AN EXPERIMENTAL STUDY ON STIMULUS VARIATION TECHNIQUES ON ENHANCING STUDENTS' ACHIEVEMENT

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ABSTRACT

The present article highlights the stimulus variation techniques on enhancing students' achievement. In this study stimulus variation is the independent variable and students' achievement is the dependent variable. Based on some advantages of experimental research, the study has adopted the single group experimental design for the present investigation. This study consists of seven experimentation phases. Thirty X standard students were taken as sample. Two tools were developed and validated to assess stimulus variation and students' achievement. The tools were administered throughout the experimental period of 6 weeks. The data for stimulus variation and achievement on pre and post-tests were collected and computed for statistical analysis. The findings revealed that there was significant mean difference between the pre-test and post-test scores of the experimental group and hence there was an enhancement in the students' attention as well as in their academic achievement due to the application of stimulus variation techniques.

INTRODUCTION

Teaching is a complex process, which is not merely lecture loaded with a mass of information, but consists of multitudes of purposeful tasks and skills. Effective teaching, therefore is more than communication, transmission of facts, installing of values and it requires interaction between students and teachers as well as among students themselves. Classrooms are set up for sharing teachers' ideas with young and growing minds. There are various skills that a teacher could use in order to synthesize the effective teaching and learning process.

In the classroom situation, attention is a selective process. So the teacher should attempt to select stimuli based on behavioural functions (Saravanakumar, 2008). Attention is considered as a cognitive stimulus. This stimulus involves the neuro function related to attention. Attention functions under a neural network. Attention and memory mechanism are closely related. Hence teachers should follow learning method which includes both attention and memory mechanism. In this situation he / she has to face many constraints on attention. If the teacher is able to minimize the constraints he / she could develop attention and enhance achievement among learners through stimulation variation techniques.

SIGNIFICANCE OF THE STUDY

In our systems of examination where cramming and rote learning are encouraged, strategies like stimulus variation on enhancing students' achievement will be useful in making learners think originally and positively and critically apply their minds. Instead of making the learner simply reproduce the textual materials with or without understanding, the stimulus variation effectively encourages the learners to think and understand the subject matter.

Variation and variety have always been associated with enjoyable learning and good teaching. Good teaching implies maximum assimilation of what has been taught and what has been expected out of it – the positive change of behavior. Therefore, stimulus variation refers to the process of change and evaluation in the teaching system and practical application of a variety of stimuli in the classroom environment. In order to gain a real understanding of the subject it is most important that students must acquire skills in the subjects (Saravanakumar & Mohan, 2007). In the classroom situation, it is found that students know and understand the concept but are unable to comprehend

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the concepts in a holistic way. It surely involves the active participation of the concerned teacher to probe into this aspect of study very deeply.

OBJECTIVES

i) To identify the factors related to stimulus variation on enhancing students' attention

ii) To implement stimulus variation techniques in classroom teaching

iii) To find the effectiveness of stimulus variation techniques on students' attention and their achievement.

EXPERIMENTAL PHASES OF THE RESEARCH

In this study the researcher adopted single group pre-test - post-test experimental design.

Phase I : Selection of the sample

Results of students' performance in tests and examinations are not satisfactory. Hence, there is immediate need to evolve new innovative strategies and techniques to teach science. The researcher selected X – 'A' section for his sample. Since the investigator selected this sample purposefully sampling technique could not be involved in the study.

Phase II :

The investigator adopted the stimulus variation techniques enhancing students achievement in science in X standard 'A' section of Alagappa Model Higher Secondary School, Karaikudi. All the thirty X standard 'A' section students were selected for the study.

Phase III :

Students were given pre-test. The question paper was for a duration of 2 hours. The question paper was with two parts, part A and part B. Part A had objective types such as choose the best answer, fill in the blanks and match for 40% and part 'B' comprise of descriptive types for 60%.

Phase IV :

Stimulus variation techniques were attempted and experimental sessions were carried out for 6 weeks with lessons selected in science. The lessons were taught to the students using the 16 factors of the stimulus variation techniques.

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Phase V :

Conducting the post-test to the group. Post-test was conducted using a pattern similar to that of the pre-test in all respects to all the students.

Phase VI :

The non-parametric technique was used to determine the effect of the treatment.

Phase VII :

Testing hypothesis and interpreting the results.

Phase VIII :

Identifying Educational Implications and providing suggestions for further study.

Phase IX : Conclusion

VALIDATION OF TOOLS

VALIDITY

Copies of pre-test and post-test were given to experienced teachers and they were asked to examine whether the test items covered contents of the subject. They were of the opinion that the test fully covered the content. Thus content validity of pre-test and post-test was established based on panel judgement.

RELIABILITY

By applying test- retest method the reliability of the pre-test tool was found to be 0.74. It was found to be significant. The reliability of the post-test tool was found to be 0.91. So the post-test was also considered to be reliable.

DATA GATHERING PROCEDURE

The investigator used the achievement test to collect data in the pre-test and post-test. Pre-test was conducted to the students on previous knowledge of the lessons selected for the study. Experimental treatment in the form of additional coaching was given to the group. Post-test was conducted to determine the effectiveness of the experimental treatment.

ANALYSIS OF DATA

The scores of students of the experimental group were tabulated. Appropriate statistical techniques were applied to identify the effect of stimulus variation on enhancing students' attention. Appropriate non-parametric statistic techniques were used for data analysis.

Table 1

MEAN, SD SCORES OF PRE-TEST OF THE EXPERIMENTAL GROUP

SCORE	MEAN (M)	SD (σ)
Pre-test	65.10	18.89

Students were administered the tool on stimulus variation on enhancing students' attention. Each student was asked to respond to a question of yes/no type. If yes, they were asked to further report to a three point scale like less, adequate and appropriate and they were graded on 1, 2, 3 respectively for each item. This procedure was repeated for 30 days regularly. Their responses were consolidated and presented in the table. Chi-square analysis was done to identify whether students differ in their performance on the effect of stimulus variation on enhancing students' attention.

Table 2

MEAN, SD VALUES OF PRE-TEST AND POST-TEST SCORES OF THE EXPERIMENTAL GROUP

SCORE	MEAN (M)	SD (σ)
Pre-test	65.10	18.89
Post-test	72.96	20.21

In the post-test the performance was greater than that in the pre-test. The test of significant difference was applied to prove the effect of attention on students' achievement. Teaching through the information processing approach and stimulus variation strategies by the researcher improved the learning ability of the students. This hypothesis was tested statistically by the application of Mann-Whitney 'U' test and Wilcoxon's matched pairs signed rank test.

FINDINGS OF THE STUDY

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The use of effectiveness of stimulus variation technique on enhancing students' attention in the teaching process positively influences and improves students' achievement. The statistical analysis like chi-square analysis, Mann-Whitney 'U' test and Wilcoxon's matched pairs signed rank test between pre-test and post-test performance of the students confirms the following findings.

1) There is significant difference between pre-test and post-test performance of the students in the experimental group.
2) Students who had been taught through effective stimulus variation on enhancing attention technique performed better in their achievement.
3) The obtained x^2 value was 240.64. It is greater than the theoretical value of x^2 at 0.5 level of significance. This implies that students differ in their performance on the effect of stimulus variation strategies on enhancing students' attention.
4) The obtained value of Mann-Whitney 'U' test (Z) = 6.65 is greater than the table value. Hence it is found that there is significant mean difference between the pre-test and post-test scores.
5) The obtained value of Wilcoxon's matched pairs signed rank test (z) = 19.85 is also greater than the theoretical value of 2.38. Hence it is also proved that the performance in the post-test is significantly greater than the pre-test performance.

RESULTS AND CONCLUSION

1) Stimulus variation techniques have produced tangible effect.
2) Stimulus variation provides better opportunity to the learners to take part in the process of learning activity.
3) Stimulus variation offers greater opportunity for active participation in teaching and learning for both the teacher and students.
4) In this technique, the teacher does not just deliver the subject matter to the learner in the conventional way. Rather he/she has to design, conduct and monitor the educational activities that facilitate the stimulus variation on enhancing students' attention using a variety of factors.

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