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## A Survey of Prescribed Activities in NCERT and PSEB Geometry Text Books Actually Being Practised In Schools of Punjab.

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### ABSTRACT

In modern societies the world over, there is a strong emphasis on the provision of good quality Science, Technology and Mathematics (STM) education. Mathematics plays a pivotal role in STM education. Mathematics enhances creative and logical reasoning about problems in our inherently geometric world. Students' mathematical competencies have been closely linked to their levels of geometric understanding. Various studies have documented that many students encounter difficulties and performed poorly in both middle and high schools geometry classrooms. Data from various studies indicate that the performance of Indian high school students in mathematics is mediocre. This suggests that students lack higher order thinking skills. The average Indian achievement in geometry is unsatisfactory. Moreover, researches show a decline in students' motivation toward mathematics. Among the variables that affect student learning, researchers have suggested that the teacher has the greatest impact on students' motivation, mathematics learning and the primary source for justifying instructional decisions noted by the teachers was textbooks.

### INTRODUCTION

Achievement in Science, Technology and Mathematics (STM) are increasingly

recognised as one of the most reliable indicators for measuring socio-economic and

geo-political development among nations (Justina, 1991). Thus, today, in modern

societies the world over, there is a strong emphasis on the provision of good quality

STM education (Igbokwe, 2000). Mathematics plays a pivotal role in STM

education: as Azikiwe puts it, "mathematics is the bedrock of science while science is the necessity for technological and industrial development" (Betiku, 1999). Mathematics enhances creative and logical reasoning about problems in our inherently geometric world (Clements & Battista, 1992). Students' mathematical competencies have been closely linked to their levels of geometric understanding (van Hiele, 1986; French, 2004). Various studies have documented that many students encounter difficulties and performed poorly in both middle and high

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schools geometry classrooms (e.g., Fuys, Geddes, & Tischler, 1988). Usiskin (1982) has found that many students fail to grasp key concepts in geometry and leave their geometry classes without learning basic terminology. Moreover, research shows a decline in students' motivation toward mathematics. According to Billstein and Williamson "declines in positive attitudes toward mathematics are common among students in the middle school years": Among the variables that affect student learning, researchers have suggested that the teacher has the greatest impact on students' motivation and mathematics learning. Burger and Shaughnessy (1986) claim that the quality of instruction is one of the greatest influences on the students' acquisition of geometry knowledge in mathematics classes. The students' progress from one reasoning (van Hiele) level to the next also depends on the quality of instruction more than other factors, such as students' age, environment, and parental and peer support (Fuys et al., 1988). The primary source for justifying instructional decisions noted by the teachers was textbooks. The National Curriculum Framework (NCF), recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home and community. NCF recommends that text book should discourage rote learning and should lay emphasis on activity based learning in the classroom. Critical evaluation of the NCERT primary mathematics series revealed lot of shortcomings in curriculum design and materials i.e. lack of child

centeredness, mismatch between tasks, objectives and operational age, non appropriate strategies for communication, overambitious course, lack of alternative strategies etc. (Sarangapani).

## 2 OBJECTIVES:

1) To identify the activities presented in geometry text books of PSEB and NCERT taught at different grade levels.

2) To identify the extent to which the prescribed activities in the text are actually being practised in the classrooms.

## 3 SAMPLE:

Sample of the study was 200 class ninth students. Ten districts of Punjab were randomly selected from existing twenty districts. Then from each of these selected districts five schools affiliated to C.B.S.E and five schools affiliated to P.S.E.B were selected. From each of these selected schools about two students of class ninth were taken for the data collection. Feedback Performa was administered on them to judge whether activities prescribed in their text books were being actually practiced or not.

## 4 TOOLS & TECHNIQUES

Feedback Performa: Feedback Performa was prepared by researcher himself to check whether the activities presented in the ninth class mathematics text books were actually being practiced or not. This Performa consisted of six questions out of which three were of objective type and three were of short answer type. All these questions were based on the activities presented in the ninth class mathematics text books. Two separate

Performa's were prepared for both CBSE and PSEB affiliated schools. The time allotted for filling this Performa was thirty minutes.

## 5 METHOD /PROCEDURE

In the present research, researcher analyzed the geometry text books of NCERT and PSEB from classes 6th to 10th to identify the activities presented in geometry text books. Researcher selected NCERT and PSEB text books because majority of the schools in the Punjab are affiliated to the PSEB and CBSE boards and these boards prescribe these text books. In order to find out whether activities prescribed in the text books were being actually practiced or not Feedback Performa was administered on two ninth class students of the selected schools.

## 6 ANALYSES

First objective of the study was to identify the activities presented in geometry text books of PSEB and NCERT taught at different grade levels. For the achievement of this objective the geometry text books of NCERT and PSEB from classes 6th to 10th were analyzed and it was found that

activities are proposed higher in the NCERT text books than PSEB text books. Table 6 represents the number of activities being prescribed by these text books in different grades. Highest activities are proposed for class 6th for both NCERT and PSEB text books. For NCERT minimum activities are proposed for class 10th whereas for PSEB it is for the class 8th.

Second objective of the study was to identify the extent to which the prescribed activities in the text are actually being practised in the classrooms. For fulfilling this objective %ages of the schools were calculated in which the prescribed activities were being practised. It was found that only 15% of PSEB affiliated schools and 27% of CBSE affiliated schools actually practised the prescribed activities in the text books.

## 7 DISCUSSIONS:

From the table 6 it is evident that the number of activities in NCERT text books are more than PSEB text books. Also the number of activities decreases as the grade increases in the NCERT text books. Moreover in the PSEB text books the number of activities in grades 8th and 10th

Table.6:

Table 6 Proposed activities in the text

BOARD	CLASS 6	CLASS 7	CLASS 8	CLASS 9	CLASS 10
NCERT	49	27	38	21	10
PSEB	20	17	3	7	4

are very less. This reveals that NCERT text books are better than PSEB text books in terms of prescribed activities.

## 8 IMPLICATONS

Data from various studies indicate that

the performance of Indian high school students in mathematics is mediocre. This suggests that students lack higher order thinking skills, which may be related to the Van Hiele levels of the thinking. The average Indian achievement in geometry is

unsatisfactory. Since the text is an important instructional tool in Indian classrooms, this text analysis might have implications for ways in which to improve this unsatisfactory performance of Indian students. Perhaps the most significant implications of this study of text series lie in the area of suggestions for design and revision of geometry text materials. Textbook authors are, of course, under severe restrictions when it comes to writing geometry material. Only a set number of pages can be devoted to the geometry strand, and the nature of printed page makes certain types of manipulative explorations and discovery learning difficult. A text page can only suggest, but not dictate, use of a manipulative material. Even if an author would like to have students discover and formulate properties, there is a need to have a text summarize results, and students may easily learn how easy it is to look ahead for the answer to a challenge. Perhaps these considerations suggest that teachers should look beyond a text for geometry instructional materials, to activity cards, or sequenced worksheets. However, even within the context of a textbook, this text analysis does provide suggestions for textbook authors who wish to develop curriculum materials which are more consistent with the van Hiele model of thinking in geometry.

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