



A STUDY OF EFFECTIVENESS OF USING NON-TECHNOLOGICAL GAME BASED LEARNING PROGRAM ON STUDENTS' ACADEMIC ACHIEVEMENT IN SCIENCE

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Abstract

An experimental study was conducted by the researcher in which the effectiveness of non technological game based learning program was studied in teaching of Science to Std. V students. The paper focused on using game based learning to improve students' achievement in Science. Based on the results of the study, it can be said that non-technology games play a vital role in improving students' achievement in Science. It also motivates the students to learn, grabs their attention, creates friendly atmosphere in the classroom and promotes healthy interactions in the classroom.

Keywords: *Non-technology game based learning, Science, achievement of students.*

Introduction:

Learning occupies a very important place in our lives. Our behavior modification takes place through the types of learning experiences. Learning therefore provides a key to the structure of our personality and behavior. Most researchers conceptualize learning as a multidimensional construct of learning skills; cognitive learning outcomes such as procedural, declarative and strategic knowledge and attitudes. Learning is a complex process due to complexity of human nature. Differences in the human nature causes different learning requirements for learning also different students have different learning styles. Science is a compulsory subject for students at primary and secondary level. Most of the students find science as a difficult subject as it involves logical reasoning and comprises of many abstract concepts which are difficult to understand. As a science teacher our goal is to encourage learning in our class room. The guarantee for real learning is the creation of joy, excitement and love for learning. These can be created through using games in teaching of science.

Games are the ideal tool for imparting education and are helpful in accommodating multiple learning styles of students.

Game Based Learning: Game based learning (GBL) is a type of game play that has defined learning outcomes. Generally, game based learning is designed to balance subject matter with game play and the ability of the player to retain and apply said subject matter to the real world. It is a method of using games while teaching a subject.

Features of Game Based Learning:

- GBL uses competitive exercises either pitting the students against each other or getting them to challenge themselves in order to motivate them to learn better.
- Games often have a fantasy element that engages players in the learning activity through a story line.
- **Benefits of using game based learning**
- Get students attention.
- It helps students to memorize concepts or facts.
- It reinforces the students and help them to consolidate knowledge in a friendly environment.
- It helps students to understand the consequences of their choices. through trial and error.

Need and importance: In order to improve pupils' performance having various learning styles, there is often a need to explore various learning opportunities which cater to the complexity of the learners in the classroom. Play has been approached by several theorists as the first form of learning. *"There is no point in work unless it observes you like an absorbing game. If it doesn't absorb you, it's never any fun. Don't do it"* (D.H Lawrence). The built in learning process of games is what makes a game enjoyable. The use of games motivates the students to learn and ensures that student acquire knowledge and skills in meaningful way. It develops interest in the subject as it immerses them in the material so they learn more effectively. Psychologists suggest us that play is not just a relaxation or leisure activity, but it is an important learning experience.

According to various researchers, many of the students find science as a difficult subject. At Primary level, teaching of Science involves teaching of scientific concepts which is fundamental to children's understanding of their world. Primary school is terminal for many children in many countries and this is the only opportunity they may have to explore their environment logically and systematically. Therefore, Science well taught can promote children's intellectual development. Science at primary level can be a real fun and the teacher can do this by careful analysis of teaching methods. Using GBL in teaching of science will make the learning fun and will help in better understanding of subject.

Although the majority of schools in less developed countries are not likely to have computers in the foreseeable future, the school children in these schools can enjoy their early experiences in learning Science through non-technological games. So, non technology games of low cost or no cost can meet the needs of those students who have no technology games in their schools.. Though technological games more specifically computer based games are effective in teaching learning process, the ground reality is that they are not available in all schools.

Statement of the problem: "To study the effectiveness of using non technological game based learning program on academic achievement scores in Science on the Unit 'Food and Health' of Std V students of Millenium English Medium School, Pune."

Operational definitions:

Non-technology Game based learning Program: It is the program prepared by the researcher in which there is a use of games based on a selected unit of 'Food & Health' for teaching science which doesn't involve any use of technology. Specifically, they are non computer based games. These games include nutrition snake and ladders, food card game, spot the word game, food puzzles and nutritious meal game used by the researcher.

Effectiveness: The effectiveness will be studied in terms of achievement scores of students after the implementation of non-technology game based learning program.

Standard V students: A homogeneous group of students studying in Standard V sharing almost same characteristics such as school, age, classroom and sharing common socio-economic status.

Objectives of the Study:

- To select the unit for teaching Science through non-technological game based learning program.
- To prepare, select and organize non-technological games on the selected unit of Science.
- To test the effectiveness of the non-technology game based program.

Assumptions:

- Teachers use different teaching methods for teaching of Science.
- Students know the different types of non-technological games.

Scope: The study can be useful for the primary school students of Pune city

Limitations:

1. The attention of students, their interest and motivation during the research was beyond the control of the researcher.
2. The impact of mass media and private tuitions is beyond the control of the researcher.

Delimitations:

1. The study was delimited to students of Std V of one school.
2. The study was delimited to School following CBSE syllabus.
3. The study was delimited to only selected unit of Science. The unit selected was ‘ Food & Health.’

Research Methodology:

Method of research; The experimental method was used in the research.

Research Design: Single group pre-test and post-test design was used for the research study.

$O_1 \quad x \quad O_2$

Pre-test Post-test

Population: Population consisted of all the students studying in Std. V in Pune city.

Sample: Convenient sample was selected by the researcher for the study which consisted of 32 students of Std. V of Millenium English Medium School, Pune.

Tools of Data Collection: Tool was an achievement test based on the selected unit of Science prepared by the researcher.

Statistical Techniques: The researcher used mean, correlation and 't' test for analysis of data.

Variables:

Independent Variable: Non-technological game based learning program.

Dependant Variable: Achievement scores of students in Science.

Methodology of Study: The researcher constructed an achievement test on the selected unit of Science followed by non-technological game based learning program. A pilot study of the program was conducted before its implementation on the experimental group.

Administration of the Program: The researcher conducted pre-test on students in written and assessed the achievement out of 25 marks in Science. The researcher then implemented the game-based learning program on the students on the selected unit of 'Food & Health'. The students were oriented about the rules and regulations of each game before it was implemented. Games such as Health and Nutrition snake and ladders, food card game, spot the word game, food puzzles and Nutritious food meal were selected in the program. The program was implemented for 5 days. The duration of the period was of 40 minutes.

Data Analysis: The researcher used mean, product moment correlation and 't' test for the analysis of data. The results for 32 students are tabulated below.

	Pre-test	Post-test
Mean	6.64	14.45
S.D	1.45	1.96

Correlation	0.41
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't' test	18.02
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Testing of the hypothesis: The computed 't' value exceeded the critical value of 2.04 at 0.05 level of significance and 2.75 at 0.01 level of significance. Therefore, the null hypothesis is rejected.

Results and discussion:

- The post-test mean score of students was higher than the pre-test mean score. That means, there was a significant change in the students' achievement in post-test.
- There was a positive correlation between pre-test and post-test scores.
- As the 't' value exceeded the critical value, there is a significant difference between pre-test and post-test scores. That means non-technology game based learning has a positive effect on students' achievement scores.

Conclusion: It can be concluded from the study that non-technology games can facilitate students' improvement in Science subject. Students can be uplifted academically through non-technological games. Such games are the alternatives for the areas where there is no availability of technology. Moreover such games give equal opportunities to all students to elevate their understanding in Science. The study is a base for the teachers to discover more such types of games in their surroundings and use them in teaching of their respective subjects.

"The reason why most kids don't like schools not that the work is too hard, but that it is utterly boring." (Dr. Seymour Pappert, Prof at MIT)..Games can make learning a fun, liven up our classrooms, promotes interactions among students, motivates them and develops interest in subject .An innovative paradigm like game based learning can make school life a real fun for students and can provide them an enriching learning experience

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