



ENHANCING ACCURACY IN CHEMISTRY PRACTICAL THROUGH VIDEO DEMONSTRATION METHOD

Mrs. Shubham Rajesh Patil

M.Sc. (Analytical Chemistry), M.A. (Education), SET (Education), NET (Education)

Paper Received On: 25 NOV 2022

Peer Reviewed On: 30 NOV 2022

Published On: 1 DEC 2022

Abstract

Chemistry is concerned with the substances of which matter is composed, the investigation of their physical and chemical properties, and the use of reactions to form new substances. Chemistry is a subject based on the practical. It is of extreme importance for junior college students to improve their accuracy in chemistry practical. In the present study video demonstration method was used as a technique to enhance the accuracy in chemistry practical. Since the researcher conducted an experiment to find the effectiveness of the instructor controlled pre-practical video demonstration method as compared to the traditional method in improving the accuracy in chemistry practical, for the present study, the study was experimental in nature. A two group post test only design was selected. Video Demonstration Method was used for the experimental group and Traditional Teaching Method was used for the control group. The study was conducted with 100 F.Y.J.C. Science students studying in Late P. R. Patil Utarksha Vidyalaya and Junior College, Virar (W), Palghar, Maharashtra. In this study, experimental and control groups were used. Video Demonstration Method was used for the experimental group and Traditional Teaching Method was used for the control group. Conclusion showed that there is a significant difference in the results of experimental and control groups. Video Demonstration Method is more effective than Traditional Teaching Method.



Scholarly Research Journal's is licensed Based on a work at www.srjis.com

Introduction

In classroom interaction, the teaching will be more effective and forceful if more senses are involved in the process of teaching-learning. The ideas that cannot be expressed orally can be expressed with the help of audio-visual aids easily. Video equipment is an electronic device which shoots and records the situation and then through T.V. set or on the

screen, we can watch the recorded programmes. Such videos can also be used to enhance the accuracy in chemistry practical which may also lead to the increase in the Accuracy.

Chemistry is the branch of science concerned with the substances of which matter is composed, the investigation of their properties and reactions, and the use of such reactions to form new substances. Chemistry is a practical subject which is concern with the study of matter and its transformation through processes such as heating, electrolysis and other chemical processes. Effective pre-laboratory preparation contributes to improvements in prerequisite knowledge leading to a more contextualised learning environment in the laboratory. The use of a pre-practical video approach to laboratory preparation can facilitate a more scaffold experience. This in turn can enable a more productive laboratory work.

Need of the study

Good quality practical work can engage students, help them to develop important skills, direct them to understand the process of scientific investigation, and develop their understanding of concepts. A further consequence of experiencing practical work, particularly in chemistry, is the acquisition of an understanding of hazard, risk and safe working.

A good practical task is one that achieves its aims of effectively communicating a clearly defined set of ideas, but this can sometimes be difficult to achieve. Teachers' identified outcomes can often be quite different from the outcomes that students perceive. With any activity, communicating its purpose and learning objectives to the students can increase its effectiveness as a learning experience and enable the students to get the most out of it.

If the goals and objectives are not expressed in terms of being able to apply scientific knowledge, understanding and accuracy in performance there is a danger of students simply following 'recipes' during practical activities. When done well, practical work can stimulate and engage students' learning at different levels, challenging them mentally and physically in ways that other science experiences cannot.

Really effective practical activities enable students to build a bridge between what they can see and handle (hands-on) and scientific ideas that account for their observations (brains-on). Making these connections is challenging, so practical activities that make these links explicit are more likely to be successful.

Importance of Practical work

Following is the importance of practical work of chemistry:

- 1. Learning by doing:** Practical work follows the basic principle of Learning by doing. The students get an opportunity to actively participate in the learning process.
- 2. Training for adjustment:** When students know elementary things about electricity, electronics, sanitation etc. they depend less on others for minor repairs.
- 3. Scientific knowledge and Scientific Outlook:** Practical work helps in acquiring of scientific knowledge and scientific outlook, the twin main objectives of teaching science.
- 4. Handling of Objects:** By doing experiments students learn how to handle and operate apparatus etc.
- 5. Development of good habits:** Through practical work the students learn many good habits like resourcefulness, initiative, co-cooperation etc.
- 6. Satisfaction of curiosity:** Validity of the concepts learned by the students can be tested by experimentation. This satisfies basic human desire of knowledge of what, how and why of things.
- 7. Development of Scientific attitude:** Laboratory work develops scientific attitude and scientific temper.
- 8. Motivation:** By doing experiments, students are motivated to know more and more of science.

So, researcher wanted to study the effectiveness of use of video in chemistry practical in improving the accuracy in chemistry practical of junior college students.

Objectives of the study

1. To design a video module of chemistry practical for F.Y.J.C. Science students.
2. To assess the accuracy in the chemistry practical of F.Y.J.C. Science students using Traditional Teaching Method.
3. To assess the accuracy in the chemistry practical of F.Y.J.C. Science students using video demonstration Method.
4. To compare the effectiveness of Video Demonstration Method and Traditional Teaching Method in development of the accuracy in the chemistry practical of F.Y.J.C. Science students.

Hypothesis of the study

1. There is a significant difference in the accuracy achieved by male F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method.
2. There is a significant difference in the accuracy achieved by female F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method .
3. There is a significant difference in the accuracy achieved by male and female F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method.
4. There is a significant difference in the accuracy achieved by using Video Demonstration Method between male and female F.Y.J.C. Science students in the chemistry practical.

Scope and Delimitations of the Study

The study is limited to the pupils studying in F.Y.J.C.(Science Stream) of District Palghar, of State Maharashtra. The study is delimited to the experiment of Volumetric Analysis.

Methodology of the Study

It is necessary to adopt a systematic procedure to collect the necessary data which helps to test the hypotheses of the study under investigation. Since the researcher conducted an experiment to find the effectiveness of the instructor controlled pre-practical video demonstration method as compared to the traditional method in improving the accuracy in chemistry practical, for the present study, the study was experimental in nature. A two group post test only design was selected. Video Demonstration Method was used for the experimental group and Traditional Teaching Method was used for the control group.

Sample

For the present study, simple random probability sampling technique was used. The sample comprised 120 F.Y.J.C. science students studying in Palghar district of the State Maharashtra. (60 of experimental and 60 of controlled group)

Tools of the Study

Pre-test and Post-test on chemistry practical was used as a tool for the collection of the data.

Statistical Analysis of the Data

Table-1: Data and analysis of the test of significance of difference in mean scores of the male F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method

Group	N	Df	Mean	S.D.	't' Value	Result
Experimental	30	54	20.34	4.86	3.43	Significant at 0.01 level
Controlled	30		15.88	5.06		

Table-2: Data and analysis of the test of significance of difference in mean scores of the female F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method

Group	N	Df	Mean	S.D.	't' Value	Result
Experimental	30	58	21.02	5.12	3.58	Significant at 0.01 level
Controlled	30		16.86	4.04		

Table-3: Data and analysis of the test of significance of difference in mean scores of the male and female F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method

Group	N	Df	Mean	S.D.	't' Value	Result
Experimental	60	118	21.86	4.13	6.66	Significant at 0.01 level
Controlled	60		16.12	5.20		

Table-4: Data and analysis of the test of significance of difference in mean scores between the male and female F.Y.J.C. Science students in the chemistry practical using Video Demonstration Method

Group	N	Df	Mean	S.D.	't' Value	Result
Male	30	58	20.26	4.86	0.57	Not Significant at 0.01 & 0.05 level
Female	30		21.02	5.12		

Findings of the Study

1. There is a significant difference in the accuracy achieved by male F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method.
2. There is a significant difference in the accuracy achieved by female F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method .
3. There is a significant difference in the accuracy achieved by male and female F.Y.J.C. Science students between the chemistry practical using Video Demonstration Method and Traditional Teaching Method.
4. There is no significant difference in the accuracy achieved by using Video Demonstration Method between male and female F.Y.J.C. Science students in the chemistry practical.

Bibliography

- Agashe. L., (1995), "Evolving Programmed Learning Material for Ensuring Mastery in Biology for XI and XII Grades Students", Unpublished Ph.D. Thesis, Guru Nanak Dev University, India.
- Agnew. P., Kellerman. A.S., Meyer. J., (1996), "Multimedia in the Classroom", Boston: Allyn and Bacon.
- Anil Tanaji Patil., (2006), "Development of Multimedia Instructional System on Computer Education for B.Ed. Pupil Teachers", Teacher Education Institutions in India, M.S.University of Baroda, India.
- Alter. Millicent. (1962), "Retention in Programmed Instruction", Center for Programmed Instruction, Inc, New York.
- Ameetha. P., (2005), "Methods of Teaching Biological Science", Neelkamal Publications Pvt. Ltd, Hyderabad, P.42.
- J. Chem. Educ., 2016, 93 (1), pp 141–145 DOI: 10.1021/acs.jchemed.5b00354 Publication Date (Web): Oct 28, 2015.
- Journal of Science Education and Technology, v24 n4 p476-483 Aug 2015.
- Journal of Chemical Education, v92 n10 p1661-1666 Oct 2015
- Lokesh Koul (2012). Methodology of Educational Research, 184-203