



Exploring Quiz Program as an Intervention Tool and its Influence on Learning Interest in Science

Science is a way of life and a single step for explanation of everything existent on this earth. Science and Technology is considered to be an important subject for developing scientific attitude among students. Quiz is a form of game or mind sport in which player attempts to answer question correctly either individually or in team. The objective of the study was to develop and use quiz program as an intervention technique and to observe its influence on learning interest in science. It was an experimental and applied research. Two group random sample posttest only design was used. Quiz program was independent variable, learning interest among the students was dependent variable and standard, subject and unit were the controlled variable. A sample of 48 students of standard nine were selected through random sampling technique. The four-day quiz program included various questions. Tool of study was researcher made learning interest inventory. t test was technique for data analysis. There was significant difference between the posttest learning interest scores of control and experimental group. This proves effectiveness of the intervention program. Study implies that introduction of techniques and innovative pedagogies like Quiz programs can be effectively used for enhancing learning interest, testing the entering behavior, knowledge and skill.

Key Words: *Science Pedagogy, Quiz Program, Experimental Research, Innovative Technique*

Introduction

Science is a way of life and a single step for explanation of everything existent on this earth. Science and Technology is considered to be an important subject for developing scientific attitude among students.

Science and Interest

Looking at the importance of Science in development of brain and its role in directing knowledge and creativity, development of interest in science has become the 'major concern of researchers and educational systems of the world'. (Osborn, Simon & Collin, 2003). This concern is aggravated by the studies that cite that interests in science tend to decline with the growth of children (Dawson, 2000; Bae, 2003; Osborne, 2003) and there are students who have negative attitude toward learning science in school but have positive attitude toward science itself (Osborne, 2003).

To add upon 'as they advance from primary to secondary education, students rapidly lose their interest in science and cease seeing it as a viable option for their future, or associating it with their success aspirations' (Christidou, 2011). This declining trend assigns strong enough reasons to study the problem in order to seek probable solution.

Further, interest is an intervening factor that manipulates attitude of students for a particular subject it can be hypothesized that the development of interest in Science and technology may be related to, 'the quality and type of instruction' (Krapp and Prenzell, 2011) Researchers have conducted numerous researches to study effectiveness of various methods and techniques in increasing the interest and achievement among students for a particular subject. Several techniques including the activity based student centered techniques have been found to be effective in engaging the students strong enough to stimulate their interest.

Quiz as Technique of Teaching

Quiz is a form of game or mind sport in which player attempts to answer question correctly either individually or in team. It is highly beneficial to the learning process to use periodic quizzes as it compels students to work consistently and in accordance with other scheduled class activities (Savander-Ranne, Lundén & Kolari, 2008). Quizzes cause students to practice their retrieval systems in low stake environment. (McDaniel, M.A., Agrawal, P.K. Huelser, B. J., McDermott, K. B., & Roediger, H. L., 2011). Short quizzes motivate the student to complete them correctly (Kwan, 2011, p.5).

Students' interest in Science and its measurement

Studies reveal interesting patterns and correlation for interest and attitude of students towards school subjects. Some studies have highlighted that, there are students who have negative attitude toward learning science in school but have positive attitude toward science itself (Osborne, 2003). These type of conflicting results pose serious challenges for the teachers to relook into their strategies of teaching the students.

There are several methods to assess the interest of the students. Some popular ones include Interest scales which has been most frequently used to identify interest in certain topics or prepared texts (Hidi, Renninger and Krapp, 1992), self-reported Likert Questionnaire (Harp and Mayers, 1997), ranking preference of the subject (Whitfield, 1980; Osborne,2003), subject enrollment survey (Osborne, 2003), Qualitative method (Lagemann & Shulman, 1999; Palmer, 2004). Some researchers have used both qualitative and quantitative methods (Lee and Borphy, 1996; Prawar and Anderson, 1994).

Factors Influencing Interest

There are several factors that influence the interest of the students. There are conflicting results for the effect of gender. Girls in the age group of ten to fifteen years have 'strong interest 'to science. (Archer, 1992).

The performance of girls and boys if almost same in studies of Elwood and Comber (1995). 'High level of involvement 'and personal support in class by teachers (Myers and Fouts, 1992) helps in developing positive attitude among students. Favorable learning environment helps in developing self-concept Haussler & Hoffman (1992) indicates that the best predictor of students' interest in physics is the self-concept, which depends on favorable learning environment

There is a strong relationship between attitude towards science, motivation to achieve, and self-concept about his ability. (Oliver and Simpson, 1988). But high achievers in science are not always interested in science. (Lee and Trophy, 1996). There is only a moderate correlation between achievement and interest, although this correlation is stronger for high and low ability girls (Weinberg, 1995).

In order to look into these aspects, the researcher has undertaken a small study to see the effectiveness of quiz program on the learning interest in science.

Objectives of Research

1. To develop a quiz program for selected units in science and technology subjects.
2. To study the effectiveness of quiz program on the interest in science among students.

Hypothesis of Research

1. There shall be no significant difference in the mean scores of science interest inventory of the students of experimental and control group.

Operational Definition

Interest in Science: Dewey gave three interpretations of interest – it's a unified activity, it is a state of being totally engaged and is an engaged activity. (Dewey, 1913,1933). For the present study interest is defined as the scores obtained on the interest inventory.

Quiz Program: For the present study quiz is a set of question or exercises designed to determine knowledge or skill. The set of questions were implemented in four rounds and had questions related to the selected units of science and technology subject. The types of questions included multiple choice questions, fill in the blanks, interpretations of images etc. Rules and scoring pattern was prepared well in advance and informed to the students. Three groups were prepared from amongst the experimental group.

Methodology and Variables of Study

The study is an experimental research in the area of Teaching of Science. The variables included in the study are:

- Independent Variable: Quiz Program
- Dependent Variable: Interest in Science
- Controlled Variable: Standard, Unit, School Environment and Medium of Instruction
- Intervening Variable: Innovativeness of experiment, Interaction between groups,

Population of the study

The population comprised of secondary school students studying science and technology subject in standard IX. The sample of study was 48 students of standard IX. The sample was selected through random sampling technique.

Tool of the Study

Interest Inventory for measuring Interest in Science and Technology: The interest inventory was prepared keeping in mind all the necessary steps – developing the test items, pre pilot testing, item analysis, final selection of items and computing the reliability of the inventory. First of all, the test items were developed on the basis of the objective of the inventory. Items were developed keeping in mind the attributes of interest as well as the attributes that may indicate diverse aspects of science. 50 items were prepared initially. After the piloting and the expert opinion 42 statements were selected for the final inventory. It was a three-point scale with positive as well as negative statements. The split half reliability of the inventory was computed at 0.94. The inventory so prepared was implemented on the students.

Data Collection and Analysis

The quiz program was implemented in the school for standard IX students for four days. Quiz program was implemented in the experimental group and control group was taught with normal method and no quiz program was implemented. Pretest of achievement and Interest Inventory in Science was administered in both the groups before the intervention and posttest of same of achievement and Interest Inventory in Science was administered after the intervention. The data was analyzed using descriptive and inferential statistical technique.

Analysis of Effectiveness of Quiz Program on Interest in Science and Technology

Fig. 1 is the graphical representation of mean interest inventory scores of experimental and control groups. Inferential analysis of interest inventory scores of experimental and control group to assess the effectiveness of quiz program is given in Table 1.

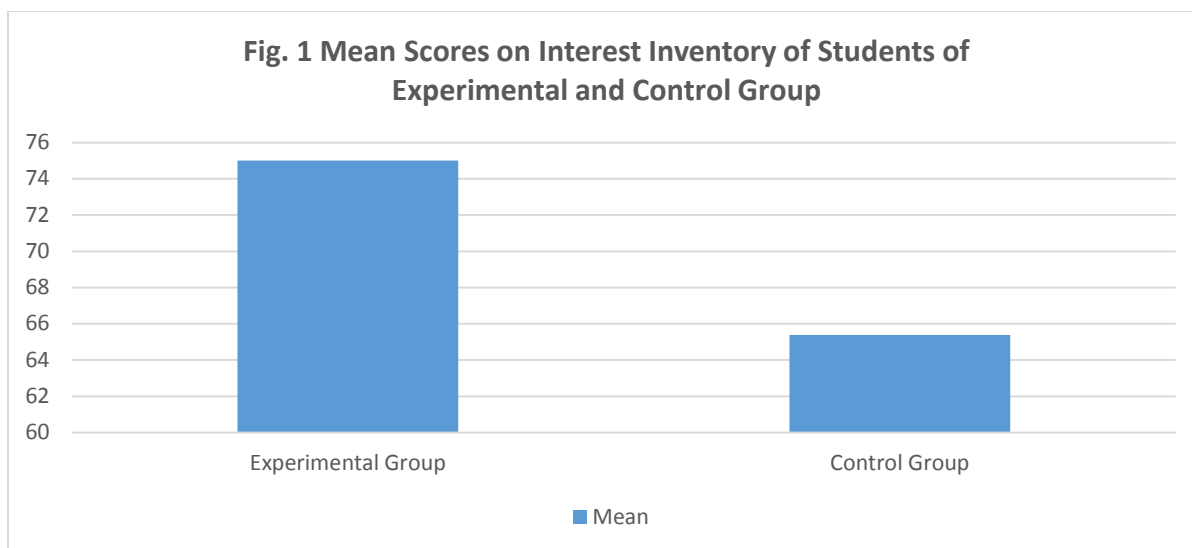


Table-1 Effectiveness of Quiz Program on Interest in Science and Technology

Group	Sample	Mean	SD	SED	t Value	Significance Level
Experimental Group	24	75.00	11.41	2.80	3.44	S**
Control Group	24	65.38	7.58			

Table 1 shows that the mean of experimental group and control group is 75.00 and 65.38 respectively, SD is 11.41 and 7.58 respectively. The value of SED is 2.80 and t value is 3.44. This is more than the table value and is significant at 0.01 level. Thus the H_{01} , i.e. there shall be no significant difference in the mean scores of science interest inventory of the students of experimental and control group is rejected.

Thus it can be inferred that there is a significant difference in the mean interest scores of the students of experimental and control group.

Results

1. Science Interest scores of the students of experimental group in which the quiz program was implemented was found to be higher than the students of control group.

Implications and Conclusion

The study has inferred that the Quiz program in science is effective in increasing the interest in science. The results are in line with the results of previous researches. The study implied that the interest and achievement of the students can be improved if they are taught with the techniques that involve some innovations and engagement of students during teaching learning process. Further the teachers should be motivated to teach science through active involvement of students, form science clubs and do other activities.

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