



EFFECTIVENESS OF TEACHING THROUGH DEMONSTRATION ON ACHIEVEMENT IN CHEMISTRY AT SECONDARY LEVEL IN THENI DISTRICT

V. Sudharsan¹ and Dr. P.N. Lakshmi Shanmugam²

¹Research Scholar, Department of Educational Psychology, TNTEU, Chennai, Tamil Nadu.

²Assistant Professor, Department of Educational Psychology, TNTEU, Chennai, Tamil Nadu.

ABSTRACT

The present investigation was intended to study the relative effectiveness on Achievement in Chemistry at Secondary level through Demonstration Teaching. Pre-test Post-test Equivalent Group design was used. The sample consisted of 70 students from Standard IX, Palaniyappa Memorial Higher Secondary School in Theni District, Tamil Nadu. It was found that Demonstration Teaching has significant gain on Achievement in chemistry due to effective teaching and student's Involvement.

KEY WORDS: Secondary Level, Demonstration Teaching, Achievement in Chemistry.



INTRODUCTION

"Swami Vivekananda" defines education as the manifestation of the perfection already in man". (Imran Saleem and Ashraf Iman, 2012). Psychologists define psychology in various ways. The nature of psychology is understood from the following definitions. Mc Dougall (1871-1938): "psychology is the science which aims to give us better understanding and control of the behavior of the organism of the world. Skinner (1904): "psychology is the science of behavior and experience". (Mannivannan, M., & Mani, M.N.G., 2010) Secondary or high school teachers instruct students in grades 9 to 12. Subjects become even more specialized than in middle school. For example, instead of teaching a general science class, he might teach biology, chemistry, physics, or earth science. (Lauren Starkey, 2007). Meaningful learning in such a dynamic is premised on the assumption that students world views are congruent with those of the chemistry as it is taught. Without some shared understanding of the culture of classrooms both teachers and students live in quite different worlds. (Deepak Dayal and Richa Bhatt, 2008). Traditionally, teachers are perceived mainly as the knowledge providers to students. But now, teachers are expected to assume a new major role as a facilitator in supporting students 'learning process and developing students' multiple intelligences and lifelong self-learning abilities. (Yin Cheong Cheng, Magdalena Mo Ching Mok and Kwok Tung Tsui, 2001). In recent years, the emphasis on teaching has been shifted from formal recitation to social participation of students in the educative process. Modern psychology has brought out the ingarternel of the organismic nature of the learning process, and as such both learning and teaching are being recognized as social activities. (Dunkinn & Biddle, 1974). Demonstration means 'to show'. Demonstration involves a description and explanation of a concept, by performing an experiment. Demonstration can also be a practical display of a piece of equipment to show its capabilities. It involves showing what (or) showing how certain

phenomenon (or) process occurs. The teacher can also illustrate the application of abstract principles through demonstration of experiments. It provides concrete experiences to students. (Monika Davar, 2012). A demonstration may be used to prove a fact through a combination of visual and associated reasoning. Demonstrations help to raise student interest and reinforce memory retention because they provide connections between facts and real – world applications of those facts. (Dr. Milan T. Mistry, 2013). A Demonstration class needs, of course, a regular conference time between the master teacher and his observers in order to take stock and to establish guidelines for the future. (S.K. Pandey & R.S.Sharma, 2008)

NEED OF THE STUDY

The investigator is working as the Teacher Educator since 2009. During his experience, he faced a lot of problems in learning chemistry by the students. He noticed that students were unable to understand application of theories and showed less interest in their classes. This makes the investigator to find the reason behind student's difficulties in learning Chemistry, but students show more interest in Lab than theory. So the investigator planned to introduce the method of Demonstration in teaching for the students to get better conceptual learning and better opportunity to play an active role in learning process.

OBJECTIVE OF THE STUDY

- To find out the difference between pre-test and post-test performance on achievement in chemistry through demonstration teaching.

HYPOTHESIS

1. There is a significant difference between the pre-test and post-test performance on achievement in chemistry through demonstration teaching.

METHODOLOGY

Experimental method was used in this study. The sample consisted of 70, IX standard students from Palaniyappa Memorial Higher Secondary School in Theni District, Tamil Nadu. Four lessons from two Units of IX standard Samacheer kalvi Syllabus was taught in 9.30 hours to these students. The investigator constructed and validated the Achievement in Chemistry. It consisted of 100 multiple choice questions from two units. These were selected on the basis of higher values of discrimination indices above 0.20 and difficulty indices between 25% to 75%. After the experimental treatment, a post-test was given to the samples. The statistical techniques used in this study was 't' - test.

RESULTS AND DISCUSSION

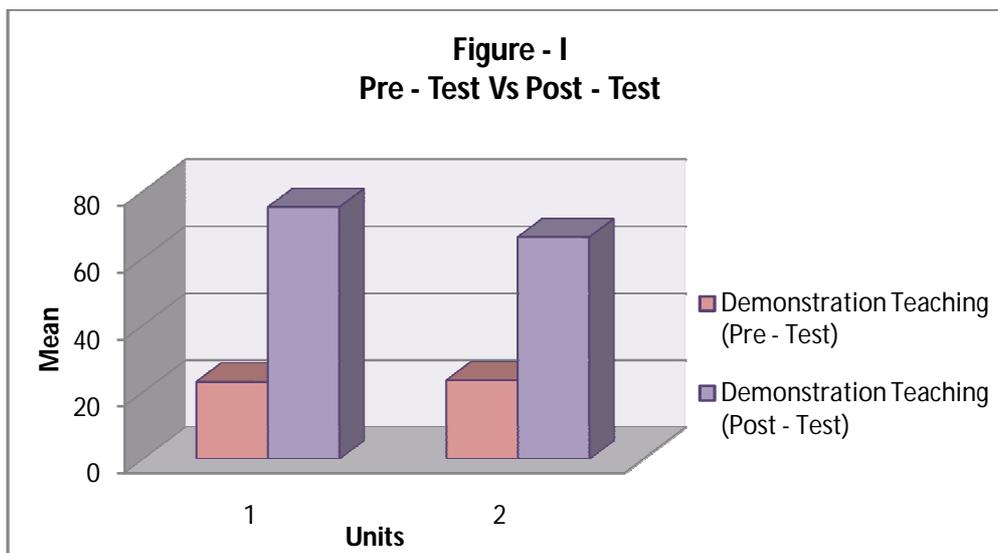
Table 1: Pre-Test Vs Post-Test

Unit	Group	Mean	SD	t-value
1	Pre	23.11	6.52	34.47
	Post	75.29	10.78	
2	Pre	23.54	7.46	24.01
	Post	66.29	13.11	

From Table-1, it is inferred that there is significant difference between the pre-test performance and post-test performance of achievement in chemistry through demonstration at 0.05 level of significance in favour of the post-test. Figure-1 furnishes the bar diagram corresponding to the mean scores of the Table 1 pertaining to each Unit.

Table-1 also shows that there is significant difference between the pre-test performance and the post-test performance (Both 1st and 2nd Unit wise) of the Achievement in Chemistry through Demonstration at 0.05 level of significance in favour of the post-test. The mean value of post-test performance for Demonstration, is greater than the mean value of pre-test. It is due to the effectiveness of Demonstration

Teaching. Figure-1 furnishes the bar diagram corresponding to the mean scores of the Table (1) pertaining to each Unit. The post test mean value of Demonstration in Unit 1 (75.29) is greater than the post-test mean value in Unit 2 (66.29).



In Demonstration Teaching the investigator used live Models and makes the Teaching - Learning effective and interesting to all (Showing Pomegranate fruit, Kerosene and Agarbathi fumes for teaching Solid, Liquid and Gases, Orange fruit and its pulp to understand Element and its Atom, Shows bubbles from soda drinks and compares it with 'Gas in Liquid' and Perfume with 'Liquid in Gas', Sugar and Salt, Smoke, Kerosene in water and explains Heterogeneous Mixtures, Half cut Water Melon fruit and explains the concept of J.J.Thomson's Atomic theory, etc). In this method, the investigator motivated the students and encouraged them to participate in the activities and experiments done in the classroom.

The students show interest and participated voluntarily in the activities (Mixing Kerosene and Water and learnt about Mixtures and understands the concept of Density of different Liquids, Separation of Homogeneous and Heterogeneous Mixtures, Finding the Physical Properties for some Metals and Non - Metals, Arranging a box full of various shaped and different coloured balls and understands the concept of "Periodic Classification of Elements") and answered the questions correctly.

HYPOTHESIS TESTED

RESEARCH HYPOTHESIS (H_R)

There is significant difference between the Pre-Test and Post-Test performance of the Secondary students through Demonstration teaching.

NULL HYPOTHESIS (H_0)

There is no significant difference between the Pre-Test and Post-Test performance of the Secondary students through Demonstration teaching.

Based on the analysis of the data concerned with reference to the Table-1, it is evident that post test performance of Demonstration teaching is greater than that of its pre-test. So Research hypothesis is accepted and the Null hypothesis is rejected.

CONCLUSION

Demonstration Teaching provides students a better opportunity to play an active role in learning process they feel familiar with the nature and use of apparatus. Additional opportunity of self-directed

learning also occurs through demonstration method. It increased the cognitive abilities of students. So the significant difference between the Pre-Test and Post-Test performance of the Secondary students occurs through Demonstration Teaching. With the co-operation of students in teaching learning process their learning became permanent. The potentially conceptualize class material gives us a common interesting method to teach the students.

REFERENCES

- Imran Saleem & Ashraf Iman. (2012). Education in Emerging Indian Society. New Delhi: APH Publishing Corporation.
- Mannivannan, M., & Mani, M.N.G. (2010). Understanding Educational Psychology. Neelkamal Publications Pvt. Ltd., New Delhi.
- Lauren Starkey. (2007). Change your Career: Teaching as Your New Profession. Kaplan Publishing. New York.
- Yin Cheong Cheng, Magdalena Mo Ching Mok & Kwok Tung Tsui. (2001). Teaching effectiveness and teacher development: Towards a new knowledge base, 2001, Kluwer Publishers, Hong Kong.
- Dunkinn & Biddle, B. (1974). The study of teaching, : Holt, Rhinehart and Winston, New York.
- Monika Davar. (2012). Teaching of Science. New Delhi: PHI Learning.
- Milan T. Mistry (2013). Educational Measurement and Evaluation. Paradise Publishers, Jaipur.
- Pandey, S.K. & Sharma, R.S. (2008). Encyclopaedia of Modern Techniques of Teaching - Teaching of Modern Languages, Common Wealth Publishers, New Delhi.