



A Study on the Effectiveness of the Learner-Centric Interactive Method of Teaching Mathematics in Classroom

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ABSTRACT

The importance of learning mathematics is becoming more and more demanding in the present era. A few students are really developmentally incapable of handling mathematics but the poor performance stems mainly from inadequate instructions. A learner's ability is not seen as fixed; their learning style and speed of learning are different. Given the same conditions, they learn differently. Mathematics teachers need to discern the actual learning in learners and find ways of facilitating it without being prescriptive or restricting learners. In this connection, learner-centric teaching is very effective for all types of students. This approach emphasizes a variety of different types of methods. This paper is intended to stimulate discussion related to learner-centric interactive teaching approaches to facilitating the learning of mathematics for all and also explore facts regarding interactive approaches to teaching mathematics in the classroom.

Keywords: *Learner-centric interactive teaching, Mathematics for all*

INTRODUCTION:

From very ancient times the relation of mathematics with civilization and culture was established and society has also recognized the importance of mathematics. Mathematics enables us to understand and explain the concepts and incidents of our simple daily life. The study of mathematics enables men to develop their power of logic, the habit of critical thinking, neat, accurate, & systematic work; confidence in solving elementary problems, and attitude toward independent work. Mathematics is one of the important and essential school subjects. The up gradation of learning mathematics occurs step by step

with the help of a teacher in the school. The teacher is required to choose a suitable teaching method so that he/she can develop all the habits/ qualities of mathematics. According to Blumberg, Learner-centred Teaching is a unified approach that focuses on student learning rather than the teacher's activity. Weiner (2008), articulates that learner-centered teaching leads to increase learning.

In recent years researchers articulates that all levels of learning involve emotion. Suurtamm et al., (2015) stated, "Meaningful mathematics takes place in K to 12 classrooms that support students as they investigate, represent and connect mathematical ideas through discussion in the context of problem-solving". Teachers need to encourage students to have positive attitudes. Wagganer, (2015) articulates that Students became co-constructors of knowledge by asking questions, justifying their work, and communicating their ideas to each other. When teachers treat their students with respect, it builds a desirable environment that tends to help their students succeed.

Objectives:

The objective of this paper is to give some attention about

- Characteristics, and important factors, of Learner-centric Interactive Teaching in Teaching Mathematics
- Method of teaching through Learner Centric Interactive teaching approaches
- Stages of Organizing learner-centric Interactive Teaching in Teaching Mathematics
- A Study on the Learner-centric interactive approach of teaching in teaching Mathematics

Characteristics of Learner-centric Interactive Teaching in Teaching Mathematics

The interrelation and interaction of learner, teacher, and environment are the main part of this interactive teaching approach. The creation of favourable learning environment in the classroom is the key task of the teacher. The development of learning manipulation, teaching materials, and effective teaching aid is another important task of the teacher. Students' active participation in various activities is also a mandatory part of this interactive teaching approach. Positive interaction between student-student, and teacher-student is lead to the success of the student in this approach.

Important factors of Learner centric interactive approach teaching:

Role of learner: learners should participate actively and continue their learning process by setting the task of learning for themselves and completing it. At the same time, learners must take part in the collective learning project; fulfill the learning task that has been set.

Role of teacher: The main function of the teacher is to help the learner to learn and to understand. Teachers need to create a friendly environment and give opportunities to the learner so that learners act spontaneously. The teacher serves the learner and must develop their knowledge in the manner of the guide.

The environment of the classroom: The environment affects all pedagogical activities, which affect learners' learning. The Interactive teaching environment consists of many components, knowledge, Interactive teaching situation, teaching aids, and the use of different manipulatives, The environment is considered in a variety of contexts: the physical environment and the mental environment, the broad environment and the narrow environment, the internal environment and the external environment, all of them create the learner and teacher's environment. The environment is a factor that can have a negative or positive effect on both the teacher and the learners. In addition, the teacher and learners can also react to the environment to adapt to it. Therefore, the environment plays the important role in teaching and learning.

Method of teaching through Learner Centric Interactive teaching approaches:

At first, the teacher should plan and provide balanced experiences that incorporate exploration, acquisition,

consolidation, and application of knowledge and skills, with opportunities to use, extend and test ideas, thinking, and reasoning. Teachers should encourage students to use creativity to represent, measure, and predict other situations. The teacher uses some manipulation to allow the learner to explore different concepts. The teacher gives sufficient time to her learner for discussion on different concepts. Teachers should promote the correct use of mathematical vocabulary and the interpretation and use of symbols, images, diagrams, and models as tools to support thinking problem-solving, reasoning, and communication. Teaching children how to evaluate solutions and analyze methods, deciding if they are appropriate and successful also helps them to understand why some methods are more efficient than others. Periodically identify the knowledge, skills, and understanding children acquire; pause and take stock to review children's learning with them; highlight the strategies and processes upon which they are able to draw; provide opportunities that allow children to make connections and show how ideas in mathematics relate, and how their learning can be applied to new aspects of mathematics. Teachers can also use context and prior knowledge, concrete representations, examples, and non-examples, in their teaching process. Only if teachers are constantly reevaluating and readjusting their own strategies for teaching will students continue to learn in new and developmental ways.

Stages of Organizing learner-centric Interactive Teaching in Teaching Mathematics

Different steps involved in the interactive approach of teaching:

Pre-active:

At first, the teacher should find out the student's background and also their academic performance. It helps to prepare lesson design and build favorable environment. Create an interesting problematic situation that stimulates students' interest and motivation. Prepare teaching aids for the students that create interest in learning the students in the learning process. The teacher needs to explore some real-life examples, non-examples, and probing questions that facilitate students' participation.

Inter-active:

Teachers can assign challenging assignments to students that motivate learners. During the teaching process, teachers can use modulation of voice, use attractive and useful charts, and clear, neat, and effective black-board work which attracts the

students' attention. To create cooperation, and healthy competition Teachers may divide the class into groups of students and assign tasks to discuss a problem, or work together to find ways to solve a math problem. After a certain period of time, the groups send their representatives to present their ideas. Teachers should give feedback on every performance of each learner and praise and guide accordingly. This recognition helps learners in their learning.

Post-active:

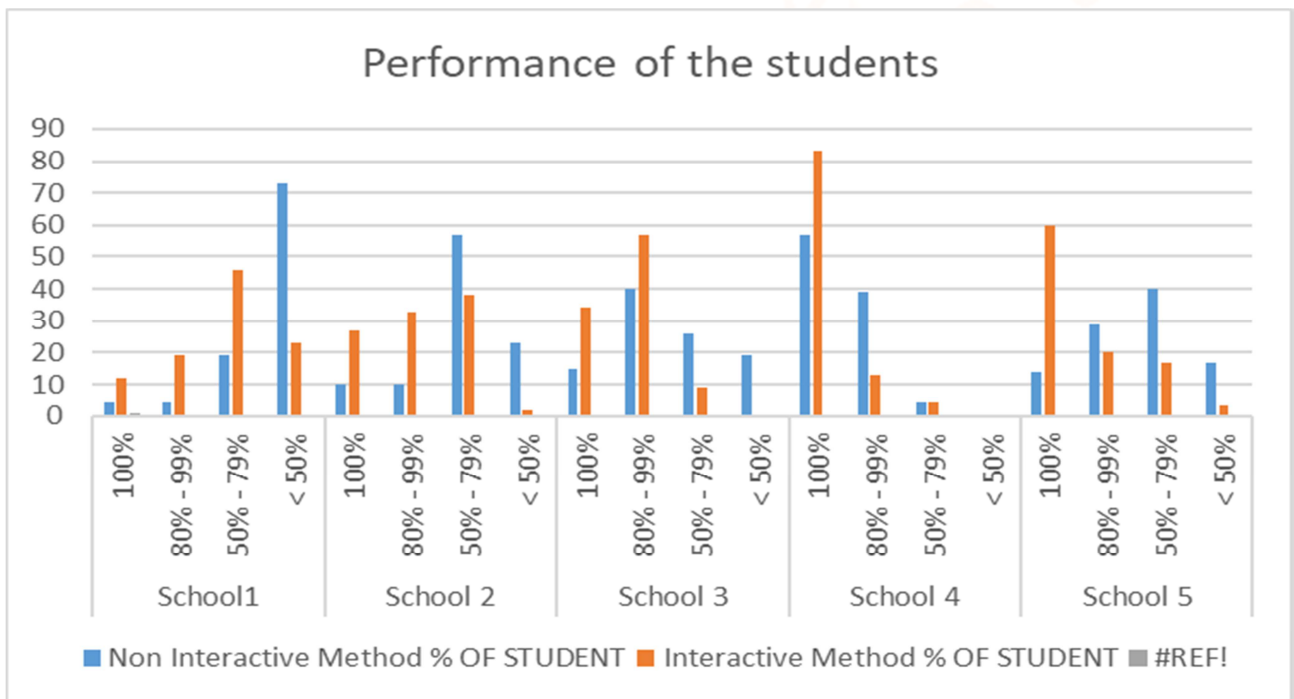
To confirm the learning results, testing and evaluation should be conducted regularly and systematically throughout the learning process in various forms and levels. The assessment is limited not only to the test's results but also to the interactive skills. It is the ability to collaborate, know how to find and share information, and deal with situations in their learning groups.

A Study on the Learner-centric interactive approach in teaching Mathematics:

A study was done to observe the effectiveness of the interactive approach of teaching in teaching Mathematics in five schools in West Bengal. Five teachers are selected for this study in different five

schools. A purposive sample is used for this selection. They teach one unit to their students through an Interactive approach to teaching and the equivalent of other units teaching the traditional method of teaching. All of them select the same content of the same class, solving simultaneous linear equations by elimination method, for the Interactive approach of teaching and solving simultaneous linear equations by the comparative method, through the traditional method. After teaching through different approaches, teachers conducted unit tests with teacher-made achievement tests to compare the achievements of the students. Two types of data are collected as follows: - (i) the results of the achievement test after teaching through the traditional method and (ii) the results of the achievement tests after teaching mathematics with the help of an interactive approach to teaching. Those collected data are projected in the form of a table and graphs so that a general conclusion can be drawn regarding the effectiveness of mathematics teaching with the help of interactive teaching methods, creating a Supportive and Engaging Classroom Environment using teaching aids like charts, models, and activity sheets by which teaching can create attention and motivation.

Performance of the students:-																					
Tools of Teaching	% of Marks	School1				School 2				School 3				School 4				School 5			
		100%	80% - 99%	50% - 79%	< 50%	100%	80% - 99%	50% - 79%	< 50%	100%	80% - 99%	50% - 79%	< 50%	100%	80% - 99%	50% - 79%	< 50%	100%	80% - 99%	50% - 79%	< 50%
Non Interactive Method	% OF STUDENT	4	4	19	73	10	10	57	23	15	40	26	19	57	39	4	0	14	29	40	17
Interactive Method	% OF STUDENT	12	19	46	23	27	33	38	2	34	57	9	0	83	13	4	0	60	20	17	3



Discussion: From the total study, it is observed that teaching Mathematics in the classroom with the help of a learner-centric Interactive way of teaching is more effective than a noninteractive way of teaching. Students are more active and motivated about the subject in an interactive way of teaching. Students participated actively during the interactive Method. Students feel more confident in interactive ways of teaching. A very friendly relationship between teacher and student is established. The students feel free to interact with the teachers. We hope “Mathematics Phobia” may be decreased by the use of Interactive ways of teaching in the mathematics classroom.

Conclusion:

Learner-centric Interactive teaching is a teaching orientation, which is implemented via a two-way interaction between the student, the teacher, and the environment. In this, the student becomes a true subjectivity of cognitive process with excitement, active participation, and learning responsibility; the teacher acts as an instructor and assistant; the environment affects the entire teaching process with influence and adaptation. To organize learner-centric interactive teaching in Mathematics at high school effectively, the teacher needs to understand the stages of interactive teaching, the process of implementing the lesson plan, how to inspire the learning, how to use techniques and forms of interactive teaching organization, simultaneously combined with the exploitation of information technology application creating interactive teaching situations, in order to develop the interaction between the student, the teacher and the environment in the teaching process.

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