

A Comparative Study of Achievement in Life Science Of 10th Class Students by Using Lecture Method or Lecture-Cum-Demonstration Method

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INTRODUCTION

The seekers of truth in India have always collaborated in the pursuit of knowledge. History of science reveals that Indian people have contributed to scientific knowledge which laid the foundation of our present day science. Not only in the field of physical world. Science has entered into our daily life. Science has explored all the hidden treasures from the nature. Science in the field of medicine has increased the average age of human beings on the earth.

“Every effort will be made to extend science education to the vast numbers who have remained outside the pale of formal education.”

- National Policy of Education

In the teaching learning situation, methods of teaching play an important role especially in the teaching of sciences. It has been established that in teaching physical and life Sciences, active participation of the students is essential. So the teacher has to use some aids as illustrations for explaining the different points. In short, the efficacy of lecture-cum-demonstration Method is established in teaching of physical and life Sciences. The investigator, being a student of life Sciences, wanted to study whether the same is true of Life Sciences or not.

Velle S & Hal T. (2004) A study was conducted using 64 ninth grade students in Wisconsin. Two classes, led by different teachers, were utilized. The class of Teacher A dissected real frogs, while the class of Teacher B performed a virtual dissection. Students in both classes followed the same laboratory outline and submitted the same laboratory report. At the end of the lab, both classes were given two tests. One test was virtual; the other used real frogs. Students who had completed the virtual dissection performed better on both tests. Cross & Cross (2004) commented that the teacher conducting the virtual dissection was a veteran of 20 years in the classroom, while the teacher working with the students dissecting real frogs was a first year biology intern, and that the method by which the performances were judged was not indicated.

Cross TR & Cross VE. Scalpel (2004) Over a two-year period, four classes of eleventh and twelfth grade high school AP Biology students were tested, none of whom had previously dissected a frog. 36 students dissected real frogs, while 38 dissected virtual frogs using the 'Biolab Frog

Dissection' computer simulation. The students were given two days to complete their assignments, after which their identification and knowledge of the functions of organs and tissues was examined. The first year (two classes), all students were tested only via a laboratory practical using real frogs. The second year (two additional classes), students were tested in laboratory practicals using both real and virtual frogs. Students dissecting real frogs performed significantly better on the laboratory practicals utilizing real frogs. No significant difference was observed in the virtual laboratory practical test scores, however.

Cantrell (2004), the **Exposition** method of teaching is conventional and widely used in the classroom. Also, Cantrell (2004) reported the characteristics of exposition method to include the following: leader-centered, leader-active, learner passive and content emphasis. Examples of exposition methods are lecture, discussion, traditional demonstration, guest speaker, panel discussion, story telling, dramatization, and reading of textbooks, manuals or handouts.

The **Inquiry** method is an approach where the learner generates his/her own form of information. It is characterized by the following features: learner-centered, leader-facilitated, learner-active and learning process emphasis.

DEFINITION OF KEYWORDS

To avoid vagueness in the terms used in the study, it is necessary to define the various terms used in this study.

- 1) **Comparative Study:** - It means an investigation in the field of teaching like science which compare two methods in order to find the superiority of one over the other.
- 2) **Achievement:** - It means works obtained by the pupils in a particular test.
- 3) **Biology:** - It applies of life science leaving side the other science.
- 4) **Lecture Method:** - It is that method of teaching in which the teacher is the only active participant and the pupils are listeners and no demonstrations are given to the students. He delivers the lecture without demonstration.

5) Lecture-cum-Demonstration Method:- It is that method of teaching life science in which the teacher explain the subject matter with the help of teaching aids like audio-visual colorful diagram and effective demonstration with the help of projector slides, working models computer presentations etc.

OBJECTIVES OF THE STUDY:

The objectives of this investigation are to find the difference in achievement in life science of class 10th student if they were taught by using lecture method or lecture-cum-demonstration method.

HYPOTHESIS:

In order to attain the above given objectives, null hypothesis was framed.

DELIMITATIONS:

The investigator has to delimit the investigation keeping in mind time and convenience in collecting the data. So she delimited her study-

1. Only to students of 10th Class.
2. Only one government school was taken.
3. The study was limited to the two groups of ten students each.
4. The study was conducted only in biology.

DESIGN OF STUDY:

The investigator thought of devising an experimental design for her study.

For this researcher taught two groups by Lecture-Method and Lecture-cum-Demonstration Method. The students were divided into two groups on the basis of their performance in previous class. She taught both the group herself and the teacher variable was also controlled.

For the purpose of comparison, he gave test each after completion of one topic.

The achievement of students of two groups was compared by using appropriate statistical techniques which were mean, standard deviation, standard error of the difference of mean, t-ratio. The formulas for computing this are given.

STATISTICAL TREATMENT:-

t-test was used by the researcher as a statistical techniques for the interpretation of data.

The investigator found that overall performance of students taught by Lecture-cum-Demonstration Method was found to be better.

EXPERIMENT - 1 ANALYSIS OF 1ST ACHIEVEMETN TEST

Group	n	Mean	S.D.	SE _(D)	t-value	Level of Significance
Experimental	10	11.3	1.48	0.62	4.84	Significant at both level
Control	10	8.3	1.29			

* Table value at .01 level 2.58

** Table value at 0.05 level 1.96

INTERPRETATION

The t-ratio is significant at both the level of significance, which shows the significant achievement of experimental group over the control group. Hence it reveals the effectiveness of Lecture-cum-Demonstration method over the Lecture method.

EXPERIMENT - 2 ANALYSIS OF SECOND ACHIEVEMETN TEST

Group	n	Mean	S.D.	SE _(D)	t-value	Level of Significance
Experimental	10	11.7	1.59	0.61	5.90	Significant at both level
Control	10	8.1	1.16			

* t-ratio is significant at .05 level

** t-ratio is significant at .01 level

INTERPRETATION:

The t-ratio is significant at both the level of significance, which shows the significant achievement of experimental group over the control group. Hence it reveals the effectiveness of Lecture-cum-Demonstration method over the Lecture method.

EXPERIMENT – 3
ANALYSIS OF 3RD ACHIEVEMENT TEST

Group	n	Me- an	S.D.	SE _(D)	t- value	Level of Signif- icance
Experi- mental	10	12. 1	1.60	0.65	6.30	Signif- icant at both level
Control	10	8.0 6	1.30			

* t-ratio is significant at .05 level

** t-ratio is significant at .01 level

The t-ratio is significant at both the level of significance, which shows the significant achievement of experimental group over the control group. Hence it reveals the effectiveness of Lecture-cum-Demonstration method over the Lecture method.

DEEPER ANALYSIS OF STUDY:

Deeper analysis revealed that during the course of her teaching.

1. Active participation on the part of students of experimental group made the lesson more interesting.
2. Experimental group students were able to form clearer concepts through proper observation.
3. Lecture-cum-Demonstration method stimulated the pupils in learning who were anxious to know about the topics.
4. Demonstration along with lecture was found to develop deeper insight into the cause and effect relationships. The pupils were able to reason out the occurrence of various phenomena.

5. Deeper insight help the students of experimental group to apply their knowledge gained to various other phenomena.

6. Students were motivated by seeing the real specimens.

7. Learning in case of students taught by Lecture-cum-Demonstration Method was better and more stable.

MAIN FINDINGS

The main findings of the study are listed below:

1. Active participation on the part of students of experimental group made the lessons more interesting for them while the students of control group were passive listeners and showed no involvement. The students of experimental group were more eager to go into the details of subject matter than the students of control group.
2. Students of experimental group were able to form clear concepts through proper observations while the students of control group showed uncertainty and blankness on their faces. As the students of experimental group saw the demonstration, charts and colourful diagrams during the presentation of subject-matter, hence they have better observation power and clear concepts in their minds.
3. Lecture-cum-Demonstration method stimulated the pupils in learning who were anxious to know more about the topics. This was evident from number of questions asked by the students of experimental group. On the other hand, the students of control group tried to learn the lesson by heart whatever was taught to them in the class and were not interested in knowing more facts about the topic.
4. Lecture-cum- Demonstration method was found to develop deeper insights into the cause and effect relationship. The pupils were able to reason out the occurrence of phenomenon. In the experimental group the pupils were found to discuss the causes of various phenomena not only with the investigator but also among themselves. So Lecture-Cum-Demonstration method not only provided knowledge but also encouraged discussions which developed deeper insights in the subject.
5. Deeper insights helped the students to apply their knowledge gained to various other phenomena. A general talk with the pupils, on the topic taught for the day, revealed that the pupils of the experimental group

had gained more knowledge of subject matter and tried to apply this knowledge in their daily life.

6. Real specimens shown for teaching by Lecture-cum-Demonstration method in some topics were more effective. The knowledge gained by these was more stable and the power of retention was also found to be better.

7. The use of colorful models, real specimens, drawings on the charts motivated the students in learning and drawing.

8. The equal time given to the both groups revealed that the teacher who do not want to adopt the Lecture-cum-Demonstration method on the plea that it is more time consuming is baseless.

REFERENCES

1. Adinaryana, K., "A Teaching Strategy for Developing Appropriate Skills Required in Students for Conducting Scientific Investigation," MUS, 1979.
2. Anjaria, R., "Systems Approach in the Teaching of Science: An Exploration," SGU, 1984.
3. Buch, M.B., ed. "Third Survey of Research in Education," NCERT, New Delhi, 1978-1983.
4. Buch, M.B., ed. "Fourth Survey of Research in Education," NCERT, New Delhi, 1983-1988, V 01.1.
5. Dev, S.K., "A Critical Study of the Methods of Teaching in Secondary Schools of Nagaland," Gau. University, 1979
6. Dighal, K.C., "Improved Methods of Teaching Biological Science in Schools of Tripura and West Bengal," Cal. U. 1985,
7. Garrett, H.E., "Statistics in Psychology & Education," Vakils, Feffer & Simons Pvt. Ltd., 1973.
8. Husen Torsten & Postlethwaite T. Neville ed. "The International Encyclopedia of Education," Pergamon, New York, 1994, Vol. VI.
9. Jha, I., "An Experimental Comparison of Different Methods of Teaching High School Biology," Pat. U., 1979.
10. Kamalakanthan, T.S., "An Experimental Study of Teaching Physics by the Traditional and Problem Solving Methods," SCERT, Hyderabad, 1968.