

INVESTIGATION OF LECTURE AND DEMONSTRATION METHOD  
IN THE TEACHING OF SCIENCE AT ELEMENTARY LEVEL IN  
HAVELI KAHUTA AZAD JAMMU AND KASHMIR

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ABSTRACT

Science plays a pivotal role in our life. Science is one of the most important channels of knowledge. Students achievement in this subject at all levels of education had been consistently poor. In an attempt to seek solution to this problem this study determined the effect of lecture and demonstration method in the teaching of science at elementary level in Haveli Kahuta AJ&K. The objective of the study was to find out achievements scores of elementary students in the subject of science with demonstration and lecture method. The study adopted an experimental design. The participants of the study were students of class 8<sup>th</sup> of Govt. Girls High school Haveli Kahuta, for conducting the experiment, the investigator used pre-test and post-test comparison group design. Two groups were made to conduct this study i.e experimental group and control group. Experimental group was taught by demonstration method (18 students) and control group was taught by lecture method (18 students). 100 items (MCQs) were made for data collection and data were analyzed using t-test at a significant level of 0.05. 100 Items were same for both groups (Pre-test, post-test).

The findings of the study revealed a significant difference in the mean scores of the students and a significant difference was noted between control group and experimental group. Results obtained revealed that student's performance better in science when taught using demonstration method than when lecture method was used. It was therefore, recommended that the demonstration method be used with confidence to teach science at elementary level.

**Keywords:** *Demonstration Method, Lecture Method, Teaching of Science.*

## INTRODUCTION

The word Lecture is derived from the French language, which means to read. According to traditional definition, this academic practice involves an oral presentation intended to teach by conveying information about a particular subject, by a member of faculty (Gross Davis, Jossey –Bass 2009). Lecture method saves time and energy of the teacher, as teacher can speak one thing to the whole class at the same time. It helps the students to enhance and improve the ability to listen carefully to the teacher but it kills student's initiatives as it makes them passive learner. The female students prefer seeing them than hearing on the other hand, male students prefer hearing them than seeing in teaching learning process (Hodkinson & Jeophcote, 1996).

The study may be helpful for teachers when teacher have lack of knowledge about suitable method students will not able to know about worth and use of science. The study may be helpful for students learning will better when teachers use innovative methods. In this study, Researcher focused on students effective learning in science. The findings of this study may be useful for policy makers as it may provide them an opportunity to rethink and to remodel their priorities.

Lecture method is a teaching procedure in which there is a one-way channel of communication where the teachers make an oral presentation of the subject matter content and students react by silently listening and

taking notes. In this method, the teacher gives out all the facts he wants the students to know and master, caring very little if at all whether or not, the students are actively participating and contributing to the success of the lesson (Akem, 2007). This method is good for large class since much work could be easily covered in shorter time. Abah (2006) revealed that skills are best learnt through practices rather than mere listening.

The most suitable methods for teaching practical oriented subject like agricultural science are demonstration and discussion methods. Nowak et.al (2004) articulated this position and presented evidence that, demonstration method is generally effective in teaching sciences, mathematics, as well as subjects within vocational and technical education because it can be effective. There are two types of demonstration namely, teacher-demonstration and student-demonstration. Teacher-demonstration strategy therefore, is one whereby the teacher illustrates a procedure to be followed and thereafter students follow those procedures to solve the given problem.

## 2. Research Methodology

Research design used for the current study was experimental method, which further involves pre-test, post-test, and control group design. In this design, two groups were formed randomly i.e.; control and experimental. Both groups were based on pre-tested and post-tested on the same achievement test. The independent variable in present study

was teaching of science. And the dependent variable in present study was Lecture and demonstration method. The population of the study consisted of all the private elementary school's students of grade 8<sup>th</sup> in district Haveli Kahuta AJ&K for the academic year 2022. Total students of class 8<sup>th</sup> selected randomly from school.

## 2.1 Research Instruments

As a research instruments, researcher developed test to measure dependent variable i.e. achievement test.

### 2.1.1. Achievement Test

The pre-test and post-test reported in this research study, were focused on answering the multiple-choice questions (MCQs). The pre-test consisted of 100 MCQs each carry one mark. The total marks of this test were 100. This pre-test was administered to determine baseline equivalency in prior knowledge of students in the lecture-based treatment group. The same test was used as post-test.

## Development of lesson Plans

The researcher developed two versions of lesson plans. One version of lesson plan utilized the lecture-based strategy while the second version of lesson plan utilized demonstration-based strategy. Twenty (20) lesson plans for lecture-based strategy and 20 for demonstration-based strategy were developed with respect to four chapters taught during the experiment. The content for each lesson plans, across both the lecture-based strategy and demonstration based strategy, was based on the same educational objectives in both the experimental and control group. Test was MCQs based Achievement test (pre-test, post-test) was made from four chapter of class 8<sup>th</sup> science. 100 items were included in achievement test (pre-test, posttest). Out of 100 questions 49 were based on knowledge, 33 were based on understanding, and 18 were based on application

**Table of Specification**

| Chapters Name                      | Knowledge   | Understanding | Application | Total                       |
|------------------------------------|-------------|---------------|-------------|-----------------------------|
| Acids, Bases and Alkalis           | 12          | 6             | 7           | 25<br>(25%)                 |
| Measurement of physical quantities | 10          | 9             | 6           | 25<br>(25%)                 |
| Sources and effect of heat energy  | 13          | 9             | 3           | 25<br>(25%)                 |
| Force and pressure                 | 14          | 9             | 2           | 25<br>(25%)                 |
| Total                              | 49<br>(49%) | 33<br>(33%)   | 18<br>(18%) | <b>100</b><br><b>(100%)</b> |

## 3. RESULTS

This chapter deals with

analysis and interpretation of data collected through achievement tests and attitude scale. For analysis of data

and to find out the difference in performance of experimental and control group and to assess their attitude towards science, T-test was

used. For this purpose, the researcher also took help from SPSS (Statistical Package for Social Sciences).

### **Analysis and Interpretation of the Data**

#### **3.1.1 Table#1. Pretest between Experimental and Control group.**

| Test    | Groups       | N  | Mean  | SD   | T    | df | Sig  |
|---------|--------------|----|-------|------|------|----|------|
| Pretest | Control      | 18 | 32.33 | 7.66 | 1.53 | 34 | .204 |
|         | Experimental | 18 | 36.16 | 9.95 |      |    |      |

Above table shows that the mean score of pre-tests of control group is 32.33 with SD 7.66, and score of experimental group is 36.16 with SD 9.95.

#### **3.2.2 Table#2. Posttest between Experimental and Control group.**

| Test     | Groups       | N  | Mean  | SD    | T    | df | Sig  |
|----------|--------------|----|-------|-------|------|----|------|
| Posttest | Control      | 18 | 38.88 | 11.55 | .824 | 34 | .034 |
|          | Experimental | 18 | 47.88 | 12.84 |      |    |      |

Above table shows that the mean score of post-tests of control group is 38.88 with SD 11.55, and score of experimental group is 47.88 with SD 12.84.

#### **3.3.3 Table#3 Pretest and posttest of Experimental group.**

| Test         | Groups   | N  | Mean  | SD    | T      | df | Sig  |
|--------------|----------|----|-------|-------|--------|----|------|
| Experimental | Pretest  | 18 | 36.16 | 9.95  | -5.061 | 17 | .000 |
|              | Posttest | 18 | 47.88 | 12.84 |        |    |      |

Above table shows that the mean score of pre-tests of experimental group is 36.16 with SD 9.95, and mean of post-tests of experimental group is 47.88 with SD 12.84.

#### **3.3.4 Table#4. Pretest and Posttest of Control group.**

| Test    | Groups   | N  | Mean  | SD    | T      | df | Sig  |
|---------|----------|----|-------|-------|--------|----|------|
| Control | Pretest  | 18 | 32.33 | 7.66  | -3.441 | 17 | .003 |
|         | Posttest | 18 | 38.88 | 11.55 |        |    |      |

Above table shows that the mean score of pre-tests of control group is 32.33 with SD 7.66, and mean of post-tests of control group is 38.88 with SD 11.55.

### Findings

1. There is no significance difference between Experimental and control groups in pre -Test. (Table 3.1)
2. There is a significance difference between posttest of experimental group and control group. (Table 3.2)
3. There is a significance difference between pre and post-test of experimental group. (Table 3.3)
4. There is a significance difference between pre-test and post-test of control group (Table 3.4).

### Conclusion and Recommendations

Based on the findings of the study, the following conclusions were drawn: -

5. It is concluded that at the time of pretest there was minor difference in mean scores of achievement test of both control and experimental group.
6. It is concluded that at the time of posttest there was a major difference between achievement test scores of control and experimental group.
7. It is concluded that at the time of pretest and posttest there was a difference in achievement test scores of control group.
8. It is concluded that at the time of pretest and posttest there was a major difference

achievement test scores of experimental groups.

### Recommendations

Based take on the results, the following recommendations are made:

1. Demonstration teaching method is hereby recommended for science teachers because students take interest more in demonstration and students learn more in demonstration as compared to lecture method.
2. It was noted that teachers have lack of guidance about demonstrations. So, for proper training of teachers in demonstration Workshops and seminars may be organize for science teachers.
3. In Government Sectors, Students strength is more as compared to private sectors and forty (40) minutes are allotted for science class and it is difficult to manage
4. whole class in demonstration. The forty (40) minutes may be doubled to make it eighty (80) minutes when demonstration method is to be used.
5. Government may hire more qualified teachers to decrease the work load of teachers.
6. Resources are most important for implementation of demonstration. Government may provide adequate resources for implementation of demonstration method in the teaching of science.
7. Basically, Science is a practical work, and students cannot learn more through conventional lecture method so, it is highly recommended for the teaching of

science via demonstration method to be adopted in schools.

### **Discussion**

The findings of the present study supported the research hypothesis that revealed that there is a significant difference in the science achievement post-test mean scores of the student taught with demonstration method (Experimental) and students taught with lecture method (control) groups after controlling for the effect of the pre-test on science scores, and a noticeable difference was found to be in the favor of experimental group students in terms of the post-test science academic success scores. The result agrees with Daluba (2015) who conducted a research on the effect of demonstration method of teaching science in secondary schools in Kogi East Education Zone of Kogi state and found a significant effect.

This result also agreed with Efe and Khalil (2016) who investigated the effect of teacher's demonstration and lecture instructional methods on students learning outcomes in selected secondary schools in Kaduna, Nigeria and found that the demonstration teaching method was more facilitating. As Buguelski (1977) suggested the lecture model is not useful in teaching factual information. Samuel Johnson said in

1766 "People have a got strange opinion that everything should be taught by lectures. When compared, the effectiveness of lecture and demonstration method in learning science demonstration method was more effective than lecture method.

The findings of this study is in support of the finding of Okocha (1994) who reported that

demonstration method was more effective in learning science concept. This showed that demonstration method was more effective than the lecture method. This is in line with Moore (1996) reports which said that students remember 90% of what they see and do what they hear. This finding is in line with Ernest (2010) who reported that demonstration method was more effective in learning science in Esan, Edo state. The results agrees with Attah (2014) who using demonstration method and lecture method found out that demonstration method brought about increased in retention than the lecture method. The result is in line with the statement of Ibrahim (2015) that demonstration strategy helps in presenting vivid illustration for quick grasping of facts, which is foster retention of learned facts.

Veselinovskaa (2011) conducted a study on the comparison of teaching methods and their impact on student's motivation and academic achievement. The results showed that students taught with practical task (maximum use in inquiry method) and demonstration method were high achiever than the students taught by lecture method. Veselinovskaa also mentioned that demonstration and experiment also attract and motivate students better than lecture method.

In a study on the effectiveness of demonstration, Hannus and Hyona (1999) found the results that illustration during the teaching process increases the comprehension level of high ability students but not for the students of low ability. In another study, Reid and Beveridge (1986) concluded that when picture is used along with the text during

teaching process, students with low ability level disturb rather than

improvement. The reason may be that students of low ability level may confuse in integrating information with text. In a Turkish high school study was conducted by Kaya and Geban (2011) and found that demonstration method develops positive attitude among students towards chemistry subject rather than traditional method of teaching.

So, lecture method also can be considered as a popular teaching model in different subjects. The lecture model is the traditional style of teaching still found in many schools and colleges (Dececcos and Grawford, 1977). It is still the lectures in sciences, engineering and medicine and they are still the most common method of teaching in universities throughout the world (Brown, 1987). This has to be noted that the lecture method just like any other method is inappropriate as all-purpose method, but it can serve many useful instructional functions. The lecture-explanation approach, when used properly can inspire enthusiasm and capture the student imagination (Leish, 1976).

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