

AN EXPERIMENTAL STUDY ON COMPARISON OF CONVENTIONAL TEACHING AND INTERACTIVE WHITEBOARD TEACHING IN LEARNING PHYSICS AND CHEMISTRY

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Abstract

During the last two decades, many significant developments have taken place in the discipline of education. Educational technology has become a very major and useful area of knowledge relevant for more efficient and effective functions of teaching-learning system. Teaching and learning stand more successful when technology is added to the classroom and to progress students' learning and to support them extend their aims. Interactive Whiteboard is an influential device in the classroom adding interactivity and association, allowing the integration of media content into the lecture and supporting collaborative learning. Hence researcher would like to study on Interactive Whiteboard teaching in learning Science in Krishna District, Andhra Pradesh, India. True-Experimental research design was used for this study. The population of the study was made up of 8th class CBSE Students. The sample population was made up of 160 students. This study intends to find out the effectiveness of Interactive Whiteboard teaching in learning Physics and Chemistry. Objectives, Hypotheses, Tool, Sample, Method, Data Analysis, and Educational Implications are discussed as follows.

Key Words: *Technology, Conventional, Learning, Interactive Whiteboard,*



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Introduction

Novel invention of technology is influencing the future of advanced education and prompting teaching approaches. The globalization of technology stays to transformation the manner we live and work. Teaching and learning stand more successful when technology is added to the classroom and to progress students' learning and to support them extend their aims. One of the best significant features of today's society is the developing thrust of systematic, scientific, technical, social developments etc. in it. When the only steadiness experience is the modification and variability, human civilizations and administrations are unavoidable to generate active and productive improvements because of access to innovative tendencies in the future. Interactive Whiteboard is an influential device in the classroom

adding interactivity and association, allowing the integration of media content into the lecture and supporting collaborative learning.

Interactive Whiteboard classrooms are technology improved classrooms that foster chances for teaching and learning through combining technology for example computers, specified software, assistive hearing tools, networking and audio or visual competences. Interactive classrooms use all interactive components like videos and power point presentations and these visually interesting methods of teaching become engaging to students who are already struggling with the old-fashioned method of teaching in a classroom.

Review of Related Literature

Dr. Anita Menon (2015) critically studied the effectiveness of smart classroom teaching on the achievement of secondary school students on chemistry and studied the effectiveness of different classroom teachings i.e. Smart Classroom teaching and conventional mode of teaching on achievement of class IX students in chemistry with respect to gender and to study the academic achievement and the interactional effect of it on them. She experimented on 330 students and concluded that there was no effect on the academic achievement in chemistry of secondary school students, boys or girls even when taught through smart classroom teaching and conventional teaching.

Betcher and Lee (2010) studied scientifically on Interactive white board, ICT, interactive, technology in education to find out learning technology in education by survey method which found that the uses of interactive white board enhances motivation learn and raises the level of concentration improve behavior and enhances learning because it was fun and innovative.

Elharr (2010) found the relationship between the use of interactive board and student achievement. To find out, he employed survey and observed the execution of the Interactive board in grade V and VI in several areas of Australia Students who learned with the interactive white board scored better achievement and nationwide tests math and languages in 2003 the modification was minor and didn't repeat itself and a comparable test administered in 2004. An exhaustive analysis of the data indications are that the usage of the interactive white board contributed primary to the accomplishment of students who were weak in the part of writing.

Jayamani P (1991) presented a brief analysis on the effectiveness of the stimulation model in teaching physics to standard XI students through CAI that both the CAI strategies

were superior to the traditional method of instruction and CAI with TSS was more effective than CAI without TSS for under achievers.

Murcia (2007) studied that understanding of key enduring science concepts and the investigative and social aspects of working scientifically. The aim was to engage students and provide opportunities for construction of scientific understandings. The assumption was that to be effective primary science teachers the students needed to develop their scientific literacy. It would develop a general, broad and useful understanding of science that contributed to their competence and disposition to use science to meet the personal and social demands of their life at home, at work and in the community. The study revealed that science as a tool for inquiry or discovery and the use of science for learning, informing or contributing to problem solving and critically reflects on the use of science with reference to context.

Objectives of the Study

1. To find and compare the Pretest mean scores of 1.Control group 2. Experimental group students in Physics and Chemistry.
2. To find and compare the Posttest mean scores of 1.Control group 2. Experimental group students in Physics and Chemistry.

Hypotheses of the Study

1. There would be no significant difference between the Pretest mean scores of Control group students in Physics and Chemistry.
2. There would be no significant difference between the Pretest mean scores of Experimental group students in Physics and Chemistry.
3. There would be no significant difference between the Posttest mean scores of Control group students in Physics and Chemistry.
4. There would be no significant difference between the Posttest mean scores of Experimental group students in Physics and Chemistry.

Methodology of the Study

True-Experimental design was adopted for this study.

Sample for the Study

A sample of 160 pupils from 8th class from CBSE School in Krishna District, Andhra Pradesh.

Tool of the Study

Pretest was prepared from the previous knowledge of the two units from 8th class CBSE Science Text Book. That is Light from Physics, Metals and Non-Metals from Chemistry. The test was constructed on the norms and standards of the achievement test.

A questionnaire in Physics and Chemistry was prepared by taking different areas to assess the following components:

1. Knowledge
2. Understanding
3. Application
4. Skill

Analysis and Interpretation of Data

These investigative approaches may prove very useful in the study of data of any research work and no resemblances, changes, tendencies and significant aspects would go ignored by the researcher. The researcher has analyzed the total mean scores from Physics and Chemistry.

Objective-1

To find and compare the Pretest mean scores of 1. Control group 2. Experimental group students in Physics and Chemistry.

Hypothesis-1A

There would be no significant difference between the Pretest mean scores of Control group students in Physics and Chemistry.

Hypothesis-1B

There would be no significant difference between the Pretest mean scores of Experimental group students in Physics and Chemistry.

These hypotheses were tested by analyzing the Pretest mean scores of Control group and Experimental group students. The effects were tested by finding Mean, S.D and Critical Ratio value of the scores of Conventional teaching and Interactive Whiteboard teaching and the results were tabulated in table-1.

Table-1
Comparison of mean scores of Physics and Chemistry in Control and Experimental group students in Pretest

Group	Physics		Chemistry		SED	Critical Ratio
	Mean	S.D	Mean	S.D		
Control Group	15.51	3.90	15.20	3.97	0.62	0.50 NS
Experimental Group	15.54	3.97	15.26	3.88	0.62	0.45 NS

NS-Not Significant at 0.01 level

From the above table-1, it was observed that the Critical Ratios calculated between the mean scores of Physics and Chemistry in both Conventional and Interactive Whiteboard teaching were not significant. Therefore no significant differences were observed between the means of Physics and Chemistry in the comparison. It may be concluded that there were no significant differences between the means of Physics and Chemistry in learning science concepts. Hence the sub hypotheses “There would be no significant differences between the Pretest mean scores of Control group and Experimental group students in Physics and Chemistry” were accepted. Thus, it was concluded that the Control group students have no significant difference in the performance of Physics and Chemistry concepts in learning science before the experiment. Likewise it was concluded that Experimental group students have no significant difference in the performance of Physics and Chemistry concepts in learning science before the experiment.

Objective-2

To find and compare the Posttest mean scores of 1.Control group 2. Experimental group students in Physics and Chemistry.

Hypothesis-2A

There would be no significant difference between the Posttest mean scores of Control group students in Physics and Chemistry.

Hypothesis-2B

There would be no significant difference between the Posttest mean scores of Experimental group students in Physics and Chemistry.

These hypotheses were tested by analyzing the Posttest mean scores of Control group and Experimental group students. The effects were tested by finding

Mean, S.D and Critical Ratio value of the scores of Conventional teaching and Interactive Whiteboard teaching and the results were tabulated in table-2.

Table-2
Comparison of mean scores of Physics and Chemistry in Control and Experimental group students in Posttest

Group	Physics		Chemistry		SED	Critical Ratio
	Mean	S.D	Mean	S.D		
Control Group	15.76	3.96	15.39	3.87	0.62	0.60 ^{NS}
Experimental Group	17.81	3.64	17.15	3.50	0.57	1.17 ^{NS}

NS-Not Significant at 0.01 level

From the above table-2, it was observed that the Critical Ratios calculated between the means of Physics and Chemistry in both Conventional teaching and Interactive Whiteboard teaching were not significant. Therefore no significant differences were observed between the means of Physics and Chemistry in the comparison. It may be concluded that there were no significant differences between the means of Physics and Chemistry in learning science concepts. Hence the sub hypotheses “There would be no significant differences in Posttest mean scores of Control group and Experimental group students in Physics and Chemistry” were accepted. Thus, it was concluded that the Control group students have no significant difference in the performance of Physics and Chemistry concepts in learning science after the experiment. Likewise it was concluded that Experimental group students have no significant difference in the performance of Physics and Chemistry concepts in learning science after the experiment.

Findings of the Study

1. Interactive Whiteboard teaching is effective in learning science.
2. The effect of regular method of teaching in learning science is also significant and effective in its own way.
3. There is significant difference between the performance of Control group and Experimental group students in learning science after the experiment.
4. Conventional teaching has no significant effect in learning science.
5. Interactive Classroom teaching has significant effect in learning science.

6. Learning science through Interactive Whiteboard is relatively more effective than learning through the regular method or traditional method.

Suggestions to Further Studies

1. The effectiveness of Interactive Whiteboard teaching may also be extended to experiment on different classes in learning science and other non – science.
2. The same study may be carried out to test the effectiveness of different subjects related to languages, literature and the like.
3. A longitudinal study may also be conducted to see the effectiveness of the Interactive Whiteboard teaching and Conventional teaching.

Conclusion

This piece of research helped the researcher to know more about the procedure of experimental research and also some awareness about Interactive Whiteboard classroom teaching. Above all these researches helped the researcher to gain a sense of achievement and self-satisfaction and this report may be helpful to the teachers, students and research scholars in their teaching learning situations. This may also be helpful to the policy makers and educationists to solve the problems of education. One of the best significant features of today's world is the developing momentum of scientific, technological, social developments etc. The revolution and unpredictability, human societies and organizations are inevitable to create dynamic and productive developments because of access to latest trends in the future. According to Toffler, “only using innovative of change is for its direction, which can be spared the shock of the injury and to achieve a better future and more human”.

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