

**A COMPARATIVE STUDY OF MATHEMATICS CURRICULUM
AT PRIMARY LEVEL
IN BANGLADESH AND INDIA (WEST BENGAL)**



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mathematics curricula all over the world. Many countries have reformed their mathematics programmes to keep pace with the current developments in various fields of education and technology. Any attempt at reform would take into account local conditions which can vary from one country to another. Nevertheless, reform in all countries finds common difficulties which can be overcome by using the same methods (Aram, 1986).

The Universality of the teaching of mathematics is a recognized fact. Perhaps no other subject is taught so universally as mathematics and the syllabi, methods and objectives of teaching this subject are quite similar in different countries of the world. The nature of the subject is such that it would easily lend itself to the promotion of inter-cultural understanding.

It is felt that to understand the nature of primary mathematics curriculum in Bangladesh and India; it would be very helpful to give a brief description of the education system in Bangladesh and India.

Education System of Bangladesh

The formal education in Bangladesh begins with 5-year primary education which is followed with 3-year lower secondary (junior high school), 2-year of secondary and 2-year of higher secondary education. The University education comprises of 3 / 4-year Bachelor degree followed by 1 / 2-year Master's.

The task of reviewing and redesigning primary curriculum was initiated in 1986. The competency based curriculum was designed and developed and instructional materials were prepared during 1987 to 1990. The new curriculum was introduced in primary school from 1992 (BNCTB, 1988). The prevalent curriculum in grades 1 and 2 include Mother Tongue Bengali, Mathematics, Environmental Studies, Religions Education and Arts and Crafts. Along with these subjects English, Social Studies and Science are compulsory subjects in grades 3 to 5.

Education System of West Bengal of India

The formal education in India begins with 5-years primary education which is followed by 3-year middle, 2-year of secondary and 2-year of higher secondary education (Aggarwal, 1993). Primary schools are, by and large, co-educational. Higher education is provided in universities and colleges. Technical and professional courses range from three to five years for a first-degree course and two to three years for the post degree course.

As per the recommendation of the Education Commission (1964-1966), State Government restructured the educational pattern of 10 + 2 + 3 system. In West Bengal, the elementary education consists of 5 years of schooling from grades I-V followed by Jr. High or Upper Primary Education from grade VI-VIII provided in all Jr. High, Secondary and Higher Secondary schools (Government of West Bengal, 1999). The medium of instruction is mother tongue and one-single language (mother tongue) has been prescribed for study at primary level.

Rationale of the Study

The primary education is the foundation of any education system. Mathematics is one of the courses of basic education which is delivered mainly through primary education. Primary mathematics curriculum should therefore be developed keeping in view, the needs of the learners and their society. Quality of mathematics education always depends on the curriculum and its implication in any country.

The aim of mathematics education cannot be confined only to the knowledge and skill necessary for everyday life. Knowledge and skill of mathematics are pre-requisites for learning other important subjects (Sho, 1997). Developing logical thinking with interesting mathematical activities should be also one of the aims of primary mathematics education. By summing up these, one can say that aim of mathematics education at primary level could be

- (i) imparting knowledge and skills,
- (ii) developing logical and rational thinking,
- (iii) application of mathematical knowledge in day-to-day life.

The extent to which these aims are imparted through curriculum in any country is a major question! The detailed study of mathematics curriculum at primary level in any country would answer this question. Comparison of mathematics curriculum at primary level will enable the researcher to study the extent to which above aims are included in the primary mathematics curriculum in Bangladesh and West Bengal of India and transmitted in schools at primary level. The related literature throws light on gaps existing in primary education and poor qualities of curriculum and its implication in Bangladesh. Standard of education depends on the standard and effort of the teachers and teachers' performance depend on standard curriculum (Roy, 1986).

Bangladesh, like other nations, felt the need to modify the existing education system to improve the quality of education. With this felt need, different Educational Commissions and Committees were formed. Finally, competency based curriculum was introduced from 1992 (BNCTB, 1988) starting from grade I-V. Curriculum renewal and development is an ongoing process and no nation can afford to neglect this matter. The curriculum must meet the learner's needs, societal expectations, community aspirations and international comparisons. Bangladesh Education Commission's report (1974) suggested for continuous evaluation and research in the field of curriculum materials.

The Government of Bangladesh brought about a reform in the curriculum and syllabus of primary education through the BNCTB which has already been put into practice. But no systematic attempt has so far been made to bring qualitative improvement in primary education through curriculum research, specifically in the area of primary mathematics curriculum. Hossain and Jahan (2000) pointed out some of the major deficiencies in curriculum development in Bangladesh which include:

- (a) lack of professional expertise in the development of modern curriculum, both in the BNCTB and nationally;
- (b) lack of a solid research base providing assessment information about the previous curriculum and the areas needing revision; and
- (c) insufficient curriculum emphasis on such competencies as understanding, comprehension and application.

In the absence of any empirical study on primary school curriculum in Bangladesh, it has not yet been possible to evaluate the effectiveness of the existing mathematics curriculum as prescribed by the BNCTB. Even the facilities for implementing the mathematics curriculum in the primary schools of Bangladesh are not known due to lack of systematic research. Whereas various research studies in India have been conducted and reported that learning achievement of primary school children in general and mathematics in particular is far from satisfactory (Das, 2000). In the age of science and technology, a strong base of mathematics is absolutely necessary for all. Therefore, how to develop the basic mathematical competencies among young children is a strong need felt by teachers, researchers and educators.

Periodical revision and reform of curriculum and syllabus must be carried out to make it need centred for the children of the country, to achieve the national goals and for the contemporary world, and at the same time all possible measures have also to be taken for its proper implementation. Implementation of curriculum at the primary schools in



Bangladesh and West Bengal of India and its study is of vital importance in determining the effectiveness of the mathematics curriculum and the quality of primary education in these countries.

Documents of national policy of education and review of related literature tell that Bangladesh needs to improve the quality of education by modifying the curricula at all levels. For the sake of improvement in quality of Education, Bangladesh cannot adopt ready-made ideal curriculum and education system from any other developed country because the differences of cultural and social aspects of both these countries would lead to failure of the system due to blind imitation. If at all Bangladesh wants to follow or borrow something good as a sample of education system for the sake of better quality of education, she must look into similarities of the culture, language and other aspects of that system from which educational ideas could be borrowed for the better quality of education.

By exchanging information and experience, pooling expertise, sharing facilities, and undertaking joint activities, several countries, working together, can increase their resource base and lower costs to their mutual benefit. Such arrangements are often set up among neighboring countries (sub-regional), among all countries in a major geo-cultural region, or among countries sharing a common language or having cultural and commercial relations. Regional and International organizations often play an important role in facilitating such co-operation between countries (WCEFA, 1990). However, of late there has been more attention to mathematics programmes which are based upon the needs and cultures of the ethnic mixes found in most countries. First looking at UNESCO, most of UNESCO's work is directly with the governments of its Member States, and the mathematics education programme is no exception. Upon request, the mathematics education specialist from UNESCO works with the ministry of education, advising and providing information. UNESCO's principal emphasis on mathematics education has been to promote the exchange of information, to work nationally, and to co-operate with regional and international groups (Jacobsen, 1996). This, in turn, will help the system to lift up the quality of education.

Now looking to the fact that the sharing of Bangla, by Bangladesh with parts of the India – offer both possibilities and challenges for cooperation among people in education and culture – in literacy field as well as in substantive study of science, social science and humanities. Bangladesh is known to use Bangla in its judicial and perhaps educational system to a much greater extent than in Indian West Bengal – and the latter is said to be

studying the former (Bhattacharya, et.al., 1993). The Dhaka declaration (December 1985), as it came to be called, underscored the historic significance of the first ever summit meeting of the South Asian Countries and described it as a tangible manifestation of their determination to cooperate regionally, to work together towards finding solutions to their common problems in a spirit of friendship, trust and mutual understanding and to the creation of an order based on mutual respect, equity and shared benefits (Bhattacharya, 1995). Bangladesh and West Bengal of India, is not only a distinct entity in geo-political terms but also shares common historical, cultural, religious and linguistic heritage. Not only that India and Bangladesh have many agreements to their credit to foster all round ties between the two countries but they also share democratic relations and are sharing many common policies in world affairs.

In this context, it is of great importance to study and compare mathematics curriculum at primary level of both the countries. This, in turn, will help the researcher to spell out the positive strong points of curricula of both the countries. Such research work will help to give answers to questions raised regarding the achievement of goals of primary mathematics education in context of the present needs of the society, existing gaps of the education system of Bangladesh and West Bengal of India in terms of curriculum design and its implementation and suggestions to modify the primary mathematics curricula if needed for better quality of education and to satisfy aims of the primary education. Such comparative study will help to identify strong positive and negative points existing in curricula of both the countries that will further enable to give suggestions for modification of primary mathematics curricula of Bangladesh and West Bengal of India.

Therefore, a comparative study of the primary mathematics curriculum in Bangladesh and West Bengal of India would be of great value, because on the basis of such a study, an insight will be developed into existing scenario and issues related to mathematics curriculum which in turn would guide for appropriate plan of action which may be undertaken for the implementation of a good quality primary mathematics education.

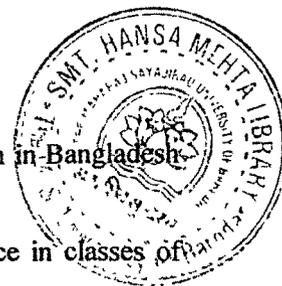
Statement of the Problem

“A Comparative Study of Mathematics Curriculum at Primary Level in Bangladesh and India (West Bengal)”.

Objectives of the Study

The objectives of the study are to

- (1) Critically examine the mathematics curriculum for primary education in Bangladesh and West Bengal of India.
- (2) Identify the teaching process of primary mathematics that take place in classes of Bangladesh and West Bengal of India.
- (3) Identify the problems and obstacles in transacting primary mathematics curriculum in classroom situation in Bangladesh and West Bengal of India.
- (4) Identify the major strengths and weaknesses of the primary mathematics curricula of Bangladesh and West Bengal of India.
- (5) Compare the primary mathematics curriculum of Bangladesh with that of West Bengal of India with respect to
 - a. teaching processes in classes.
 - b. problems and obstacles in transaction of curriculum in classroom
 - c. strengths and weakness of the curriculum.
- (6) Provide specific suggestions for revision and modification of primary mathematics curriculum of Bangladesh and West Bengal of India.



Plan and Procedure of the Study

In order to realize the stated objectives, a survey was planned to collect the data from different sources of the primary schools of Bangladesh and west Bengal of India. Two types of data were collected - qualitative and quantitative to attain the objectives of the study; with the help of following tools.

Tools

The investigator developed the tools, such as two questionnaires, one for the primary school mathematics teachers, the other for the academic supervisors, one opinionnaire for the experts (curriculum and subject specialists), and an observation schedule. All these constructed tools were given to group experts of both the countries to judge the adequacy and appropriateness of items of the tools in the context of the study. As per comments of the experts the tools were further modified to conduct the pilot study.

These modified tools were given to the respondents of parallel categories of Bangladesh and West Bengal of India to confirm whether the items of the tools are understood properly by the respondents or not.

As per responses, the researcher had checked the language ambiguity and finalized the items of the tools.

Data Collection

The data mainly collected through (i) documents (ii) observations in real classroom situations and (iii) responses obtained through questionnaire and opinionnaire given to the mathematics teachers, academic supervisors, and experts (curriculum and subject specialists) from both the countries.

For achieving objective one, documents / reports and textbooks were referred. For achieving objectives 2 to 4, 240 mathematics teachers (120 from each country), 120 academic supervisors (60 from each country), 12 curriculum specialists (6 from each country), 8 subject specialists (4 from each country) and classroom observations (24 primary schools, 12 from each country) were considered as the sample.

Data Analysis

The data collected were classified and tabulated. Quantitative and Qualitative technique techniques of analysis have been used in order to arrive at the findings of the study.

Major Findings

- The set of objectives of mathematics curriculum considered by West Bengal Board of Primary Education (WBBPE) is larger, more comprehensive and maintain the logical order of presentation than the set of objectives prescribed by Bangladesh National Curriculum Textbook Board (BNCTB). Also, it is found that the set of objectives prescribed by WBBPE focus on higher level cognitive development of pupils while similar objectives focusing on higher level ability are absent in the list of objectives prescribed by BNCTB. But none of these sets of objectives are at par with the standard set of objectives as prescribed by the experts of RCDICMDCA.
- Five learning areas such as 'number and numeration', 'four fundamental operations', 'day-to- day life problems', 'pictorial representation of data', and 'geometry' are common areas included in the textbooks of both countries for grades I to V. The content related to 'manipulation of concrete objects and counting' is more emphasized and spirally distributed (in grads I to III) in the textbooks prescribed by BNCTB while manipulation of counting is not highlighted

in the textbook of WBBPE even though the topics related to counting numbers are present in the text books of West Bengal.

- Introduction to each topic in the text books of WBBPE is made more interesting than that of BNCTB.
- More pictures, diagrams, graphs, tables are included and labelled in better way in the textbooks of BNCTB than that of WBBPE.
- More barriers are found in Bangladesh compared to West Bengal for in-service training programme. Teachers from Bangladesh (73%) and West Bengal (33%) opined that one of the main barriers is 'shortage of mathematics teachers in the schools'.
- By and large, use of teaching aids is more by the teachers of West Bengal in respective contents as compared to teachers of Bangladesh.
- The most commonly used teaching method is the problem-solving method used by almost all teachers of both countries followed by the question-answer. In this regard, West Bengal teachers used 'Problem-solving' and 'question-answer' more than that of Bangladesh teachers
- The daily lesson plan used more by the teachers of West Bengal (72%) for teaching mathematics than that of teachers of Bangladesh (54%). A vast majority of the teachers from both countries report that they prepare lesson plan and annual plan which was written formally as well as non written.
- Teachers and pupils related problems were found more in Bangladesh classrooms than that of west Bengal. There are similar type of problems in classrooms of both countries like insufficient use of teaching aids, lack of mastery in conceptual understanding of mathematics subject by the teachers, irregular attendance of learners and inappropriate teacher-pupil ratio. In addition to these common problems of both the countries, in Bangladesh, problems were found in mathematics classes like 'shortage of trained teachers', 'insufficient number of writing materials for pupils', and 'difficult content in mathematics textbook'. In West Bengal classrooms problems such as teachers have no clear understanding regarding the objectives of mathematics teaching, mathematics syllabi and evaluation procedure were also prominent.
- It was found that the human and non human resources have direct impact in process and product of mathematics teaching of both countries

- In-service training facilities are found more in West Bengal than that of Bangladesh.
- In both the countries, it was found that the content-areas of mathematics textbooks reflected the socio-cultural aspects of the respective country. The textbooks of both the countries differ in terms of representation of such socio-cultural aspect only in terms of organizations of such content at different levels at primary stages for grades I to V.
- It was found that all teachers and pupils from both countries use mathematics textbook during teaching-learning process in the classroom.
- It was observed that on average 71.8% mathematics teachers in the schools of Bangladesh did not summarize the lesson while teaching. On the other hand, it was found that 86.6% mathematics teachers in the schools of West Bengal summarized the lesson at the end of the class through questioning and problem solving while teaching.
- Strengths of mathematics curriculum of both the countries are: skill development in mathematics, suitable content-areas distributed spirally grade-wise (in the textbooks), content integration with socio-cultural aspects and sequencing the content from concrete to abstract with appropriate evaluation procedure
- Weaknesses of mathematics curriculum of both the countries are: word problems, inadequate number of teaching aids used and classroom highly crowded in the urban areas

