

Effectiveness of Tiger Method in Learning Mathematics of IX Standard Students

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Abstract--*The present study visions to find out the effectiveness of TIGER method in learning Mathematics among IX standard students. This is an experimental study with Pretest-Posttest Equivalent Group Design. A sample of 60 IX standard students were chosen for the study. The investigators applied self-developed Mathematical Achievement test to assess the achievement. Data were analyzed using ANCOVA and t-test to determine the performance comparing the mean scores. The findings implied that the experimental group performed better than the control group in posttest. It is found that TIGER method had the power to make the students perform better than their counterparts taught through traditional method.*

Key words-- *Pretest-Posttest Equivalent Group Design. A sample Achievement test the effectiveness of TIGER method.*

I. INTRODUCTION

Mathematical power encompasses the ability to “explore, conjecture and reason logically, as well as the ability to use a variety of mathematical method effectively to solve non-routine problems and the self-confidence and disposition to do so” (NCTM, 1989). Teaching Mathematics is both a challenging and stimulating endeavour. We must understand that learners create their own meanings and structures for mathematics on the basis of their own meanings and structures for mathematics on the basis of their previous experiences. Mathematics teaching is often criticized for its emphasis on memorizing basic facts, rules and formulae. It is always suggested that emphasis should be laid on mathematical reasoning and higher order thinking skills such as application, analysis, synthesis, evaluation and creation (Bloom’s revised taxonomy). Effective mathematics teaching should aim to promote student’s confidence in mathematics, curiosity, freedom and belief in doing mathematics. A teacher of Mathematics can make the learning very interesting and exciting thus changing the attitude and outlook of the students. Thus, now teachers follow different methods of teaching for school students to enhance the interest of the students and to foster their understanding of mathematical concepts. One such method of teaching learning mathematics which gives full freedom to the learner is TIGER method of learning mathematics.

Expansion of TIGER format is as follows: T-Teacher as a facilitator, I-Individual work, G-Group work, E-Evaluation, R-Reinforcement

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II. STEPS IN TIGER FORMAT

1. Introduction

In this step the teacher should introduce the topic under three heading.

(i) Evocation

The teacher should evocate the students by giving puzzles, mathematical games, life history of mathematicians, interesting incidents in their life etc. Care should be taken whether it is related to the topic.

(ii) Recall

The teacher asks some questions to check the previous knowledge of the students. The teacher develops the thinking capability of the students which leads to the topic of the day.

(iii) Survey

The teacher directs the students to check the page number and the topic to be taken. The students have a glance on the main headings, sub headings, diagrams and definitions. The teacher should confirm that all the students have the text book with them.

2. Understanding

It gives importance to the knowledge of concept and the development of problems solving skills.

(i) Concept

The teacher should clearly explain the definitions and formulas needed to the class and write it on the black board.

(ii) Teacher Solving Problem

The teacher directs the students to analyse what is given, what is to be found out in the problem. By giving step by step explanation, the teacher should develop Conceptual skill, Sequential skill, Arithmetic skill among the students.

(iii) Individual Solving Problem

The teacher asks the students to do the similar problem in the exercise individually.

3. Group Work

Group work is an important one for mathematics learning. Discussions always help us to proper understanding of the problem.

(i) Challenging Problems

The teacher gives the challenging problems to the students in group. A group contains five to six students only. The problem should develop the thinking ability of the students. The teacher clears their doubts orally or by writing on the black board.

(ii) Group Activity

The group activity given should be related to the topic. The teacher supervises the groups. After finishing, the small groups present their activity to the class.

(iii) Presentation

An average student from each group presents their problem on the black board. After finishing the problem, all students are asked to write it on their note book.

4. Evaluation

Evaluation is an important task in the teaching-learning process.

(i) Large Group Reinforcement

The teacher writes the formula and concepts on the black board. The teacher makes the pupil to draw mind map and flow chart.

(ii) Home work

The simple problems in the exercise are given as home work. The teacher gives hints if needed.

Thus, TIGER method allows the students to explore mathematics and create their own solutions to the problems and have a better understanding and everlasting knowledge of basic concepts. They get motivated to learn more and do more. More over Tiger method can be administrated in any circumstance and without expensive gadgets which are not affordable to most rural areas.

III. SIGNIFICANCE OF THE STUDY

Principles and standards for school Mathematics (2000) suggest that teachers must create opportunities that stimulate, guide and encourage students to make connections among mathematical concepts, construct mathematical ideas to solve problems through reasoning and take responsibility for their own learning. The current reforms in mathematics education suggest that teachers should engage students in tasks that exemplify the beauty and usefulness of mathematics in different fields.

In the present scenario many teachers follow traditional way of teaching mathematics. In contrary to the traditional method, Tiger method follows the recommendations of group work and individual work in solving mathematical problems and it also helps the students to gain self confidence in their mathematical abilities and provides them a practical knowledge and better understanding of mathematical concepts.

It is only the teachers who can bring about a change as they are the source to reach students. Moreover, teachers of mathematics have a responsibility in overcoming the fears about new innovative method and to assist the children in developing better understanding in mathematics. Hence the present study is conducted to find out the effectiveness of TIGER method on achievement of students.

Objectives of The Study

1. To find out whether there is any significant difference between Control and Experimental group at the Pretest stage
2. To find out whether there is any significant difference between Control and Experimental group at the Posttest stage
3. To find out whether there is any significant difference between Control and Experimental group in the gain scores

Hypothesis

1. There is no significant difference between Pretest Scores of Control and Experimental group
2. There is no significant difference in Pretest Scores between Control and Experimental Group with regard to Level of Intelligence
3. There is no significant difference in Posttest Scores between Control and Experimental groups
4. There is no significant difference in Posttest Scores between Control and Experimental Groups with regard to Level of Intelligence
5. There is no significant difference between Pretest and Posttest Scores of the Control Group
6. There is no significant difference between Pretest and Posttest Scores of Experimental Group

IV. METHODOLOGY

Method adopted for the present study

The investigator adopted “experimental method” to find out the effectiveness of TIGER method of learning Mathematics. The present study is an experimental study with pretest-posttest Equivalent group design. Achievement was treated as dependent variable and TIGER method was treated as independent variable in the study.

Sample

The sample of the study consisted of two large groups, control group and experimental group with 30 participants in each group. The 60 samples were selected after administering Nonverbal Intelligence Test by Atmananda Sharma. All students were from rural area and belonged to the same age group of 14-15 years. The economic background of the students was similar. There were 16 boys and 14 girls in the control group and the experimental group.

Tools used

Researcher developed the TIGER method lesson plans and validated it with subject experts and senior teachers. Tools used for this study, included readily available standardized test and researcher made test. It was identified that two tools were needed for the study, an intelligence test and a mathematical achievement test. Non-verbal Intelligence test developed and validated by AtmanandaSharma(2007) is used to check the homogeneity. Researcher prepared and validated Mathematical Achievement test for assessing the achievement of the students.

Statistical techniques used

Statistical techniques serve the fundamental purpose of the description and inferential analysis (Aggarwal,1990). The statistical techniques used in the study are Percentage analysis, mean, standard deviation, t-test for determining the significance of difference between means.

V. DATA ANALYSIS AND FINDINGS

H₀ 1: There is no significant difference in Pretest Scores between Control and Experimental Groups

Table 1 Difference in Pretest Scores between Control and Experimental Groups

Group	Size	Mean	SD	t value	pvalue
Control	30	16.87	4.20		
				0.141	0.889
Experimental	30	17.03	4.69		

In the above table as the p value is greater than 0.05, the null hypothesis is accepted at 0.05 level of Significance. Hence, no significant difference was observed in the pretest scores between control and experimental groups.

H₀ 2: There is no significant difference in Pretest Scores between Control and Experimental Group with regard to Level of Intelligence

Table 2 Difference in pretest scores between Control and Experimental groupwith regard to Level of Intelligence

Level of Intelligence	Group	Size	Mean	SD	t value	p value
Low	Control	7	14.71	2.81	0.806	0.451
	Experimental	7	13.14	4.56		
Average	Control	12	17.73	3.04	0.563	0.586

	Experimental	12	17.09	3.18		
High	Control	11	17.64	5.63	0.682	0.511
	Experimental	11	19.36	4.95		

From the above table as the p value is greater than 0.05, the null hypothesis is accepted at 0.05 level of significance. No significant difference was observed in the pretest scores between control and experimental groups with regard to level of intelligence.

H₀ 3: There is no significant difference in Posttest Scores between Control and Experimental groups

Table 3 Difference in Posttest Scores between Control and Experimental Groups

Group	Size	Mean	SD	t value	p value
Control	30	22.03	7.54		0.000**
				7.94	
Experimental	30	33.40	5.08		

In the above table as the p value is less than 0.05, the null hypothesis is rejected at 0.05 level of significance. Therefore, there is significant difference in the posttest scores of control and experimental groups. It is interpreted here that the experimental group performed better than the control group in the posttest.

H₀ 4: There is no significant difference in Posttest Scores between Control and Experimental Groups with regard to Level of Intelligence

Table 4 Difference in posttest scores between Control and Experimental group with regard to Level of Intelligence

Level of Intelligence	Group	Size	Mean	SD	t value	p value
Low	Control	7	19.43	7.46	4.911	0.003
	Experimental	7	31.29	7.11		
Average	Control	12	20.09	7.13	6.974	0.000
	Experimental	12	33.82	5.19		
High	Control	11	26.00	7.25	4.519	0.001
	Experimental	11	34.73	3.29		

From the above table as the p value is less than 0.05, the null hypothesis is rejected at 0.05 level of significance. There is a significant difference between the scores of control and experimental groups with regard to the level of intelligence. The mean scores in each level of intelligence shows that experimental group performed better in the posttest than the control group.

H₀ 5: There is no significant difference between Pretest and Posttest scores of the Control Group

Table 5 Difference between Pretest and Posttest scores of Control group

Type of test	Size	Mean	SD	r value	t value	p value
Pretest	30	16.87	4.20	0.395	4.024	0.000
Posttest	30	22.03	7.54			

Since the p value is less than 0.05, the null hypothesis is rejected at 0.05 level of significance. This shows that there is a significant difference between the pretest and posttest scores of control group.

H₀ 6: There is no significant difference between Pretest and Posttest Scores of Experimental Group

Table 6 Difference between Pretest and Posttest scores of Experimental group

Type of test	Size	Mean	SD	r value	t value	p value
Pretest	30	17.03	4.69	0.204	14.523	0.000
Posttest	30	33.40	5.08			

Since the p value is less than 0.05, the null hypothesis is rejected at 0.05 level of significance. This shows that there is a significant difference between the pretest and posttest scores of experimental group. The mean scores show that experimental group performed better in the post test than in the pretest.

VI. DISCUSSION

In the present study it is found that there is a significant difference in the post scores of control and experimental groups in the achievement. TIGER method intrinsically motivated, engaged the learners and reinforced the subject matter a way more than the traditional method. TIGER method has kindled their inner ability to solve a problem on their own and it has developed a better understanding of the problem in the students. Group work has created a space for the students to share their thoughts and it has helped the students to understand better.

TIGER method sandwiches the learning and teaching part and helps the students and teachers in the whole teaching learning process.

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