

『国際理数科・理科教育動向調査 (TIMSS) 方法を用いたバングラデシュ人民共和国における
小中学校の学力調査の考察』—日本における調査結果との比較と検討を中心に—

(A Study of Educational Achievement of 4th Grade and 8th Grade Students of Bangladesh in
Science Using TIMSS: Comparison with Japanese Average)

教科・領域教育専攻：自然系 (理科)コース

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Introduction

Bangladesh is the world most densely populated country. It has only 147,000 square kilometer of land and approximately 140 million of populations ¹⁾. The resources are very much limited compare to other countries. For instance, almost 839 people live only in 1 square kilometer. Bangladesh has very large primary education system. Total number of primary schools is 77,164 ²⁾ and total number of primary school teachers is 326,369 ²⁾ of which 39.5% are female. The total number of Bangladeshi primary school teachers is more than the population of the Maldives which has 0.3 Million of population. The total number of primary school students is 17,953,300 ²⁾ of which girl students are 49.6%. However, the main problem of Bangladesh education system is more specifically the quality of primary education system. Today, government-supported primary schools in Bangladesh have serious problems related to its quality of education ³⁾.

Situation of the science education is not overall fine in Bangladesh. Government should emphasize more on science education for the future development of the country. The future of the country depends not only on how the children are educated generally, but on how well they are educated in science specifically.

Globalization is forcing every country for better performance in every sector. Among all, science education will play the major role for the development of especially the densely populated country like Bangladesh. Bangladesh government has to take further initiative for improvement of science education. That's why government should facilitate the research mostly related to science education.

Significance of this study

TIMSS (Trends in International Mathematics

and Science Study) ⁴⁾ is designed to help countries all over the world improve student learning in Mathematics and Science. Approximately 50 countries are participating in TIMSS. Bangladesh is not still in the list of these 50 countries. Using TIMSS, Bangladesh can improve their science and mathematics education. Therefore, as a pioneer effort this study has done with some limitations.

Research Objectives

The objectives of this study to know the level of the Bangladeshi 4th and 8th grade students in science course with comparison to Japanese average using science test items (released) of TIMSS 2003.

Research Method

The methodological framework of this study draws from cognitive domain of the science curriculum for the gathering and analysis of data. This study specially has been focused on the physical science area in 4th grade and physics area in 8th grade. TIMSS 2003, items have been used for this study. 15 items from the physical science area have been taken for the 4th grade and 13 items for the 8th grade. The data have been collected from 182 students of 4th grade and 180 students of 8th grade. For conducting the research, Bengali version test items have been made for the selected part of the TIMSS 2003.

Results and discussion

In 4th grade, Bangladeshi averages are lower in factual knowledge (56.8%), conceptual understanding (37.65%), reasoning and analysis (17.7%) than both Japan and International average. From this data, it can be understood that Bangladeshi primary students are mostly

weak in reasoning and analysis and secondly in conceptual understanding. It reflects the Bangladeshi rote learning curriculum. If we look at the performance trends in all the domains, trends are the same for Bangladesh, Japan and International average. But difference in the performance is higher in reasoning and analysis for Bangladeshi grade 4 students.

In junior secondary level, Bangladesh performance is quite astonishing comparing to that of primary level. Performance of Bangladesh (89.15%) in factual knowledge is almost similar with Japan (93.45%) and International average (83.95%). In conceptual understanding, picture doesn't change a lot. Bangladeshi average is 63.32%, whereas Japanese average is 72.1% and International average is 52.08%. But in the reasoning and analysis, difference between Japan (65.48%) and Bangladesh (40.67%) is big but international average (39.62%) is almost similar. From this result, we can understand Bangladeshi students are weak in reasoning and analysis. Performance trends in the three domains are same for Bangladesh, Japan and International average.

Recommendation

The Bangladeshi students are weak in reasoning and analysis. The reasons for these lie in the science curriculum, textbook and teaching method. Bangladeshi science textbook and curriculum are full of contents and difficult for the students to understand higher level knowledge. Teachers don't use the student centered method while teaching. There is almost no experiment and observation in the both elementary and junior secondary level. Therefore, improvement of science curriculum, text book and teaching method is recommended in this study. Non science topics should be deleted from the curriculum. Contact hours for science teaching should be increased. Teaching method should be experiment and observation oriented.

Conclusion

This study indicates the problems of Bangladeshi grade 4 and grade 8 students in science education. We can now understand the stan-

dard of 4th and 8th grade students of Bangladesh with compare to Japan and International Average. We are able to suggest some important steps for the further improvement of the Bangladeshi science education which was one of the objectives of this research

We found contrast in achievement between the students of 4th and 8th grades. The achievement of 8th grade students was much better than that of 4th grade students. The reason behind it lies in the difference in enrollment of the students for primary and junior secondary. As government's priority and increased focus on primary education since the 1990s the enrolment of pupils in the primary school increased significantly⁵⁾. Increase in quantity does not necessarily decrease the quality. But in case of Bangladesh, quality decreases with the increase in quantity. Moreover, only half of the primary graduates enter in the junior secondary schools. In general it can be said that the enrollment is reason behind the reason. However more research can be done about the quality of primary and junior secondary education.

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