原著論文

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国際理数科調査（TIMSS）によるバングラデシュの中学２年生の学力調査
－主に日本の結果との比較と検討－

A Study of Educational Achievement of Grade Eight Student of Bangladesh Based on TIMSS：Comparison with Japan

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要旨：バングラデシュ人民共和国のグレード８の生徒（中学２年生）の理科に対する理解度や意識を調査する目的で，TIMSS2003（2003年国際理数科調査）で行われた質問項目を用いて，バングラデシュの生徒に対して調査を行った。また既に公表されているTIMSS2003での日本の結果との比較も行った。TIMSS2003調査項目のうち，25の意識を問う項目12の学力を問う項目を選んだ。調査対象は，バングラデシュ国内４つの中等学校，合計203名の生徒である。そのうち103名は女子生徒であった。調査結果の比較から，バングラデシュの生徒の方が日本の生徒よりも，学習意欲が高いことがわかった。しかし，理科に対する理解度については，バングラデシュよりも日本の方が優れていた。また，女子生徒の方が男子生徒よりも若干理解度が高かった。この結果は，これまで考えられていたバングラデシュの背景と矛盾した結果であったが，理科に対する理解度に男女差がないことが明らかになった。これらに加えて，都市（首都ダッカ）の中等学校に通う生徒と地方の中等学校に通う生徒との間の比較も同様に行った。結果からいえることは，こと理科教育に関してバングラデシュでは，都市と地方の学校間の教育の質の差を無くすには，未だかなりの長い道のりが必要であるということである。

キーワード：バングラデシュ，日本，学力，意識，TIMSS

Abstract：This study has been done to compare the achievement level of grade 8 students in science between Bangladesh and Japan. A part of TIMSS 2003 has been done through the present study. 25 attitude based questions and 12 knowledge based questions have been used in this study. Data were collected from 203 students of which 103 are girl students from 4 secondary high schools. On the other hand, data of Japanese grade eight students were taken from the TIMSS 1999 report. In the result, attitude of Bangladeshi grade 8 students was more positive than Japanese grade 8 students. But the Japanese grade 8 students' performance is better in the achievement test. The performance of the Bangladeshi grade 8 girl students' is better than boy students, which is contradictory to the existing concept but it was proved that girl students have same ability as boy students to study science. Beside the comparison between Japan and Bangladesh, there is another comparison between the students of Dhaka and outside Dhaka has been done in this study. From the result we can say that in case of science education, still long way to go to eradicate difference of quality between urban and rural schools in Bangladesh.

Keywords：Bangladesh, Japan, Educational Achievement, Attitude, TIMSS

1. INTRODUCTION

Bangladesh is with an area of 147,570 Km^2 and a population of approximately 130 million. The country is surrounded by India on the west, north and the east, Myanmar on the south-east and the Bay of Bengal on the south.

The main two objectives of the secondary and higher secondary school education of Bangladesh are to improve the curriculum up to the international standard, especially to the Asian standard gradually and to redesign curriculum so that

students can achieve enough knowledge, skill and attitude to be self employed. As Bangladesh is densely populated developing country, education system is very important for the sustainable development. If we compare with other developed country we can see that Bangladesh is lagging behind in science and technology. In these areas, we have to develop a lot. We have to give especial attention to science education of the country from the elementary level. We also need to know about our country's position comparing to other countries in science education. Since 1995, TIMSS (Trends in International Mathematics and Science Study) is being done in every four years to understand the standard of the science education in elementary and junior secondary level among the countries. In 2003, 50 countries participated in the TIMSS. TIMSS provides important information for policy development, foster public accountability, to allow areas of progress to be identified and monitored, and to address concerns for equity. Bangladesh is not included in the TIMSS study yet. So it is not possible to guess where the level of science education of Bangladesh is. Although Bangladeshi curriculum developers consult the curriculums of other countries, as a reference but that is done in the central level. It is necessary to know about the performance and attitude of students for whom the curriculum will be developed. Through TIMSS the evaluation of the student's knowledge in the science and also attitude about the science can be done. From that point of view, this study has been done although a part of the TIMSS 2003 so that we can understand the level of Bangladeshi grade 8 students.

2. OBJECTIVES OF THE RESEARCH

1)To compare the scientific attitude of the grade 8 students of Bangladesh with Japan

2)To compare the educational achievement of the grade 8 students in science course with Japan

3)Recommend to improve the science education of Bangladesh based on the comparison between Japan and Bangladesh

3. IMPORTANCE OF THIS RESEARCH :

TIMSS has not been done yet in Bangladesh. Comparisons among the countries are necessary in education for developing the education system. Government can understand the level of the country in science education by TIMSS. So as a pioneer, the part of the TIMSS 2003 has been done in this research. So that Bangladesh government can feel the need for this kind of studies and take necessary steps for the future.

4. METHODOLOGY:

For any research methodology is very important. In this research data have been collected from 203 students of which 103 are girls according to the following table.

Table 1: Number of responses and schools

Student	Number of responses	Number of schools
Boy student	100	4
Girl student	103	

In this research TIMSS questionnaire 1999 has been used for attitude and TIMSS 2003 for achievement test. Attitude type questions were 25 and achievement test items were 12. All 12 items were selected from physics area. In the following table, cognitive domains of the selected items have been shown. As this study has been done by personal effort, the sample of the study is small and only a part of the TIMSS 2003 has been done. Comparison for the achievement test between Japan and Bangladesh has been done based on TIMSS 1999 and TIMSS 2003 respectively as the detailed report of the TIMSS 2003 has not been published yet. In this paper only the part of this research will be discussed due to limitation of the space.

Table 2: Cognitive domain and content of the achievement test (TIMSS 2003)

Cognitive Domain/ contents	Reasoning and analysis	Factual knowledge	Conceptual understanding	Total
Forces and motion	2		1	3
Light	1		2	3
Electricity and magnetism	1	1	1	3
Physical states and changes in matter		1		1
Energy types, sources & conversations			1	1
Heat & temperature	1			1
Total	5	2	5	12

5. DATA ANALYSIS :

Firstly the data for the attitude survey will be analyzed. Students were asked some attitude related questions regarding science to understand the interest of the students. Following are the questions and data for the attitude.

ATTITUDE RELATED DATA

QUESTION 1

Do you like science?

In response of this question 46% students of grade 8 from Bangladesh liked science very much whereas Japan is only 11.1%. From table 3, it is found that 98.5% of grade 8 students of Bangladesh like science whereas only 54.6% from Japan like science.

Table 3: Percentage of grade 8 students whether they like science or not

Country	I like science very much	I like science	I don't like science	I don't like science at all	No response	Effective total (in number)	Total (in number)
Japan (%)	11.1	43.5	34.6	10.9	0.0	4,676	4,745
Bangladesh (%)	46.0	52.5	1.5	0.0	0.5	202	203

QUESTION 2

What do you think about the following? (Science is useful in daily life)

In response to this question 100% of grade 8 students from Bangladesh agreed with the statement whereas 39.6% from Japan agreed with the statement. It is found from the table 4 that the difference in the response is very big between Japan and Bangladesh.

Table 4: Percentage of grade 8 students whether they agree with the statement "Science is useful in daily life"

Country	Strongly agree	Agree	Disagree	Strongly disagree	No response	Effective total (in number)	Total (in number)
Japan (%)	4.4	35.2	48.7	11.8	0	4,670	4,745
Bangladesh (%)	73.5	26.5	0	0	1.5	200	203

QUESTION 3

How long you do the following things in a day after the school?

A) After the school, doing the science home work

Table 5 shows that the Bangladeshi students do the home work more than the Japanese students do. 38.5% of Japanese students don't do the science home work whereas 11.3% of Bangladeshi students don't do the science home work.

Table 5: Percentage of students doing science home work after the school

country	Don't do	Less than 1 hour	From 1 to 3 hours	From 3 to 5 hour	More than 5 hour	No response	Effective total (in number)	Total (in number)
Japan (%)	38.5	49.5	11.6	0.3	0.1	1.3	4,683	4,745
Bangladesh (%)	11.3	58.6	27.6	1.0	1.0	0.5	202	203

B) Doing the home work of other subjects

Table 6 shows that the Japanese students don't do the home work other than science a lot compare to Bangladeshi students.

Table 6: Percentage of students the home work of other subjects after the school

country	Don't do	Less than 1 hour	From 1 to 3 hours	From 3 to 5 hour	More than 5 hour	No response	Effective total (in number)	Total (in number)
Japan (%)	18.8	50.3	29.2	1.4	0.2	1.3	4,687	4,745
Bangladesh (%)	5.4	42.3	42.9	4.9	3.0	1.5	200	203

QUESTION 4

What do you think about the following?

The science is easy

Table 7 shows that about 80% Bangladeshi students agreed with the statement that the science is easy whereas Japanese students are only 18%.

Table 7: Percentage of student's opinion whether science is easy or not

country	Strongly agree	agree	disagree	Strongly disagree	No response	Effective total (in number)	Total (in number)
Japan (%)	2.6	16.1	61.9	19.4	1.3	4,675	4,745
Bangladesh (%)	20.1	60.1	16.7	1.5	1.5	200	203

QUESTION 5

What do you think about the following?

A) *Science lecture is boring*

Table 8 shows that only about 17% of Bangladeshi students agreed with the statement that science lecture is boring whereas Japanese students are 36%

Table 8: Percentage of students opinion whether the science lecture is boring or not

country	Strongly agree	agree	disagree	Strongly disagree	No response	Effective total (in number)	Total (in number)
Japan (%)	7.2	28.7	52.8	11.3	1.3	4,674	4,745
Bangladesh (%)	8.4	8.9	34.0	45.3	3.4	196	203

B) *Study of science is enjoyable.*

Table 9 shows that 93% of Bangladeshi students agreed with the statement that the study of science is enjoyable which is extremely higher than that of Japanese percentage (50.6%)

Table 9: Percentage of students opinion whether study of science is enjoyable or not

country	Strongly agree	agree	disagree	Strongly disagree	No response	Effective total (in number)	Total (in number)
Japan (%)	8.4	42.2	38.9	10.5	0	4,677	4,745
Bangladesh (%)	50	43	3.5	3.5	3	200	203

QUESTION 6

Do you think the following matter is important for good result in science?

A) *Studying science in home*

Table 10 shows that the opinion of Bangladeshi students (99%) and Japanese students (95%) are very near about studying science in home for good result.

Table 10: Percentage of student's opinion about studying science in the home for good result

country	Very important	important	Not important	Not important at all	No response	Effective total (in number)	Total (in number)
Japan (%)	60.3	34.7	3.7	1.3	1.3	4,682	4,745
Bangladesh (%)	71.4	27.6	0.5	0	0.5	202	203

B) *Ability*

Table 11 shows about 95% of Bangladeshi students and 79% of Japanese students agreed that ability is important for good result in science.

Table 11: Percentage of student's opinion about the ability for good result in science

country	Very important	important	Not important	Not important at all	No response	Effective total (in number)	Total (in number)
Japan (%)	25.8	53.3	17.4	3.5	1.3	4,683	4,745
Bangladesh (%)	49.8	45.3	3.4	0	1.5	200	203

C) *Luck*

Table 12 shows that Bangladeshi (59.7%) and Japanese (52%) students think that luck is important for good result in science. Almost same percentage of students from both country believe in luck for good result in science

Table 12: Percentage of student's opinion about the luck for good result in science

country	Very important	important	Not important	Not important at all	No response	Effective total (in number)	Total (in number)
Japan (%)	15.1	36.9	36.4	11.6	1.3	4,681	4,745
Bangladesh (%)	23.2	36.5	23.6	15.3	1.5	200	203

D) *Memorizing the text book and note*

Table 13 shows that the big percentages of Japanese students (97%) think that memorizing the text book and note is important for good result in science whereas Bangladeshi students are only 61.6%. Secondly, the data from the achievement test will be analyzed here.

Table 13: Percentage of students' opinion about memorizing the text book and note for good result in science

country	Very important	important	Not important	Not important at all	No response	Effective total (in number)	Total (in number)
Japan (%)	59.8	37.1	2.1	1.0	1.3	4,682	4,745
Bangladesh (%)	28.1	33.5	24.1	11.8	2.5	198	203

ACHIEVEMENT TEST RELATED DATA

QUESTION 1

A ray of light strikes a mirror as shown. (+)

Which picture best shows the direction of the reflected light? (-)

In response to this question, 77.3% of the grade 8 student from Bangladesh had the correct answer whereas 91.7% from Japan had the correct answer. It has described in the Table 14 more clearly and specifically. Although the gap in correct answer between Bangladesh (77.3%) and Japan (91.7%) is huge but the gap in girls' result is very close between Bangladesh (84.5%) and Japan (89.6%).

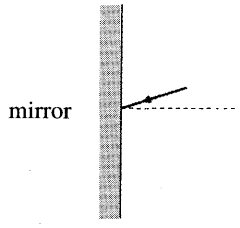


Figure 1 (+)

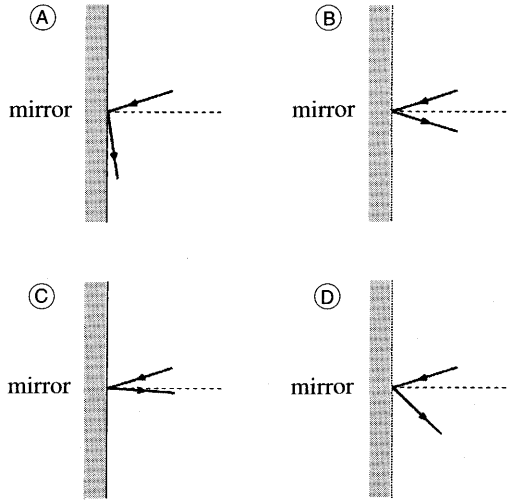


Figure 2 (−)

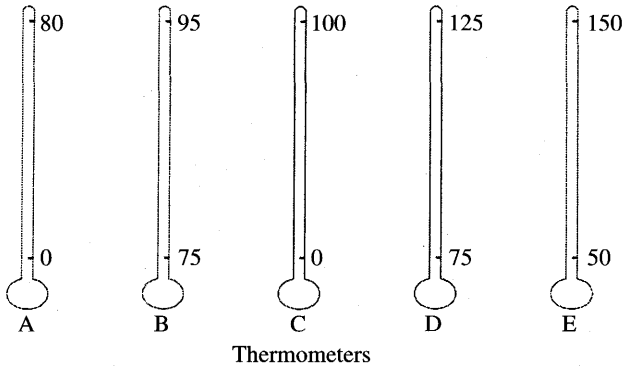
Table 14: Percentage of correct and incorrect answer to the Q1

Country	Correct answer			Incorrect answer	No response	Total (in number)
	Boy student	Girl student	Total			
Japan (%)	93.7	89.6	91.7	7.8	0.5	632
Bangladesh (%)	70	84.5	77.3	16.3	6.4	203

QUESTION 2

At different altitudes, the boiling point of water ranges from about 80℃ to 100℃ which of the Celsius thermometers shown below would give the most accurate measurement of the boiling point of water at different altitudes?

In response to this question, 8.4% of the grade 8 student from Bangladesh had the correct answer whereas 81.1% from Japan had the correct answer. The gap is very huge in this question between Japan and Bangladesh. Table 15 shows it more clearly. Gap is huge in case of both boy and girl student.



Thermometers

Figure 3

Table 15: Percentage of correct and incorrect answers to the Q2

Country	Correct answer			Incorrect answer	No response	Total (in number)
	Boy student	Girl student	Total			
Japan (%)	82.9	79.3	81.1	18.7	0.2	659
Bangladesh (%)	10.0	6.8	8.4	86.2	5.4	203

QUESTION 3

The diagram shows a bar magnet which is cut into three pieces with a hacksaw. Write an "N" or an "S" in each box on the diagram to show the polarity of each end of the center piece.

Table 16 shows that 70% of Japanese students answered correctly where as 59% of Bangladeshi students answered correctly. But the girls' result is almost similar between Japan and Bangladesh.

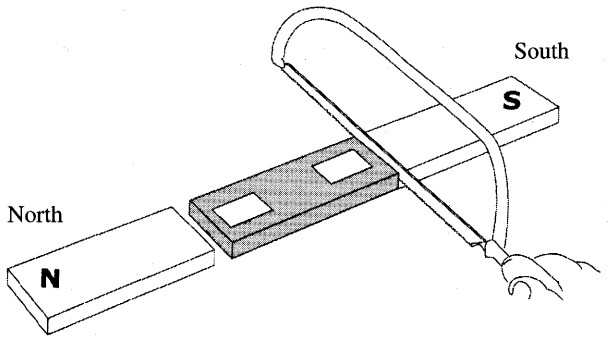


Figure 4

Table 16: Percentage of correct and incorrect answers to Q3

Country	Correct answer			Incorrect answer	No response	Total (in number)
	Boy student	Girl student	Total			
Japan (%)	71.8	68.6	70.3	29.6	0	643
Bangladesh (%)	50.0	67.0	58.6	23.6	17.7	203

QUESTION 4

The graph shows the progress made by a beetle moving along a straight line.

If the beetle keeps moving at the same speed, how long will it take to travel 10 cm?

In response to this question, 78.8% of the grade 8 student from Bangladesh had the correct answer whereas 94.1% from Japan had the correct answer. In the Table 17 it is described more clearly. Table 17 shows that, although the gap in the achievement level between Japan and Bangladesh is big enough but in case of the girl students it is almost similar.

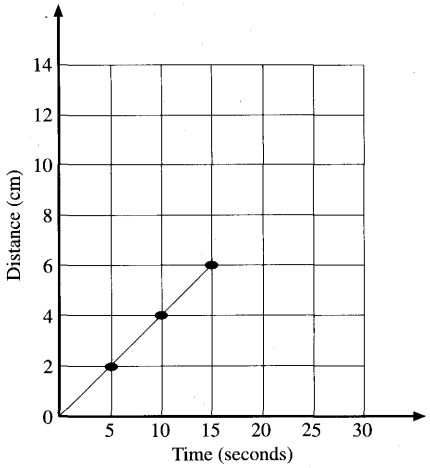


Figure 5

Table 17: Percentage of correct and incorrect answer to the Q4

Country	Correct answer			Incorrect answer	No response	Total (in number)
	Boy student	Girl student	Total			
Japan (%)	93.9	94.3	94.1	5.9	0	632
Bangladesh (%)	64.0	93.2	78.8	19.7	1.5	203

QUESTION 5

A candle is placed on a ruled grid in front of a mirror, as shown. At what point will the reflection of the candle appear to be? Table 18 shows that 84% of Japanese students answered the Q5 correctly whereas 51% of Bangladeshi students answered the Q5 correctly. The gap in achievement level is very high. From Q6 to Q12, comparison has been done between the students of Dhaka and outside Dhaka in Bangladesh.

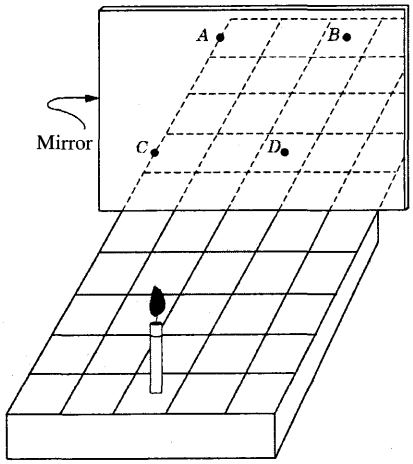


Figure 6

Table 18: percentage of correct and incorrect answer to Q5

Country	Correct answer			Incorrect	No response	Total (in number)
	Boy	Girl	Total			
Japan (%)	83.2	83.2	83.8	15.1	1.1	637
Bangladesh (%)	46	56.3	51.2	46.3	2.5	203

QUESTION 6

The diagram above shows a compass needle with its North and South poles labeled (N and S). It is placed next to a strong magnet as shown in the diagram below

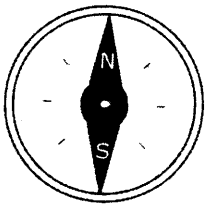


Figure 7

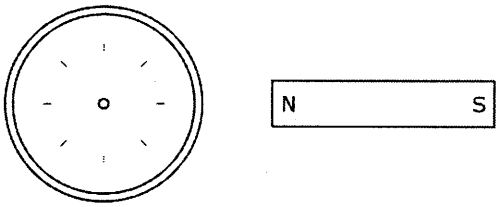


Figure 8

A) *Draw the compass needle in the circle on the diagram above. Label the North (N) and South(S) poles of the needle.*

Table 19 shows that gap in achievement level between the students of Dhaka and outside Dhaka is very high. From the school in Dhaka, the 88% students answered correctly whereas from out side Dhaka it is only 46%.

Table 19: Percentage of correct and incorrect answers between the students from Dhaka and outside Dhaka

District	Correct answer			Incorrect answer	No response	Effective Total (in number)	Total (in number)
	Boy	Girl	Total				
Dhaka (%)	96.7	78.5	88.1	10.2	1.7	58	59
Outside Dhaka (%)	46.4	45.3	45.8	18.1	36.1	92	144

B) *Explain your answer using your knowledge of magnets.*

Table 20 shows that gap in the achievement level between Dhaka (83%) and outside Dhaka (17%) is too high.

Table 20: Percentage of correct and incorrect answers between the students from Dhaka and outside Dhaka

District	Correct answer			Incorrect answer	No response	Effective Total (in number)	Total (in number)
	Boy	Girl	Total				
Dhaka (%)	80.6	85.7	83.1	11.9	5.0	56	59
Outside Dhaka (%)	18.8	16.0	17.4	28.5	54.2	66	144

QUESTION 7

The diagrams show a flashlight and three ways to put batteries in it.

In order to make the flashlight work, which way must the batteries be placed.

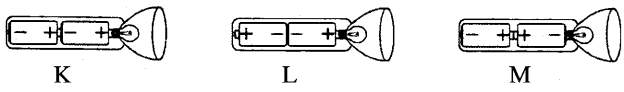


Figure 9

Table 21 shows that 100% students from Dhaka answered correctly whereas 79% students from outside Dhaka answered correctly.

Table 21: Percentage of correct and incorrect answers between the students from Dhaka and outside Dhaka

District	Correct answer			Incorrect answer	No response	Effective Total (in number)	Total (in number)
	Boy	Girl	Total				
Dhaka (%)	100	100	100	0	0	59	59
Outside Dhaka (%)	78.3	78.7	78.5	10.4	11.1	128	144

QUESTION 8

A wet towel will dry when it is left in the sun. Which process occurs to make this happen?

Table 22 shows that gap in achievement level between Dhaka (98%) and outside Dhaka (92%) is low.

Table 22: Percentage of correct and incorrect answers between the students from Dhaka and outside Dhaka

District	Correct answer			Incorrect answer	No response	Effective Total (in number)	Total (in number)
	Boy	Girl	Total				
Dhaka (%)	100	96.4	98.3	0	1.7	58	59
Outside Dhaka (%)	92.8	90.7	91.7	2.0	6.3	135	144

QUESTION 9

Mary was looking out her window on a stormy night. She saw lighting and then heard thunder a few seconds later. Explain why she saw lightning before she heard thunder.

Table 23 shows that the 86.4% students of Dhaka answered correctly to the Q9 whereas 68% students from the outside Dhaka answered it correctly. Gap is high between Dhaka and outside Dhaka.

Table 23: Percentage of correct and incorrect answers between the students from Dhaka and outside Dhaka

District	Correct answer			Incorrect answer	No response	Effective Total (in number)	Total (in number)
	Boy	Girl	Total				
Dhaka (%)	83.9	89.3	86.4	10.2	3.4	57	59
Outside Dhaka (%)	50.7	84.0	68.1	16.6	15.3	122	144

QUESTION 10

When a nail is pulled out of a wooden board, the nail becomes warm. Explain why?

Table 24 shows that gap in achievement between Dhaka (85%) and outside Dhaka (49%) is very high.

Table 24: Percentage of correct and incorrect answers between the students from Dhaka and outside Dhaka

District	Correct answer			Incorrect answer	No response	Effective Total (in number)	Total (in number)
	Boy	Girl	Total				
Dhaka (%)	96.8	71.4	84.7	8.5	6.8	55	59
Outside Dhaka (%)	29.0	66.7	48.6	24.3	27.1	105	144

QUESTION 11

The diagram on the left shows a ball on the end of string being whirled in a circle. The diagram on the right shows the whirling ball as viewed from above.

After several whirls, the string is released when the ball is at Q. which of these diagrams shows the direction in which the ball will fly the instant the string is released?

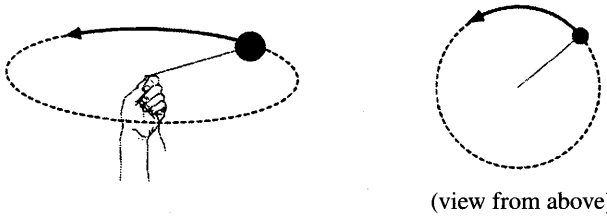


Figure 10

Table 25 shows that achievement level of both the students of Dhaka (56%) and outside Dhaka (41%) is low.

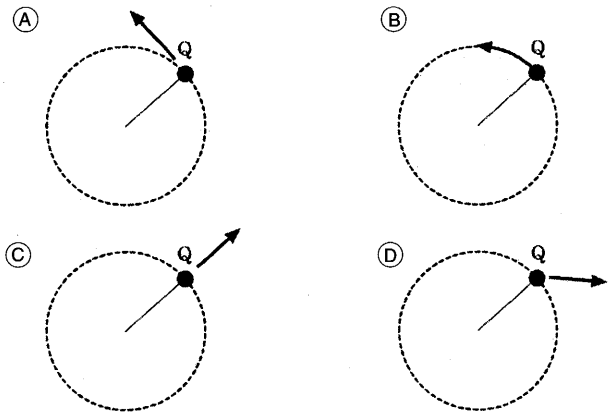


Figure 11

Table 25: Percentage of correct and incorrect answers between the students from Dhaka and outside Dhaka

District	Correct answer			Incorrect answer	No response	Effective Total (in number)	Total (in number)
	Boy	Girl	Total				
Dhaka (%)	77.4	32.1	55.9	42.4	1.7	58	59
Outside Dhaka (%)	30.4	50.7	41.0	47.9	11.1	128	144

QUESTION 12

The scientists then needed to find the volume of the crown in order to determine its density. The following equipment and materials were available for them to use.

Describe a procedure that the scientists could use to find the volume of the crown using some or all of the equipments

and materials shown above. You may use diagrams to help explain your procedure.

Table 26 shows that gap in achievement level between Dhaka (56%) and out side Dhaka (4%) is very high. Any boy student from outside Dhaka couldn' t able to answer correctly to the Q12.

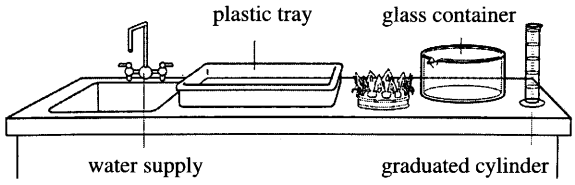


Figure 12

Table 26: Percentage of correct and incorrect answers between the students from Dhaka and outside Dhaka

District	Correct answer			Incorrect answer	No response	Effective Total (in number)	Total (in number)
	Boy	Girl	Total				
Dhaka (%)	77.4	32.1	55.9	28.8	15.3	50	59
Outside Dhaka (%)	0	8.0	4.2	40.2	55.6	64	144

6. FINDINGS AND DISCUSSION

From this research, there are some very important findings which can be used for the development and reform of the science education in Bangladesh.

1. Attitude of the grade 8 students of Bangladesh towards science is positive than Japan. If we look at the responses of attitude related Q1 we can see the grade 8 student of Bangladesh like the science than Japanese grade 8 student. Why do Bangladeshi student like science than Japanese students? We didn't investigate the reason. It is unusual that someone like science but his/ her achievement in science is worse than who don't like science that much. Answer to this question needs more study on the topic. But in general it can be said that, achievement is related to the quality of education. As quality of science education is low in Bangladesh. Lack of trained science teacher, lack of scientific lab facilities etc can be added to the reasons whereas Japanese education system is one of the best education systems in the world. They emphasize on the practical work, observation and learning by doing things in science education which is not there in Bangladeshi science education. Next, if we look at the responses of the attitude related Q2 we can see that Bangladeshi grade 8 student agreed with necessity of science in daily life than Japanese grade 8 student. Again the responses may be bit strange. But as we know Japan is scientifically and technically very high level society whereas Bangladesh is just opposite. In Japanese case students are looking at blessings of science as very usual things. For example there is no black out in Japan. So student don't think electricity is the blessing of science. But in Bangladeshi case, almost everyday black out is there. And most of the places of the country are still out of electricity. So students think that, electricity is very necessary and it is a gift of science.
2. Experience of Bangladeshi grade 8 students in temperature measurement is not enough. If we look at the Bangladeshi school system, there is not enough scope for practical work and observation in science especially up to grade 8. From grade 9 there is practical class although not enough and also have a lot of problem such as lack laboratory, equipments etc.
3. In most cases, the average achievement of Bangladeshi grade 8 students is lower than international student.
4. The achievement of grade 8 girl students is better than boy students. But in general case, the picture is just opposite that means the achievement of girl students is not better than boy students. If we look for the reason why the result in this study is just opposite the usual picture. One reason is the quality of the school selected for the study. Quality of Girls' school is better than the Boys' school in this study. And also girl students are coming up day by day as various steps such as Female Stipend Project is taken by the Government and Non Government Organizations. Another we can understand from this result that there is no problem in ability to study science for girls which is kind of answer to the conventional thinking that girl student are not eligible for the science. Girl student can also perform well if the good environment or the study is provided.
5. From Q6 to Q12 comparison has been done between Dhaka and outside Dhaka. We can see the big difference in achievement level between Dhaka and outside Dhaka. Achievement level of the grade eight students of Dhaka city is international standard. But the problems in science education are mostly in rural area. In case of Q 12 achievement level of the students from outside Dhaka is very poor. Even the achievement level of the students from Dhaka is also not good. Q12 is from the topic forces and motion and reasoning and analysis domain. So we can say that students of Bangladesh regardless of urban and rural are week in reasoning and analysis.

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7. RECOMMENDATION:

Some valuable recommendation has been given based on this study.

1) As the scientific attitude of grade 8 student of Bangladesh is very positive, Government can take effective policy such as practical work based curriculum to develop science education. The policy taken will be easy to implement as the attitude of the students are positive.
2) Heat and temperature section should be made clear to the student in the curriculum.
3) Emphasis should be given on the reasoning and analysis of the problem. So the science curriculum should not be only knowledge oriented. From primary level curriculum should be observation and experiment based so that students can improve their reasoning and analysis skill.
4) Government should try to include Bangladesh in the TIMSS study. Now there are 50 countries included in the TIMSS study. So Bangladesh should also be included in the TIMSS without making delay.
5) As the achievement of the girls are better than boys, initiative should be taken by the Government to remove the social and other barrier for the girls to study science and ensure the same environment for studying science for both boy and girl student.

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