

A COMPARATIVE STUDY OF EFFECT OF LECTURE METHOD AND LECTURE-CUM-DEMONSTRATION METHOD ON ACHIEVEMENT OF IX CLASS STUDENTS IN BIOLOGICAL SCIENCE

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Abstract

In this study the investigators adopted experimental method for testing the comparative effectiveness of lecture method and lecture-cum- demonstration method on a purposive sample of 100 students of IX class of Biological Science from a school of Delhi. The objectives of the study were (i) To study the effect of lecture method (traditional method) of teaching on pupils' achievement in Biological science. (ii) To study the effect of lecture-cum-demonstration method of teaching on pupils' achievement in Biological science and (iii) To find the comparative effectiveness of teaching through lecture method and lecture-cum-demonstration method in relation to pupils' achievement in Biological science. The tool used for collecting data was a standardized Biology Achievement Test (BAT) constructed by Dr. Saroj Aurora (1979). Findings of the study are that (i) there was a significant difference on achievement of students in Biological science, in teaching through lecture method and lecture-cum demonstration method, which implicitly stated the effectiveness of lecture-cum demonstration method. (ii) Lecture method is less effective method of teaching Biological science and lecture-cum demonstration method is more effective method of teaching Biological science. (iii) The achievement shown by both the groups before and after the treatment is different with experimental group showing a remarkable higher level of performance after the treatment, i.e. teaching by lecture-cum-demonstration method. Based on the finding of the study following can be recommended (i) different new innovative methods of teaching need to be introduced for teaching science as they have significant effect in bringing desirable development and level of achievement among students. (ii) the study has implications for education to suggest how this method of teaching could be used to teach concepts effectively. (iii) teachers can make their instructions more meaningful while teaching concepts through employment of demonstration technique. (iv) 'Science for all' and 'scientific literacy' need systematic comprehensive strategies and innovative and advanced methods of teaching should be included in our teaching-laving practice for subjects like science and especially Biological science.

Introduction

Future of a nation depends upon its development. Education plays an important role in the progress of an individuals' mind and country. Science education accompanies a very eminent place in the curriculum, both at school and university stages of education in India. Continuous advances in scientific and technological research have lead to the growth and greater application of science in contemporary society. Accordingly science becomes a priority area in education, both at contemporary education level as well as the level of specialization. Science education is supposed to perform a twofold task. Realizing such need Kothari Commission (1966) has very rightly remarked the following in their recommendation:

“Science and Mathematics should be taught on a compulsory basis to all pupils as a part of general education during the first ten years of schooling. ”

Researchers in the science education should be targeted in context to its aims and objectives. Research in science education should be addressed to the problem of developing a scientific attitude and creative thinking in educed. For achieving this objective we must direct our research towards the effective method of teaching. During the last three decades, many new methods of teaching and training have been developed, tested and modified for different kind of learning situations. In order to meet continuing need of updating methods with technological development, obsolete methods need replacement with the new, innovative and effective method.

There are various methods and strategies of teaching biological sciences in our schools. To make teaching interesting for the benefit of students it is very important; the selection and employment of a good and appropriate teaching method keeping in mind the nature and content of the subject matter. For a science teacher it is a very challenging task to stimulate in the students critical awareness, understanding of subject matter and observation power. From the review of related literature it is clearly evident that the other modern methods of teaching have been evolved as a better alternate to the traditional teaching style or the lecture method.

So, by carrying out this study an effort was made by the investigator to provide information that can be of great help in understanding learning and implementation aspect of the teaching strategy under observation (Lecture-cum-demonstration) and its comparative effectiveness with the traditional method (Lecture method). Some studies supporting to the better academic achievement by using teaching strategy other than traditional method are as follows:

Banerjee (1997) found Cooperative Learning Strategies more effective than traditional lecture method on Achievement in Chemistry in Under Graduate Students. Agarwal and Mohanty (1998) found that multimedia programs of learning are more effective for students achievement than the traditional method of teaching. Amita (1998) found concept attainment model, very effective on pupils' achievement in Biology. Sirohi (2004) found that Puppetry method in teaching of Biology led to better results.

From the review of different studies it is clearly it is evident that in almost all these researches, approach of model of teaching and other innovative method of teaching have been found to be superior to the traditional methods. It is evident that the other modern methods of teaching have been evolved as a better alternative to the traditional style of teaching. So by carrying out this study an effort had been made by the investigator to provide information, that can be of great importance and help in understanding, learning and implementation aspect of teaching- strategy under observation (Lecture-Cum-Demonstration) and its comparative effectiveness with the lecture method.

Objectives

1. To study the effect of lecture method (traditional method) of teaching on pupils' achievement in Biological science.
2. To study the effect of lecture-cum-demonstration method of teaching on pupils' achievement in Biological science.
3. To find the comparative effectiveness of teaching through lecture method and lecture-cum-demonstration method in relation to pupils' achievement in Biological science.

Hypotheses

1. Lecture method is less effective method of teaching Biological science.
2. Lecture-cum-demonstration method is more effective method of teaching Biological science.
3. There is a significant difference on achievement of students in Biological science ,in teaching through lecture method and lecture-cum-demonstration method.

Methodology

Experimental method was used to conduct the study. Pre-test ,post-test, control group and experimental group design was used for the study.

Sample

The sample of the present study was consisted of 100 students of Biology studying in class IX of Updesh Kaur Sarvodaya Kanya Vidayala, Dariyapur, Bawana, Delhi . The purposive sample consisted of two intact sections (IX A and IX B) of class IX students. Class IX A was termed as experimental group and IX B termed as control group. The two groups were as similar as the availability permitted; they were natural and highly comparable in respect of size, average age and especially in their past achievement in science. Thus the two experimental groups were comparable within proximity on experimental measures at pre-experimental stage.

Tools

As per objectives of the study, to measure the subjects during pretest and post test the tool used for collecting data was a standardized Biology Achievement Test (BAT) constructed by Aurora, Saroj (1979) was used.

Analysis of Data

In order to find out the individual effectiveness as well as the relative effectiveness of the lecture method and lecture-cum-demonstration method, pre-test post-test scores of students in Biology Achievement Test were taken into consideration. As these two groups did not differ significantly on pre-test stage, they could directly compared using 't'-test. Two tailed test was applied. The analysis of data can be studied under different sections as given below.

(A) Comparison of Means of Pre-test Scores of Students of Experimental and Control Groups in Biology Achievement Test

Table - 1
Significance of Difference of Means of Pre-test Scores of Students of Experimental and Control Groups in Biology Achievement Test

GROUP	N	M	SD	t-value
EXPERIMENTAL	32	25.84	5.78	0.09
CONTROL	32	25.68	5.62	

* at .05 level= 2.00, ** at .01 level =2.66

In table - 1 the mean, standard deviation and 't' values have been shown for the scores of the students in Biological achievement test at pre-test stage for both the groups i.e. experimental and control. The calculated 't'-value is 0.09, which is less than the table value at .05 level and .01 level i.e. 2.00 and 2.66 respectively. Hence the test is insignificant at both the levels. So these two groups can be treated as similar groups as the mean score of experimental group does not differ significantly from that of control group.

(B) Comparison of Means of Post-test Scores of Experimental and Control Groups in Biology Achievement Test.

Table - 2
Significance of Difference of Means of Post-Test Scores of Experimental and Control Groups in Biology Achievement Test

GROUP	N	M	SD	t-value
EXPERIMENTAL	32	42.68	6.18	14.15**
CONTROL	32	28.53	5.64	

* at .05 level= 2.00, ** at .01 level =2.66

In table -2 the mean, standard deviation and 't' value have been shown for experimental and control group at post-test stage. As it may be observed from the table no 4.2 that the 't' value 14.15, of difference in mean scores at post-test stage of students in experimental and control group in Biology achievement test is significant at both the levels i.e. .05 and .01. The mean score of experimental group differs from the control group significantly. This shows that the achievement shown by both the groups at post-test stage is different.

(C) Comparison of Mean Gains of the Experimental and Control Group in Biology Achievement Test

Table - 3
Significance of Difference of Mean Gains of the Experimental and Control Groups in Biology Achievement Test

GROUP	N	M	SD	t-value
EXPERIMENTAL	32	16.84	6.3	12.38**
CONTROL	32	2.84	1.3	

* at .05 level= 2.00, ** at .01 level =2.66

In table - 3 mean, SD of gains of experimental and control group in pre-test and post-test have been shown. Significant difference in the mean scores of gain in pre-test and post-test for experiment and control group was observed. It may be observed from the table-3 that 't'-value 12.38 of difference in mean scores of students gain before and after the treatment in experimental and control group in Biological Achievement test is significant at 0.05 and 0.01 levels. The mean score of gain of experimental group is fairly high than the mean score of gain of control group. This shows that the achievement shown by both the groups before and after the treatment is different with experimental group showing a remarkable higher level of performance after the treatment, i.e. teaching by lecture-cum-demonstration method.

Thus, from all of the above we can conclude regarding the hypotheses which were framed at the starting of the study as follows:

- H1:** Lecture method is less effective method of Biological Science is accepted.
- H2:** Lecture-cum-demonstration method is more effective method of teaching Biological science is accepted.
- H3:** There is a significant difference on achievement of students in Biological Science in teaching through lecture method and lecture-cum-demonstration method is accepted.

Conclusion

The results of current study i.e. a comparative study of effectiveness of lecture method and lecture-cum-demonstration method on the achievement of class IX students in Biological Science are very interesting.

The experimental and control groups did not differ significantly in terms of levels of achievement in science at pre-test stage. But after the treatment the mean scores of experimental group was significantly higher than the control group. Also the difference in mean gain scores of experimental and control groups on achievement was noteworthy. The mean gain scores of students in experimental group were significantly higher than the score of students in control group. Hence these gains can be considered due to treatment provided to the experimental group.

The difference in achievement of experimental and control groups reflects the effectiveness of treatment. The experimental group was provided higher form of instruction than the control group in form of lecture-cum-demonstration method, while the instructions given to control group were through the lecture method of teaching.

Here it is obvious from the above discussion that teaching through lecture-cum-demonstration method brings higher achievement as compared to the lecture method of teaching. In other words the teaching through lecture-cum-demonstration method can be a better method of imparting and transmitting knowledge to the student in comparison to the traditional, i.e. lecture method in Biological science.

A very significant difference in the mean scores of gain in pre-test and post-test for experimental and control group was observed. The mean gain of experimental group was fairly high than the mean gain scores of control group after the treatment at post-test stage. This shows that the achievement shown by both the groups before and after the treatment is different with experimental group showing a remarkable higher level of performance after the treatment, i.e. teaching by lecture-cum-demonstration method. So, the findings suggested that Lecture method is less effective method of teaching Biological science and lecture-cum demonstration method is more effective method of teaching Biological science.

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