



## **Study of effectiveness of non technological Game based program on academic achievement of students in Mathematics.**

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### ***Abstract***

*Most of the school students feel that mathematics is a difficult, complicated and confusing subject because it involves formulae and calculations. Some students feel that it is not related to their real life situations. In schools, teachers use conventional teaching and learning instruments as text-books, revision books and courseware which could not develop interest in mathematics and could not motivate the students for learning mathematics. There is no need to spend more time to learn how to think and perform in the real world challenges, we need effective, interactive experiences that motivate and actively engage us in the learning process. That's why we can use game based learning as an alternative to make learning of mathematics interesting and realistic.*

*The focus of this study is to improve the achievement and interest of school students in mathematics. Experimental research methodology has been used for this study and single group design has been used for the research. 40 sixth standard students were selected from the population by purposive sampling method. The achievement test (pre-test and post-test) tools are used for collection of data. The findings of the study suggest non technological games showed a positive response towards the academic achievement in mathematics among the sixth standard students.*

**Key words**-Game based program, non technological game, student's achievement

### **Introduction-**

With the changing world, methods of teaching and learning are also changing. When we use conventional learning instruments these are not very effective in ensuring the mastery of the subject. Conventional learning instruments are not very interesting and those are with lack of motivation .Because of this, interest and achievement of students in mathematics decreases. To develop student's interest in mathematics and to improve the achievement in mathematics we need some innovative learning process. The increase in achievement occurs when the student is enjoying the process. Through game based learning education can be imparted effectively in all fields particularly in mathematics as games have educational values and are played for enjoyment and pupils enjoy games in mathematics.

### **Need-**

Due to the complexity of human nature learning is considered a complex process. Rose and Conner (2006) stated that "learning is a discursive activity that involves social and material resources." There are different types of students in the class; some are fast, average and slow learners. Different students have different abilities, different perceptions and process information differently. Keeping all these in mind a teacher need to use various learning processes to enhance students' achievement in mathematics. If we use different learning processes we can make learning mathematics enjoyable and can try to improve students' performance. Hence the researcher decided to study the effectiveness of non technological game based program on the achievement of sixth standard students in mathematics.

### **Statement of the problem-**

To study the effectiveness of Game-based program on achievement of sixth standard students of Raja Shivray Pratishthan School, kothrud in mathematics.

### **Operational definitions-**

1. Game based learning-Game based program is a type of game play that has designed learning outcomes.
2. Non technological games- Such games in which there is no use of any kind of electronic devices in any form are called non technological games.
3. Students achievement- Scores obtained by students in pre-test and post-test.
4. Game based program- Games developed by researcher on selected content of mathematics.
5. Sixth standard students- A group of students have passed fifth standard and studying in sixth standard.

### **Objectives of the study**

- 1 To construct an achievement test based on the selected mathematics units before teaching those units with games.
2. To design suitable games program to teach selected mathematics units.
3. To implement the prepared program for a duration of one week.
4. To find out the effectiveness of the program through post-test.

### **Assumptions**

- Students have basic knowledge about selected mathematics units.
- Students have problems in understanding selected mathematics units.

### **Hypothesis**

#### **Research hypothesis-**

Game based program will enhance the achievement of the students in mathematics.

**Null hypothesis-**

**HO:** There will be no significant difference in the pre-test and post-test scores after implementation of game based program.

**Research methodology**

**Method of research**

The method of research was experimental method.

**Research design**

Single group Pre-test and Post-test design was used for the research study. O

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**Population and Sample**

All the students studying in sixth standard in the city of Pune.

**Sample**

Purposive sample was selected for the study which consisted of 40 sixth standard students from Raja Shivaray Pratishtan school of Pune city.

**Tools for Data Collection**

The tools were achievement tests in mathematics based on selected units prepared by the researcher.

### **Statistical Techniques**

The researcher used mean, co-relation and t-test as statistical techniques for the analysis of data.

### **Variables**

#### **Independent variable**

The independent variable was the game based program prepared by the researcher.

#### **Dependent variable**

The dependent variable was the achievement of the students.

#### **Scope of the study**

The researcher felt that the study can be useful for sixth standard students of Pune city.

#### **Limitations**

- The psychological aspects like attention, motivation, interest are beyond the control of investigator.
- The guidance received by the students from any other sources as private class; parents etc. are beyond the control of investigator.

#### **Delimitations**

- Only one school was selected for the study.
- Only 40 students from standard six were selected for the study.
- Only selected mathematics units were taken for the study.

#### **Preparation of the tools**

- Achievement tests (pre-test and post-test)- These tests are prepared by the investigator which are based on the selected units in mathematics syllabus of sixth standard that is profit and loss, area, integers and addition and subtraction on number

line.

- Game based program based on selected units in mathematics syllabus of sixth standard.

### **Administration of game based program**

- Administration of achievement test (Pre-test)-  
Investigator has taught selected units with conventional method. Based on that investigator administered the pre- test prepared by her.
- Administration of the Game based program based on selected units in mathematics syllabus of sixth standard, prepared by the investigator.
- Administration of achievement test (Post-test)-  
After administration of Game based program investigator had administered the achievement post test on experimental group.

### **Testing of hypothesis-**

HO: there is no significant difference between mean scores of pre-test and post-test.

### **Interpretation of data for “t” test-**

| Test      | Number | Mean | S.D. | “t” value | Decision |
|-----------|--------|------|------|-----------|----------|
| Pre-test  | 40     | 15.3 | 5.12 | 20.52     | Rejected |
| Post-test | 40     | 19.2 | 3.94 |           |          |

### **Observation**

From the table we can see that t-value is greater than the table value at 0.5 level of significance, the hypothesis is rejected. Hence it is taken to be significant resulting in the rejection of null hypothesis  $H_0$ : and accepting the research hypothesis.

### **Major Findings-**

The findings of the study are developed non technological Game based program enhances the academic achievement of the sixth standard students in mathematics.

### **Educational Implication-**

Students learn more and enjoy learning more when they are actively involved in process rather than passive listeners. This study was based on active participation of the students in teaching learning process. Non digital game based program develop interest of students in mathematics and motivate them for learning mathematics. Game based program enhance students knowledge, understanding and application skills which are essential in their real life. As a result, the individual is able to apply his knowledge in day-to-day life. So game based program can be used as an effective tool to enhance the achievement of students in mathematics.

Digital games are easily available now a days but its not easy to use these games everywhere and all the time. Teachers can prepare non-technological games which are easy to administer everywhere and can help students to enhance their academic achievement in mathematics.