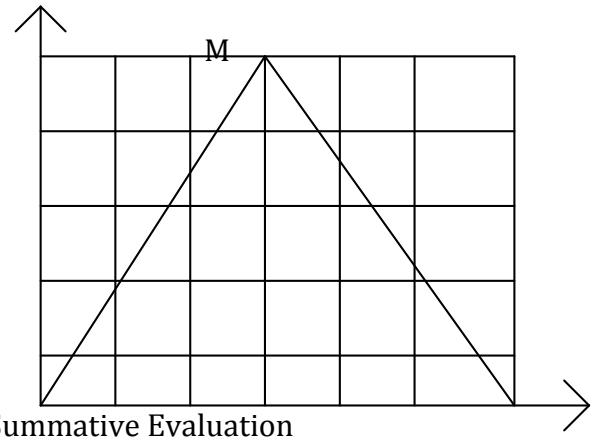


EFG ni aina gani ya pembe?

(A) Pembe butu (B) Pembe kuu

(C) Pembe kali (D) Pembe mraba

49.



O N

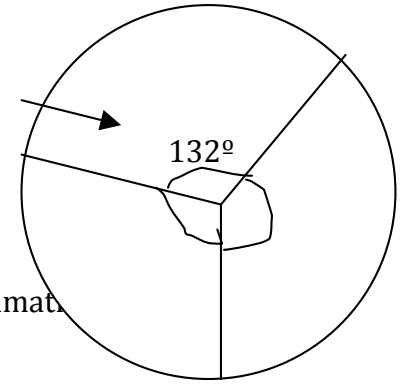
Taja majira ya nukta M

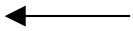
(A) (3,6) (B) (6,3)

(C) (4,5) (D) (5,4)

50. Kijiji cha Bugulola kina watu 15,000, Je watoto ni wangapi?

Vijana



watoto 

Wazee

(A) 45,000 (B) 15000

(C) 9500 (D) 4500

SAYANSI STD V 18/01/2010

A. CHAGUA JIBU SAHIHI

1. Yafuatayo ni mambo yanayofanaya mfumo wa mzunguko wa damu isipokuwa;
   (A) Damu yenyewe (B) Moyo

   (C) Mate (D) Mishipa ya damu

2. Ogani ipi inayohusika na kutoa na kuingiza hewa;
   (A) Mapafu (B) Figo

   (C) Ngozi (D) Ini

3. Kazi ya vyakula vifuatavyo mwilini matunda na mboga za majani ni;
   (A) Kujenga mwili (B) Kutia joto

   (C) Kulinda mwili (D) Kuupa mwili nguvu

4. Njia nzuri ya kuepuka maambukizi ya Ukimwi _____;
   (A) Kutumia kondom kila unapofanya tendo la ndoa (B) Kuwa mwaminifu kwa mpenzi mmoja tu asiyeambukiswa.

   (C) Kuacha kabisa kujamiiana (D) Majibu yote (A), (B) na (C) ni sahihi

5. Msaada apewao mtu kabla ya kufikishwa hospitalini huitwa;
   (A) Usamaria mwema (B) Huduma ya kwanza

   (C) Uungwana (D) Msaada

6. Ugonjwa upi hautolewi chanjo kati ya haya;-
   (A) Kisukari (B) Surua

   (C) Pepopunda (D) Kifua Kikuu

7. Tunafanya majaribio ya kisayansi ili _____:-
   (A) Kutatua tatizo (B) Kujifurahisha

   (C) Kujichangamsha (D) Majibu yote ni sahihi

8. Viumbe hai vimeundwa kwa:-
   (A) Chembe sahani. (B) Tungamo

   (C) Damu (D) Seli

9. Chombo chenye uwezo wa kurahisisha kazi:-
   (A) Gari (B) Kukojoa

   (C) Mashine (D) Roda

10. Sumaku ina ncha mbili nazo ni;-
   (A) Kusini (B) Kaskazini

   (C) Kusini na Mashariki (D) Kusini na Kaskazini

B. CHAGUA JIBU SAHIHI KWA KUANDIKA HERUFI KATIKA KISANDUKU

11. Chakula kikitoka kwenye tumbo huingia kwenye:-
   (A) Utumbo mdogo (B) Utumbo mkubwa

   (C) Utumbo mrefu (D) Maji

12. Chakula ambacho kinaweza kuupatia mwili virutubisho vyote muhimu huitwa :-
   (A) Vitamini (B) Protini

   (C) Wanga (D) Mlo kamili

13. _____ ni ugonjwa unaotokana na zinaa na hushambulia sehemu za siri?
   (A) Kichocho (B) Malaria

   (C) Kisonono (D) Kifua kikuu

14. Trakoma ni ugonjwa wa _____ unaotokana na virusi:-
    (A) Macho (B) Masikio

    (C) Miguu (D) Fangas

15. Ugonjwa ambao unaoitikisa dunia na mpaka sasa hauna chanjo ni.
    (A) Malaria (B) Ukimwi

    (C) Trakoma (D) Homa ya matumbo

16. Mishipa inayotoa damu kutoka kwenye moyo huitwa;
    (A) Ateri (B) Kapilari

    (C) Vena (D) Vena Kava

17. Mapigo ya Moyo husababishwa na kusinyaa na kutanuka kwa;
    (A) Vena Kava na Ateri (B) Auriko na Ventriko

    (C) Kapilari na Ventriko (D) Auriko na Kapilari

18. Njia rahisi ya kupika chakula kwa haraka katika mafuta ya moto ni;
    (A) Kuchemsha (B) Kukaanga

    (C) Kuoka (D) Kupika na mvuke

19. Hali ya kumtenga na kumnyanyasa mgonjwa wa Ukimwi inajulikana kama;
    (A) Kumtunza (B) Kumnyanyapaa

    (C) Kumsema (D) Kumfariji

20. Maji safi na salama ni yale ambayo;
    (A)Yamechemshwa (B) Yamewekwa kwenye chombo kisafi

    (C) Hayajachotwa kisimani (D) Yamechemshwa na kuchujwa

    kwa kitambaa safi.

21. Metamofosisi ni;
    (A) Hatua za kufa kwa mdudu

    (B) Hatua za kuzeeka kwa mdudu

(C) Hatua za kukua kwa mdudu

(D) Hatua za kutembea kwa mdudu

22. _____ ni kiasi cha vitu kinachounda maada;
(A) Tungamo

(B) Ukinzani

(C) Chocheo

(D) Kani

23. Kazi ya lenzi mbonyeo ni;
(A) Kukusanya mwanga

(B) Kutawanya mwanga

(C) Kuzuia mwanga

(D) Kurekebisha mwanga

24. Nishati ya umeme huambatana na nguvu ya;
(A) Radi

(B) Mitambo

(C) Unene wa waya

(D) Sumaku

25. Chombo chenye uwezo wa kuongeza na kupunguza kiasi cha umeme ni;
(A) Transimita

(B) Betri

(C) Transfoma

(D) Sumaku

26. Kazi ya kulinda miili yetu isishambuliwe na magonjwa ovyo hufanywa na_____;
(A) Chembe hai nyekundu za damu.

(B) Chembe hai nyeupe za damu.

(C) Chembe hai sahani za damu.

(D) Ute mzito wa damu.

27. V.V.U ni kifupi cha;
(A) Virusi vinavyozuia Ukimwi

(B) Virusi vya Ukimwi

(C) Viini vya magonjwa

(D) Hakuna jibu sahihi

28. Aina kuu mbili za maji ni _____;
(A) Maji ya kisima na maji ya bomba

(B) Maji ya mvua na maji ya bahari

(C) Maji ya mtoni na maji ya kisima

(D) Maji magumu na maji malaini

29. Vifaa vya kupima umeme ni;
(A) Amita, vihisi umeme na voltamita

(B) Swichi na transifoma

(C) Betri,swichi na transifoma

(D) Majibu (B) na (C) ni sahihi

30. Aina kuu za umeme ni;
(A) Mbili

(B) Moja

(C) Tatu

(D) Nne

31. Dalili mojawapo ya kupunguza uzito kwa 10% bila sababu maalamu ni mojawapo kati ya dalili kuu ya ugonjwa wa;
    (A) Kaswende

    (B) Kwashiakoo

    (C) Ukimwi

    (D) Kisonono

32. Umeme huamishwa kwa njia ya kutiririka, njia hiyo huitwa _____;
    (A) Amiti

    (B) Sakiti

    (C) Volti

    (D) Transfoma

33. Sayari iliyo karibu sana na jua ni;
    (A) Pluto

    (B) Zuhura

    (C) Zebaki

    (D) Dunia

34. Sauti husafiri kwa njia ya;
    (A) Mwangwi

    (B) Mawimbi

    (C) Msitari

    (D) Kwa kupiga simu

35. Joto la ndege lina nyuzi ngapi?
    (A) 37.5 ºC

    (B) 40.5 ºC

    (C) 86 ºF

(D) 25 ºC

36. Kizingiti cha maji kuchemka ni nyuzi;
    (A) 37.5 ºC

    (B) 90 ºF

    (C) 100 ºC

    (D) Maji hayachemki

37. Popo yuko kundi gani la viumbe hai_____?
    (A) Ndege

    (B) Wadudu

    (C) Mamalia

    (D) Reptilia

38. Kazi ya maji mwilini ni; ____
    (A) Kuharibu chakula

    (B) Kusaga chakula

    (C) Kufanya chakula kiwe kigumu

    (D) Kusafirisha chakula mwilini

39. Chakula cha mtoto mdogo chafaa kiwe na__;
    (A) Wingi wa wanga

    (B) Wingi wa protini

    (C) Wingi wa vitamini

    (D) Wingi wa mafuta

40. Chombo kinachorahisisha kazi ni;
    (A) Makaa ya mawe

    (B) Mashine

    (C) Gari

    (D) Kuni

41. Sehemu kubwa ya mwili wa binadamu ni;
    (A) Mifupa

    (B) Nyama

    (C) Maji

    (D) Ngozi

42. Mtu anayenaswa na umeme tutamsaidiaje;
    (A) Kumsukuma kwa mti mbichi

    (B) Kumtoa kwa mikono

    (C) Kuwaita watu wa Tanesko

    (D) Kumsukuma kwa mti mkavu

43. Vitu vyote vinavyomzunguka mwanadamu ni;
    (A) Nyumba

    (B) Mazingira

    (C) Wanyama

    (D) Ndege

44. Kiini cha mfumo wa sayari zote ni;
    (A) Jua

(B) Mwezi

(C) Dunia

(D) Anga

45. Kuwepo kwa chumvichumvi baharini husababishwa na;
(A) Chumvi nyingi iliyopo katikati ya bahari

(B) Madini ya chumvi yanayobebwa na mito na kuingia baharini

(C) Chumvi nyingi zinazotupwa baharini

(D) Vinyesi vya wanayama na binadamu

46. Kundi la viumbe hai linalotengeneza chakula chake ni ___;
(A) Wanyama

(B) Bakteria

(C) Mimea

(D) Wadudu

47. Baadhi ya vielekezo vya sehemu za jangwa ni_____;
(A) Uhaba wa vyanzo vya maji

(B) Udongo wenye rutuba

(C) Misitu minene

(D) Mvua nyingi

48. Kipimo cha kani inayotumika kufanya kazi ni;
(A) Juli

(B) Kazi

(C) Nyutoni

(D) Kizio

49. Watu gani hasa hutumia dira katika shughuli zao za kila siku?
(A) Wafugaji

(B) Manahodha na Marubani

(C) Fundi umeme na Waashi

(D) Madaktari

50. Kizio cha ukinzani ni _____;
(A) Waya

(B) Volti

(C) Ampea

(D) Ohm

18/01/2010

MTIHANI WA SAYANSI STD VI

CHAGUA HERUFI ILIYO SAHIHI

1. Binadamu anahitaji hewa ya Oksijeni ili aweze kuishi je anatoa hewa gani?
   (A) Oksijeni (B) Hidrojeni

   (C) Naitrojeni (D) Kabonidayoksaidi

2. Kazi muhimu za damu kati ya hizi ni;
   (A) Kuyeyusha Kabondioxide (B) Kuyeyusha Oksijeni

   (C) Kusafirisha chakula na oksijeni katika sehemu zote za mwili

   (D) Kutupa joto

3. Katika hali tatu za maada _____ ina uwezo wa kubadilika katika hali zote.
   (A) Maada ya gesi (B) Maada ya yabisi

   (C) Maada ya vimiminiko

   (D) Majibu yote (A), (B) , (C) na (D) ni sawa

4. Mimea inayotoa maua imegawanyika katika makundi ____;
   (A) Moja (B) Mawili

   (C) Matatu

   (D) Sita

5. Yafuatayo ni baadhi ya magonjwa ya kuambukiza yanayotibika;
   (A) Kisonono,Ukimwi na Malaria (B) Kisonono, Kaswende, Trikonomia

   (C) Kipindupindu, Taifodi,Kisukari (D) Athma , Ukimwi na Kisukari

6. Kazi ya chembe hai sahani yadamu ni;-
   (A) Kuyeyusha damu (B) Kusafisha damu

   (C) Kulainisha damu (D) Kugandisha damu sehemu iliyopata jeraha

7. Mabadiliko yanayotokea kutoka lava hadi insekta kamili huitwa:-
   (A) Metabolizimu (B) Metamofiki

   (C) Metamofosisi (D) Metropoli

8. Mnyama anayezaliana bila viungovya uzazi kukutana kati ya hawa ni:-
   (A) Kuku (B) Binadamu

   (C) Amiba (D) Kabonidayoksaidi

9. Mojawapo katika njia zifuatazo si ya kutoa uchafu mwilini:-
   (A) Kutema mate (B) Kukojoa

   (C) Kupumua (D) Kutoa jasho

10. Mrija unaotoka kwenye figo na kuelekea kwenye kibofu huitwa;-
    (A) Ureta (B) Urethra

    (C) Kibofu (D) Vena

11. Hewa inayotumika kuzima moto:-
    (A) Kabon dioksaidi (B) Oksijeni

    (C) Naitrojeni (D) Haidrojeni

12. Unaweza kutambua kuwa hewa unayopumua ni Kabondioksdaidi kwa kupumulia katika:-
    (A) Maji yaliyochemshwa (B) Maji ya laimu(Maji ya chokaa)

    (C) Pombe (D) Maji

13. Kizingiti cha maji kuchemka ni :-
    (A) 0 ºC (B) 100 ºC

    (C) 100 ºF (D) 108 ºC

14. Si vizuri kuweka mimea inayokuwa chumbani wakati wa usiku kwa sababu
    (A) Harufu ya maua huleta maumivu ya tumbo (B) Hutoa unyevu

    (C) Oksijeni hutolewa (D) Kabomdioksaidi hutolewa

15. Ogani ya mwili iliyomuhimu katika kuondoa chumvi ya ziada, urea na maji katika mwili ni:-
    (A) Ini (B) Figo

    (C) Moyo (D) Mapafu

16. Damu inayotoka sehemu mbalimbali za mwili kwenda kwenye mapafu huwa na _____nyingi.
    (A) Oksijeni (B) Nitrojeni

    (C) Kabonidayoksaidi (D) Monoksaidi

17. Maada yoyote ikipata joto;
    (A) Husinyaa (B) Hukua

    (C) Hulegea (D) Hutanuka

18. Kitendo cha mimea yenye rangi ya kijani kujitengenezea chakuala chake yenyewe huitwa;
    (A) Osmosisi (B) Fotosinthesisi

    (C) Kujongea (D) Ukuaji

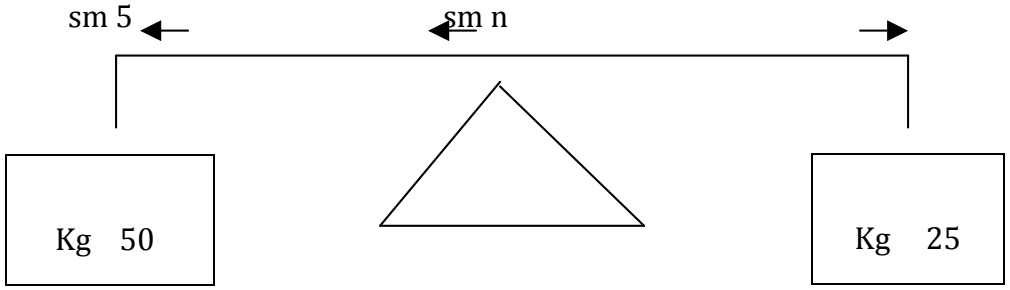
19. Zipo aina ngapi za mashine
    (A) Sita (B) Nne

    (C) Mbili (D) Kumi na sita

20. Ni udongo gani unaopitisgha maji kwa haraka zaidi?
    (A) Mfinyanzi (B) Tifutifu

    (C) Kichanga na Mfinyanzi (D) Mfinyanzi

21. Tafuta n.



(A) Sm 15 (B) Sm 10

(C) Sm 50 (D) Sm 25

22. Mwanasayansi anapaswa kuwa na tabia gani ya ____;
(A) Kuongea sana (B) Uvivu

(C) Udadisi (D) Uongo

23. Zipo sayari ngapi ambazo zinajulikana?
(A) Kumi na mbili (B) Haijulikani

(C) Tisa (D) Hakuna jibu

24. Mtu mwenye tatizo la kutoona mbali inashauriwa kutumia miwani yenye lenzi;
(A) Mbonyeo (B) Mbinuko

(C) Mbonyeo na Mbinuko (D) Hakuna jibu

25. Katika sakiti mfuatano glopu moja ikiungua;
(A) Umeme uingia katika glopu nyingine (B) Umeme huwaka kidogo katika glopu nyingine

(C) Glopu zote huzimika (D) Glopu zote huwaka

26. Jinsia ya mtoto hufanyika wakati wa _____;

(A) Uchavushaji (B) Urutubishaji

(C) Ukuaji (D) Kuzaliwa

27. Maji ni muunganiko wa ____;
(A) Haidrojeni na Oksijeni(B) Kabonidayoksaidi na Oksijeni

(C) Mbili (D) Kumi na sita

28. Tunavuta hewa ya _____na kutoa hewa ya ____;
(A) Kabonidayoksaidi na Oksijeni (B) Laini na ngumu

(C) Oksijeni na Naitrojeni (D) Oksijeni na Kabonidayoksaidi

29. Viini vya magonjwa huingia mwilini kupitia ;
(A) Mdomoni tu (B) Kwenye ngozi

(C) Kwenye damu (D) Sehemu mbalimbali za mwili

30. Ukimwi huambukizwa kwa;
(A) Zinaa (B) Damu

(C) Mama kwa mtoto (D) Yote sawa

31. Mazingira ni;
(A) Kupanda miti (B) Jumla ya mambo yote yanayomzunguka kiumbe hai

(C) Mama kwa mtoto (D) Kukata miti

32. Mama mjamzito anashauriwa;
(A) Kuvaa nguo zisizobana ili aweze (B) Kula vyakula vyenye lishe

kupumua bila shida

(C) Kutofanya kazi ngumu (D) Majibu yote ni sahihi

33. Ubongo umegawanyika sehemu kuu ngapi?
(A) Moja (B) Sita

(C) Tatu (D) Mbili

34. Taarifa kuhusu harufu hutafsiriwa na sehemu ya ubongo wa mbele inayoitwa;
(A) Pua (B) Olfektori

(C) Selebramu (D) Neva za kunusa

35. Ni madini gani yanayoruhusu mwanga kupenya;
(A) Almasi (B) Dhahabu

(C) Ulanga (D) Shaba

36. Uzito wa maji yanayochukuliwa na kitu kinapoelea unakuwaje?
(A) Unalingana (B) Haulingani

(C) Ni mrefu (D) Kitu kinazama

37. Kuna aina ngapi za Transfoma;
(A) Mbili (B) Tatu

(C) Nne (D) Moja

38. Seli kavu moja ina volti ngapi?
(A) Volti 3.0 (B) Volti 3

(C) Volti 1.5 (D) Volti 2.5

39. Sumaku ina pande mbili ambazo ni;
(A) Kusini ma Mashariki (B) Kusini na Kaskazini

(C) Kaskazini na Magharibi (D) Magharibi na Mashariki

40. Mwale unaoelekea katika uso wa kioo huitwa____:
(A) Mwale akisi (B) Mwale mtuo

(C) Pembe akisi (D) Pembe mtuo

41. Ni nini kinachopambana na sumu zinazoingia mwilini;
(A) Figo (B) Mapafu

(C) Nyongo (D) Ini

42. Kabonidayoksaidi na maji ni;
(A) Gesi na kimiminika zinazotolewa moyoni (B) Taka zinazotolewa na mapafu

(C) Taka mwili zinazotolewa na mwili (D) Taka mwili zinazotolewa na ngozi

43. Ugonjwa utokanao na mabadiliko yaliyo ya kawaida ya mawimbi ya umeme ya neva za ubongo ni;
(A) Kifua kikuu (B) Kifafa

(C) Kikohozi (D) Kisukari

44. Taka zinazotolewa na ngozi ni;
(A) Urea, chumvichumvi na maji ya ziada (B) Kabonidayoksaidi na chumvichumvi

(C) Maji ya ziada na Oksijeni (D) Haidrojeni na Oksijeni

45. Ni zao gani kati ya yafuatayo huifadhi rutuba;
(A) Korosho (B) Minazi

(C) Miembe (D) Mimea jamii ya kunde

46. Katika nyenzo daraja la kwanza ___;
(A) Mzigo huwa katikati ya daraja (B) Egemeo huwa katikati ya mzigo

na egemeo na jitihada

(C) Jitihada huwa katikati ya mzigo (D) Majibu yote ni sahihi

na egemeo

47. Ukitaka kutambua chakula chenye wanga utatumia;
(A) Ayodini (B) Litimasi

(C) Mihogo (D) Maji

48. Mtoto mdogo huhitaji chakula chenye _____ kwa wingi;
(A) Kabohaidreti (B) Protini

(C) Fati (D) Chumvi za madini

49. Kati ya wadudu wafuatao anayetaga mayai yake chini ya ardhi ni;
(A) Panzi (B) Kipepeo

(C) Inzi (D) Mmbu

50. Katika makundi ya wanyam,a wafuatao kundi mojawapo halin auti wa mgongo;
(A) Wadudu (B) Mamalia

(C) Ndege (D) Amfibia

Annex III: Classroom Observation Instrument

Classroom Observation (post-test)

Instructions:

- Prior to doing the observation of a complete math class and a science class, complete items 1 through 41.
- For item 13, get the enrollment figures from the teacher's class list, and then determine the number of boys and girls present for item 14; count the number of students yourself. Do not depend on what the teachers may tell you.
- For items 13 and 14, ask the teacher to show you the attendance records, so you can see if it is kept on a daily basis and mark in item 15.
- **For items 15-41, ask the teacher the questions and record the answers yourself. Do not give the teacher this form to fill out.**
- For item 22, fill in the date as day/month/year—ddmmyy
- If you do not see a particular behavior, it did not occur, so mark it as NO. In other words do not leave anything blank.

School _____number				
1.	Name of observer:**obsname**			
2.	Date of observation:	**C2.1** Day **C2.2** month **C 2.3** year		
3.	Name of school:	**C3**—SchNum		
4.	Name of district:	**C4**—DistNum		
5.	Location of school—rural/urban:	1=rural 2=urban (circle location)		
6.	Type of school	1=BIT 2=BIT+LS 3=control		
7.	What time did you begin the observation?	**C6.1** Hour **C6.2** Min		
8.	What time did you end the observation?	**C7.1** Hour **C7.2** Min		
9.	What grade level(s) are being taught?	5=Standard 6=Standard (circle standard)		
10.	Teacher's Name			
11.	Interviewed for baseline	1=yes 2=no		
12.	What subject(s) are being taught?	1=math 2=science (circle subject)		
	Class Enrollment	**Total**	**Boys**	**Girls**
13.	How many children are enrolled in the class? (just for stream observed)	**C10T**	**C10B**	**C10G**

14.	How many children are present today? (the actual number present)	**C11T**	**C11T**	**C11G**
15.	Is a register of attendance updated on a daily basis	**1. yes**		**2. no**
	Teacher Background and Qualifications			
16.	Is this teacher male or female?	**1. M**		**2. F**
17.	The teacher lives in the community. (within 1 hours walk of the school)	**1=yes**		**2=No**
18.	The teacher has another job, or runs a business	**1. yes**		**2. no**
19.	How long has the teacher been teaching?	**Years**		
20.	What level of academic qualification has the teacher achieved? Degree Diploma in Education Grade A Grade B Grade C	**1. Deg** **2. Dip** **3. A** **4. B** **5. C**		
	Training and Support			
21.	Did you receive BridgeIT Training?		**yes**	**no**
22.	When did you receive the BridgeIT training?**22.1dd 22.2 mm 22.3 yy**		**Date**	
23.	Were you trained by BridgeIT to be a master teacher?		**1. yes**	**2 no**
24.	Were you trained in BridgeIT by master teachers?		**yes**	**no**
25.	Were you trained in BridgeIT by a fellow teacher? (not a master teacher)		**yes**	**no**
26.	Have you trained other teachers in how to use BridgeIT?		**yes**	**no**
27.	Do you feel that the training to use BridgeIT was appropriate?		**yes**	**No**
28.	Do you feel that you receive appropriate support from the head teacher and colleagues at school?		**yes**	**no**
29.	Do you feel that you receive appropriate support from the school inspectors in your district?		**yes**	**no**
30.	Do you receive visits from the school inspectors?		**yes**	**no**
31.	Do you get prompt responses from the BridgeIT helpdesk?		**yes**	**no**

32.	Do you share your BridgeIT resources with teachers and classes from other schools?	**yes**	**no**
	Available Facilities		
33.	Lunch program for children (1-from community 2-from outside organization)	**yes**	**no**
34.	Separate toilet facilities for boys and girls.	**yes**	**no**
35.	The toilet facilities are clean (Go take a careful look!).	**yes**	**no**
36.	There is reliable clean water.	**yes**	**no**
37.	Classroom is secure (windows, watchman and doors can be locked).	**yes**	**no**
	General Satisfaction		
38.	Although teaching is challenging, do you find your job satisfying?	**yes**	**no**
39.	Are you satisfied with the school facilities? (Physical infrastructure, teaching materials, etc.)?	**yes**	**no**
40.	Are you satisfied with the BridgeIT cell phone and video equipment?	**yes**	**no**
41.	Are you satisfied with the BridgeIT education model?	**yes**	**no**
	Classroom Environment		
42.	There are posters and illustrations on the wall. (either teacher's work or commercially produced)	**yes**	**no**
43.	There is a display of children's work in the classroom.	**yes**	**no**
44.	If there are posters/diagrams on the walls, do they have a gender balance?	**yes**	**no**
45.	There is a cooperative atmosphere between students and teacher.	**yes**	**no**
46.	There is adequate light for each child to be able to see the blackboard and read their books.	**yes**	**no**
47.	The children have an unobstructed view of the television	**yes**	**no**
48.	External noise does not interfere with communication and classroom activities	**yes**	**no**
49.	Seating arrangement facilitates participation by all the students (U-shape)	**yes**	**no**
50.	Seating arrangements can be altered to encourage group work	**yes**	**no**
51.	The classroom is clean and tidy. (floor recently swept, desks orderly, no rubbish on the floor)	**yes**	**no**
	Facilities and Materials		

52.	The school has adequate storage space for teaching/learning materials.	**yes**	**no**
53.	Each child has enough space to work (crowded together or have some open space for working).	**yes**	**no**
54.	The classroom has a working television to show BridgeIT videos	**yes**	**no**
55.	The cell phone has a functional security cable	**yes**	**no**
56.	The classroom has a functional Nokia cell phone with hookup to TV	**yes**	**no**
57.	There are materials available for enrichment and extra help (Reference books, maps, globes, diagrams, etc.)	**yes**	**no**
58.	All children have workbooks, note books or slates	**yes**	**no**
59.	There are enough textbooks available for each child	**yes**	**no**
60.	There is a useable blackboard and chalk	**yes**	**no**
	Observation of Students		
61.	Children pay attention when the teacher gives instructions.	**yes**	**no**
62.	Children ask questions (both boys and girls)	**yes**	**no**
63.	Boys ask more questions than girls.	**yes**	**no**
64.	Girls ask more questions than boys.	**yes**	**no**
65.	Boys and girls are given equal time and attention.	**yes**	**no**
66.	Most of the children (more than 80%) participate in class activities.	**yes**	**no**
67.	All children are given the opportunity to present ideas/answers to the class.	**yes**	**no**
68.	Children who need help get that help from the teacher or their peers.	**yes**	**no**
69.	The children are given responsibility for tasks within the classroom.	**yes**	**no**
	Teacher Communication	**yes**	**no**
70.	The teacher speaks so that all children in the class or group can hear.	**yes**	**no**
71.	The teacher maintains eye-contact with class or group.	**yes**	**no**
72.	The teacher speaks to children in a motivating manner.	**yes**	**no**
73.	The teacher talks to the children using normal vocabulary that most students can understand.	**yes**	**no**
74.	The teacher communicates in the local language. (in addition to Swahili)	**yes**	**no**
75.	The teacher knows and uses students' names.	**yes**	**no**
76.	The teacher writes legibly on the blackboard so that all of the students can see and understand.	**yes**	**no**

77.	The teacher listens carefully to all students.	**yes**	**no**
78.	The teacher encourages silent students to participate by calling on them.	**yes**	**no**
	Lesson Planning and Implementation	**yes**	**no**
79.	The teacher has materials, supplies, and equipment for the lesson ready at the start of the lesson.	**yes**	**no**
80.	The teacher enters the class with a written plan.	**yes**	**no**
81.	While teaching, the teacher makes use of the available space in the classroom instead of remaining in front.	**yes**	**no**
82.	A BridgeIT video was shown during the observation.	**yes**	**no**
83.	If yes, the teacher prepared the students for the video lesson.	**yes**	**no**
84.	Upon completion of the video, the teacher carried out related activities.	**yes**	**no**
	Questioning Skills		
85.	The teacher gives opportunity to all students, boys and girls, to present individual and group work to the class.	**yes**	**no**
86.	The teacher poses questions clearly and one at a time.	**yes**	**no**
87.	The teacher provides specific useful feedback after an incorrect, incomplete, or non-response in a helpful way (praise, further probing).	**yes**	**no**
88.	The teacher asks questions that require more than a simple answer. (more than yes/no or a single word or number)	**yes**	**no**
89.	The teacher affirms a correct oral response, probing as necessary to enhance learning.	**yes**	**no**
90.	The teacher waits sufficient time for students to respond. (A rule of thumb—count 1 to 5.)	**yes**	**no**
	Practice, Feedback and Remediation		
91.	The teacher moves about the classroom during class work to check performance of all students, and reduce the psychological distance.	**yes**	**no**
92.	The teacher checks for understanding before assigning practice.	**yes**	**no**
93.	The teacher regularly marks and provides feedback, written or verbal, on students' work.	**yes**	**no**
94.	The teacher can prepare activities for children of different abilities.	**yes**	**no**
	Grouping	**yes**	**no**
95.	The teacher sometimes works with particular subgroups of students.	**yes**	**no**
96.	Students sometimes work independently in groups on activities.	**yes**	**no**
97.	The teacher circulates among the groups to help and monitor activities.	**yes**	**no**

98.	Students sometimes work in a co-operative learning group situation. (This is distinct from working individually in small groups.)	**yes**	**no**
99.	Generally, there is gender balance in the groups organized by the teacher	**yes**	**no**
	General Teaching Methods		
	Children experience a variety of activities in the different learning styles so they can actively involve at least six of their intelligences.	**yes**	**no**
100	Verbal – linguistic (Using written and spoken words)	**yes**	**no**
101	Logical – mathematical (Using numbers/abstract patterns problem solving)	**yes**	**no**
102	Spatial – visual (Using visual imageries/graphic diagrams)	**yes**	**no**
103	Musical – rhythmic (Using rhyme/rhythm/repetition)	**yes**	**no**
104	Body Kinesthetic-movement (Using physical movement/games)	**yes**	**no**
105	Interpersonal – people skills (Using group, leadership, co-operative skills)	**yes**	**no**
	Classroom Atmosphere		
106	The teacher talks to the children in a positive and friendly way.	**yes**	**no**
107	There appears to be a supportive learning environment in the classroom.	**yes**	**no**
108	The children seem to respect the teacher.	**yes**	**no**
109	The children seem to respect their peers.	**yes**	**no**
110	The teacher uses positive verbal and non-verbal communication.	**yes**	**no**
111	The children appear to enjoy being at school.	**yes**	**no**
112	In general, boys and girls appear to be treated equally.	**yes**	**no**
113	Generally the teacher uses participative teaching methods.	**yes**	**no**

Below write a brief narrative about the class you just observed (include teachers' comments if any):

Annex IV: Student and Teacher Attitude Instruments
Teacher Interview

Instructions:

1. **Carefully read each statement**
2. **Circle your answer**
3. **Make sure to circle only one answer**
4. **When finished, check to make sure you have answered all the questions**
5. **Enumerator will fill items 1-6 and then hand the questionnaire to the teacher**

1.	School Name			
2.	School Number (from List)			
3.	District			
4.	Type of School	1-BIT 2 BIT+LS 3=Con		
5.	Grade	Std.5	Std.6	56 both
6.	Gender	Male	Female	
7.	Have you shown BridgeIT videos in your class?	yes	no	
8.	How many days ago did you show the last video?	No. days		
9.	A teacher should be serious and not joke too much	yes	no	
10.	Students should be encouraged to speak as much as possible	yes	no	
11.	Only teachers should use tools and resources for demonstrations	yes	no	
12.	Teaching boys and girls sometimes requires different strategies.	yes	no	
13.	Students should only speak when called upon	yes	no	
14.	Videos can be distracting	yes	no	
15.	Boys understand videos better than girls	yes	no	
16.	Students should do independent group work at least twice a week	yes	no	
17.	Students should learn how to use tools and resources	yes	no	
18.	It is better to teach without videos	yes	no	
19.	Boys and girls understand the videos equally well	yes	no	

20.	Use of technology can enhance learning among students.	yes	no
21.	Videos help both girls and boys learn	yes	no
22.	Students frequently break or destroy resources	yes	no
23.	Videos work well together with other teaching aids.	yes	no
24.	Girls are more reluctant to participate in class than boys	yes	no
25.	Cell phones are unreliable for showing videos	yes	no
26.	The videos integrate well into the lesson plans	yes	no
27.	Videos are just for entertainment and not for learning	yes	no
28.	Girls understand the videos better than boys	yes	no
29.	Students learn better and faster with the video lessons	yes	no
30.	Students learn better when they work together in groups	yes	no
31.	Boys and girls should be encouraged to participate equally in class	yes	no

Student Interview

Instructions:

1. **Carefully read each statement**
2. **Circle your answer**
3. **Make sure to circle only one answer**
4. **When finished, check to make sure you have answered all the questions**
5. **Enumerator will fill items 1-6 and then hand questionnaire to the student**

1.	School Name		
2.	School Number from List		
3.	District		
4.	Type of School	1-BIT 2BIT+LS 3=CT	
5.	Grade level	Std. 5	Std. 6
6.	Are you a boy or a girl?	boy	girl
7.	Have you seen a video lesson in class?	yes	no
8.	If yes, how many have you seen?	No.	
9.	If yes, how many days ago was the last one shown?	No. days	
10.	Parents should make children go to school even if do not want to.	yes	no
11.	It is important to have time to play games in school.	yes	no
12.	Videos lessons in class are boring.	yes	no
13.	Working with other students in a group improves understanding.	yes	no
14.	Videos lessons are confusing.	yes	no
15.	The teacher helps students understand the video lessons.	yes	no
16.	Students should put up their hands to ask questions often.	yes	no
17.	Itis important to listen carefully to what others have to say.	yes	no
18.	It is important to go on to secondary school.	yes	no
19.	Videos lessons make learning math easier.	yes	no
20.	Working in groups is really a waste of time.	yes	no
21.	The videos make science easier to understand.	yes	no

22.	The teacher should callequally on boys and girls.	yes	no
23.	As soon asstudents finish primary school, they should go to work.	yes	no
24.	A good time to get married is right after finishing primary school.	yes	no
25.	The teacher should do most of the talking.	yes	no

Mtazamo wa Mwalimu.

Soma maelezo yafuatayo kwa makini na kisha chagua jibu lililo sahihi kwa kuzungushia neno Ndiyo au Hapana au kuandika idadi ya siku.

1.	Mwalimu anapaswa kuwa makini na kuepuka utani kupita kiasi.	Ndiyo	Hapana
2.	Wanafunzi ni muhimu kuhamasishwa kuongea darasani kadri inavyowezekana.	Ndiyo	Hapana
3.	Umeshawahi kutumia video za Elimu kwa Teknolojia darasani kwako?	Ndiyo	Hapana
4.	Kwa mara ya mwisho ulitumia video lini?	Idadi ya siku	
5.	Walimu tu wanahitaji kutumia vifaa na zana kwa kuonesha.	Ndiyo	Hapana
6.	Wanafunzi wanatakiwa kuongea pale tu wanapotajwa kwa jina.	Ndiyo	Hapana
7.	Filamu (video) zinaweza kuharibu wanafunzi.	Ndiyo	Hapana
8.	Wavulana huelewa filamu (video) zaidi kuliko wasichana.		Hapana
9.	Wanafunzi katika darasa langu hufanya kazi za makundi walau mara mbili kwa juma.	Ndiyo	Hapana
10.	Wanafunzi wanahitaji kujifunza jinsi ya kutumia vifaa na zana.	Ndiyo	Hapana
11.	Njia zangu za kufundishia ni bora kuliko ninapotumia filamu (video).	Ndiyo	Hapana
12.	Uelewaji wa filamu (video) kwa wasichana na wavulana huwa ni sawa.	Ndiyo	Hapana
13.	Filamu (video) huwasaidia wasichana na wavulana kujifunza.	Ndiyo	Hapana
14.	Wanafunzi mara kwa mara huvunja au kuharibu zana.	Ndiyo	Hapana
15.	Filamu (video) hutumika vizuri zinapotumika pamoja na zana zingine za kufundishia.	Ndiyo	Hapana
16.	Wasichana ni wazito kushiriki darasani kuliko wavulana.	Ndiyo	Hapana
17.	Simu ya mkononi tunayotumia haina uhakika katika kuonesha filamu (video).	Ndiyo	Hapana

18.	Filamu (video) hutumika vizuri katika somo langu.	Ndiyo	Hapana
19.	Filamu (video) ni kwa ajili tu ya burudani na sio kujifunzia.	Ndiyo	Hapana
20.	Wasichana huelewa filamu(video) zaidi kuliko wavulana.	Ndiyo	Hapana
21.	Wanafunzi wangu hujifunza vizuri na haraka kwa kutumia filamu (video).	Ndiyo	Hapana
22.	Wanafunzi hujifunza vizuri wanapokuwa katika makundi.	Ndiyo	Hapana
23.	Katika darasa langu wavulana na wasichana hushiriki sawasawa katika kujifunza.	Ndiyo	Hapana

Mtazamo wa Mwanafunzi.

Soma maelezo yafuatayo kwa makini na kisha chagua jibu sahihi kwa kuzungushia neno Ndiyo au Hapana au kuandika idadi ya siku ama filamu (video)

	Darasa	DRS. 5	DRS. 6
	Je, wewe ni mvulana au msichana?	Mvulana	Msichana
2.	Umeshawahi kuona filamu (video) ikitumika darasani?	Ndiyo	Hapana
3.	Kama ni ndiyo, umeshawahi kuona filamu (video) ngapi?	Idadi	
4.	Kama ni ndiyo, ni siku ngapi zimepita tangu uone filamu(video) ya mwisho?	Idadi ya siku	
5.	Wazazi wangu ndio husababisha niende shuleni lakini mimi sipendi kwenda.	Ndiyo	Hapana
6.	Napenda kucheza michezo shuleni	Ndiyo	Hapana
7.	Filamu(video) zinazotumika darasani hunichosha.	Ndiyo	Hapana
8.	Kufanya kazi na wanafunzi wenzangu hunisaidia kuelewa vizuri zaidi.	Ndiyo	Hapana
9.	Ni mara chache sana mwalimu hunitaja jina darasani.	Ndiyo	Hapana
10.	Filamu (video) hizi hunichanganya zaidi.	Ndiyo	Hapana
11.	Mwalimu hutusaidia kuelewa vema somo linalotumia filamu (video).	Ndiyo	Hapana
12.	Napenda kufanya kazi na wanafunzi wenzangu katika vikundi.	Ndiyo	Hapana
13.	Kwa kawaida hunyosha mkono kujibu maswali darasani.	Ndiyo	Hapana
14.	Ningependa kuendelea na masomo ya sekondari.	Ndiyo	Hapana
15.	Filamu (video) hufanya somo la Hisabati kuwa rahisi.	Ndiyo	Hapana
16.	Filamu (video) hunisaidia kuielewa somo la Sayansi kirahisi.	Ndiyo	Hapana
17.	Ninafurahia kwenda shuleni.	Ndiyo	Hapana
18.	Mwalimu huwashirikisha wavulana zaidi kuliko wasichana.	Ndiyo	Hapana
19.	Baada ya kumaliza elimu ya msingi ningependa kufanya kazi.	Ndiyo	Hapana

20.	Baada ya kumaliza elimu ya msingi ningependa kuoa/kuolewa.	Ndiyo	Hapana
21.	Mwalimu ndiye hutawala maongezi yote darasani.	Ndiyo	Hapana