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Instructional Strategies: Perceptions and Impressions of Upper Primary Mathematics Teachers

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ABSTRACT: Instructional strategies are different methods which are used to impart the subject matter. It has a pivotal role in exchanging the content and knowledge as it is the bridge that connects teachers and pupils. So it is very important to select the instructional strategies in accordance with the demands of the subject material. Mathematics is an alluring subject which starts with easy arithmetic and moves on to abstract ideas. A teacher in Upper Primary class should be intelligent enough to use a wide range of instructional strategies to make the students innovative and interesting in learning. This paper inquires about the teachers' relative use of prevailing instructional strategies that can enhance Mathematics learning. This paper is also to find the impressions of upper primary Mathematics teachers in taking up new strategies. The present study was conducted on 45 Upper Primary Mathematics teachers of Kozhikode district. A semi structured interview schedule was used to collect the data. The study reveals that teachers are much aware of the prevailing instructional strategies and time constraint is found as the most important reason behind the reluctance of teachers to experiment with new strategies.

Keywords: Instructional strategies, mathematics learning & Upper Primary Mathematics teachers.

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I. INTRODUCTION

Instructional strategies have a greater role in imparting instruction. There are various considerations which may influence a teacher in taking up a specific instructional strategy. As Duffy (1982) says, "Strategies are the secret algorithms of learning". It depends on different aspects like strength of the class, syllabus, subject matter, teaching ability and time schedule.

Many new ideas and concepts are introduced in the upper primary Mathematics classes under the Kerala State syllabus. Angles, Ratios and proportions, Area and volume of triangles and quadrilaterals, basics of statistics, repeated multiplication, algebra etc. are some of the new concepts which students come across in their upper primary classes. These are the major concepts which make them proficient in higher classes. These concepts are varied in their nature. Some concepts can be well learnt through group learning, some through activity learning, some through lectures and others through experiments and so on. So, it will be improper to teach each and every concept using the same method of teaching.

Instructional Strategies

Mathematics learning has got greater importance in the educational process of a child in upper primary classes. It paves the foundation for a child to build greater knowledge in his higher Mathematics education. A child should have some skills like inferencing, thinking, visualizing, questioning and structuring to learn Mathematics. So, a Mathematics teacher should be capable of satisfying all these needs of a student. Attempting different modes of Instructional strategies will certainly prepare the students to become more enthusiastic and innovative in the subject. Mere usage of a single strategy will make the class mundane.

Different theories contributed to innovative learning strategies so as to make the learning interesting. Generally mathematics is said to be dull and tedious subject. Chel (1990) says, to make the Mathematics class enthusiastic, teachers should motivate and remove the fear of Mathematics. Moreover teacher should clearly present the subject as per the needs of the students. Thus, Mathematics teaching and learning demands varied instructional strategies to enhance the students' cognitive capacities to learn newer concepts. Varied learning experiences have to be provided to students so as to make abstract ideas concrete.

Important Instructional Strategies Used in Mathematics Teaching

Instructional strategies generally refer to the principles, pedagogy and strategies used for instruction. Teachers are supposed to provide good learning atmosphere and experience while teaching Mathematics. They should suffice the needs of backward students, normal students and child prodigies.

Teaching theories primarily fall into teacher-centered and student-centered approaches. Student centered approach is considered to be the best way for effective participation of students. Innovative ways of teaching can be practiced in Mathematics class also so as to improve teaching as well as learning quality. Some of the strategies that are used in Mathematics class are Direct Method, Issue Based Approach, Computer Assisted Learning, Assignments and Projects, Activity Oriented Learning, Co operative Learning, Drill and Practice and Problem Solving Method. Relative use of these instructional strategies among upper primary Mathematics teachers is probed in this study.

Objectives of the Study

There are numerous instructional strategies that are used and practiced in classrooms all over the world. In this study, researcher has enquired about the awareness of teachers regarding certain instructional strategies. Following were the objectives of the study.

1. To study the relative use of certain prevailing instructional strategies among upper primary mathematics teachers.
2. To study the impressions of Upper Primary Mathematics teachers in practicing new strategies.

II. RESEARCH METHODOLOGY

Methodology of the present investigation is presented briefly as follows.

Participants

The study was carried out on a sample of 45 Upper Primary Mathematics teachers of Kozhikode district of Kerala. The data were collected from both government and aided school teachers. Sample includes 16 male teaches and 29 female teachers.

Instruments

A semi structural interview schedule was used to collect the data. Interview was prepared in two phases. In the first phase the teachers were asked to figure out the instructional strategies that they are practicing in their teaching. Second phase of the interview was intended to study their impressions on experimenting such instructional strategies in their classes.

Statistical Technique

Percentage analysis was done to find out the awareness level of Upper Primary Mathematics teachers and their impressions on experimenting such instructional strategies in their classes. Graphical representation was also used to interpret the data.

III. ANALYSIS AND INTERPRETATION

This part of the paper highlights the relative use of certain prevailing instructional strategies among Upper Primary Mathematics teachers. Details of the analysis are presented in Table 1.

Table 1 .*Data and Percentage of the Relative use of Certain Instructional Strategies among Upper Primary Mathematics Teachers*

No.	Instructional Strategies	% of awareness		
		M	F	Total
1	Direct Method	68.75	58.62	62.22
2.	Issue Based Approach	87.50	68.96	75.56
3.	Computer assisted learning	81.25	75.86	77.77
4.	Assignments & Projects	100	93.10	95.56
5.	Activity Oriented learning	100	93.10	95.56
6.	Co operative learning	93.75	72.41	80.00
7.	Drill & Practice	56.25	68.96	64.44
8.	Problem solving Method	93.75	93.10	93.33

From Table 1, it is clear that the teachers were using prevailing instructional strategies. From the interview it was clear that all the mentioned strategies were practiced by teachers. It is also evident that the relative use of different instructional strategies is more among male teachers than female teachers. Activity

Oriented Learning and Assignments & Projects are the most favoured strategies (95.56%) used by the teachers in Mathematics teaching. Prominent teaching strategies in mathematics like Problem Solving Method (93.33%) and Co operative learning (80%) are also seen adopted. Teachers also rely on Computer assisted learning, Issue Based Approach and drill & practice, the levels of acceptance being 77.77, 75.56 and 64.44 respectively. From the table it can be reasonably construed that teachers employ different innovative methods and direct method (62.22%) is the least favoured one. Second objective of this study was to find the impressions of upper primary Mathematics teachers in experimenting new instructional strategies. Even though the teachers are well aware of different strategies, they feel some constraints in taking up different strategies in the present classroom situation. The researcher detailed the various impediments encountered by the teachers in the adoption of novel instructional strategies in the classroom in Table 2.

Table 2 . Data regarding the Major Constraints Faced by Upper Primary Teachers in practicing certain Instructional Strategies

No.	Constraints faced by Teachers	Percentage of opinion
1.	Time is a constraint for the adoption of novel instructional strategies	97.78%
2.	Lack of training from proper authorities	20%
3.	Less awareness of different instructional strategies	3%
4.	No support from authorities / management	4%
5.	Poor level self confidence and self motivation	3%
6.	Unhealthy criticism from parents	6%
7.	Poor responses from students	13%
8.	Lack of infrastructural facility	28%

From Table 2, it is clear that time is the major constraint for adopting new and novel instructional strategies. 97.78% opines that time is an important factor in adopting new methods, and is the major reason why the teachers are reluctant in experimenting such methods. From the interview the researcher identified that, teachers are interested in using new techniques of learning. But they face difficulty in adopting such innovative strategies. Lack of infrastructural facilities (28%) and training from authorities (20%) are the next two factors identified by the teachers. They also face poor responses from students (13%) and unhealthy criticism from parents (6%) as chief impediments .Interview showed 4% of teachers got less support from the authorities or management. Less awareness of different instructional strategies (3%) and Poor level of self confidence and self motivation (3%) are the least important obstacles identified. Result of the analysis is graphically presented in Figure 1, for easy visualization of the constraints in adopting novel methods of teaching.

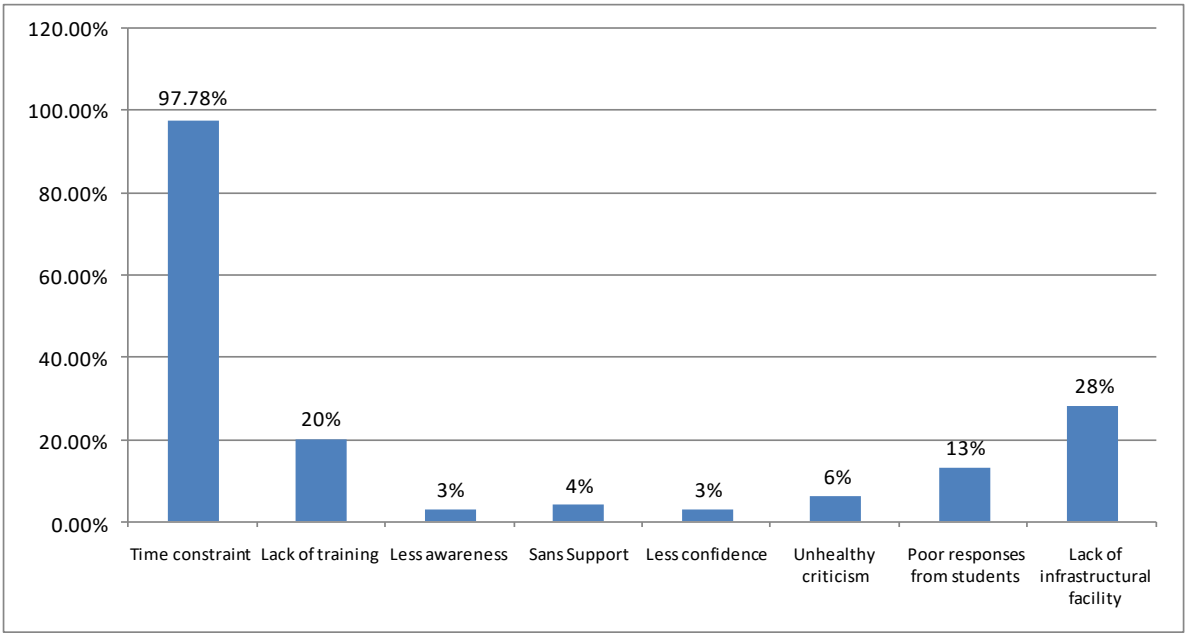

Figure 1: Graphical representation of the major constraints faced by upper primary teachers on practicing certain Instructional Strategies

From the graph it can be seen that majority of the teachers' opines that lack of time is the major constraint on practicing different methods. Less awareness and less confidence are the issues they consider the least.

IV. CONCLUSION

Grouws (2004) says that, using different instructional strategies have a positive impact and influence on student learning. Innovative and interesting teaching will definitely enhance learning. A teacher should be able to create an effective Mathematics environment. Teacher in a Mathematics class must pose challenging questions, demonstrate for divergent thinking, grouping for students benefit, create projects, and connect interdisciplinary examples. Since every child has individual differences, so to the teachers. Considering different factors in a classroom, teachers should experiment novel instructional methods and strategies. Since many new and abstract ideas are introduced in upper primary Mathematics Text Books, embracing new methods in teaching methods will definitely accelerate students learning.

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