

EFFECT OF SMART CLASS ON LEARNING BIOLOGY CONCEPTS

BICHITRA CHOUDHURI^{*}, AHRAR HUSAIN^{**}

ABSTRACT

Numbers of initiatives have been taken in India to promote the use of ICT in teaching learning process. One of the most recent approaches of ICT is teaching through smart class technology. Teaching through smart class is regarded as one of the most revolutionary instructional technologies for different subjects at various educational levels. Smart class technology includes giving instruction by using Interactive White Board (IWB) and e-content. The main goal of this article is to evaluate the effect of smart class on learning biology concept among secondary school learners of government and government aided schools of Delhi. It was a Pre-test Post-test Control group Design. The experimental group was taught by using smart class technology. Five chapters of IX class biology i.e. 35 lessons were delivered using interactive white board and e-content while the control group was taught by traditional chalk and talk method. 30 items and 100 items multiple choice question type Achievement Test was constructed by the researcher. Pre-test consisted of 30 items and Post-test consisted of 100 items. Data was collected and analyzed by using t-test. Result showed that smart class has a positive effect on learning process as the learners of smart class had higher achievement level in biology in comparison to the learners of traditional class taught by chalk and talk method. In all the three cases i.e. the learners of government, government aided and private schools had higher achievement level in their post-test in comparison to learners taught by traditional lecture using chalk and talk method.

KEYWORDS: Smart Class, Interactive White Board, Achievement Level, ICT, Chalk & Talk Method.

“Computer based instruction has raised student achievement in numerous studies. It has given students a new appreciation for technology and has had positive effects on student’s attitudes toward schools and teaching. And computers have helped teachers save instructional time.”

J.A. Kulik and C.C. Kulik (1987)

INTRODUCTION

The one who has the potential influences the world and we all are aware about the potentiality of technology. Because of its huge potential, there no field left which is untouched by the technology. With the use of technology in the form of computer technology, the nature of education has substantially changed.

^{*} Research Scholar, Faculty of Education, Jamia Millia Islamia, New Delhi-110025.

^{**} Professor, Faculty of Education, Jamia Millia Islamia, New Delhi-110025.

Correspondence to: Ms. Bichitra Choudhuri, Faculty of Education, Jamia Millia Islamia, New Delhi-110025.

E-mail Id: bichitra.ani@gmail.com, ahusain1@jmi.ac.in

Day by day the use of technology is increasing, because of which 21st century is called techno era and in the field of education, it is called era of ICT based education. Numbers of initiatives have been taken in India to promote the use of ICT in teaching learning process. One of the most recent approaches of ICT is teaching through smart class technology. Teaching through smart class is regarded as one of the most revolutionary instructional technologies for different subjects at various educational levels. Smart class technology involves giving instructions by using Interactive White Board (IWB) and e-content. An interactive whiteboard is an instructional tool that allows computer images and videos to be displayed onto a board using a digital projector. The instructor can then manipulate the elements on the board by using his finger as a mouse, directly on the screen. It is said that this smart class technology has brought a complete transformation in the traditional rote methods of learning as it provides innovative learning solutions using digital instruction material. The main goal of this article is to evaluate the effect of smart class on learning biology concept among secondary school learners of government and government aided schools of Delhi.

OBJECTIVES

1. To compare the academic achievement of secondary school learners of smart class and traditional class in Government school.
2. To compare the academic achievement of secondary school learners of smart class and traditional class in government aided school.

HYPOTHESIS

1. There is no significant difference in academic achievement of secondary school learners of

smart class and traditional class in government school.

2. There is no significant difference in academic achievement of secondary school learners of smart class and traditional class school in government aided school.

METHODS AND PROCEDURE

Quasi experimental method with pre-test post-test design was adapted for the present study. Investigator selected two schools through purposive random sampling, one is central government school i.e. Kendiya Vidyalaya and the other is a government aided school in Delhi. Researcher randomly selected two sections of IX class in both the schools; one section was taken as experimental group and the other as control group. With the help of smart class, the entire syllabus of 9th standard was taught to experimental group by the investigator by using interactive white board and e-content. The control group was taught in traditional class room using chalk and talk method. The design has comprised three stages. The first stage involved pretesting of all those students of two group i.e. control and experimental in both the schools. The second stage involved treatment of 5 months during which control group was taught to traditional method and experimental group was taught by using smart class technology. During this period, total 35 lessons were delivered in both the groups. During the third and the final stage, that is post-test stage, the students were subjected to post-test which consisted of an achievement test based on entire 9th standard syllabus of biology.

The detailed description of the procedure has been given in the following table.

Table 1. Experimental Procedure

S. No.	Phase	Duration	Control Group	Experimental Group
1	Pre-Test	1 Day	Achievement Test	Achievement Test
2	Treatment	5 Months	Teaching Biology using chalk and talk method	Teaching Biology using smart class technology which includes use of different features of interactive white board and digital content.
3	Post-Test	1 Day	Achievement Test	Achievement Test

RESULT AND DISCUSSION

Quantitative data was obtained by using achievement test. By using t-test, the researcher

has analyzed the data of achievement test. The data has been tabulated and presented in the form of bar graph in Fig. 1 and Fig. 2.

Table 2. Comparison of Pre-test Data of Learners of Smart Class and Traditional Class of Government School

S. No.	Group	Treatment	Mean	N	Std. Deviation	df	T	Sig. (2-tailed)
1	Smart Class (Experimental)	Pre-Test	45.81	43	15.067	42	-1.135	0.263
2	Traditional Class (Control)	Pre-Test	49	43	13.54			

The p value (0.263) in the above table indicates that the performance of the two groups is not statistically significantly. The computed 't' value (-1.135) is also non-significant at 0.05 level and at

0.01 level. Thus the statistical analysis of the pre-test scores of control and experimental groups indicates that both the groups were at equivalence in the beginning of the treatment.

Table 3. Comparison of Post-test Data of Smart Class and Traditional Class Learners of Government School

S. No.	Group	Treatment	Mean	N	Std. Deviation	df	T	Sig. (2-tailed)
1	Smart class (Experimental)	Post-Test	60.26	43	13.26	42	2	0.05
2	Traditional Class (Control)	Post-Test	55.12	43	10.25			

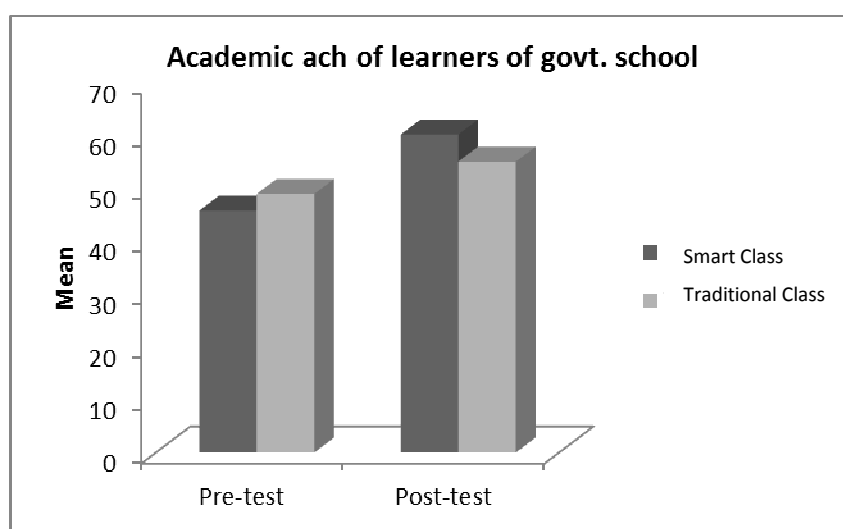


Figure 1. Mean Score of Smart Class and Traditional Class Learners of Government School

The above data and graph indicate that the mean score of the experimental group was higher than that of control group. The p value (0.05) indicates that the performance of the two groups is extremely significant. The computed 't' value is significant at 0.05 level which reflects the effectiveness of treatment of teaching through

interactive white board and e- content over traditional chalk and talk method. On the basis of the above analysis of data, Hypothesis 1 (There is no significant difference in academic achievement of secondary school learners of smart class and traditional class in government school) is rejected.

Table 4. Comparison of Pre-test Data of Smart Class and Traditional Class Learners of Government Aided School

S. No.	Group	Treatment	Mean	N	Std. deviation	df	T	Sig. (2-tailed)
1	Smart class (Experimental)	Pre-Test	24.29	41	13.02	40	1.10	0.26
2	Traditional Class (Control)	Pre-Test	27.29	41	11.83			

The two-tailed P value (0.26) is considered to be not statistically significant. The 't' value (1.10) is also non-significant at 0.01 and 0.05 levels. Thus it is clear from the data that both the groups

(control as well as experimental) before the treatment were equivalent in terms of their academic performance.

Table 5. Comparison of Post-test Data of Smart Class and Traditional Class Learners of Government Aided school

S. No.	Group	Treatment	Mean	N	Std. deviation	df	T	Sig. (2-tailed)
1	Smart Class (Experimental)	Post-Test	50.63	30	11.835	40	4.61	0.01
2	Traditional Class (Control)	Post-Test	39.44	30	11.500			

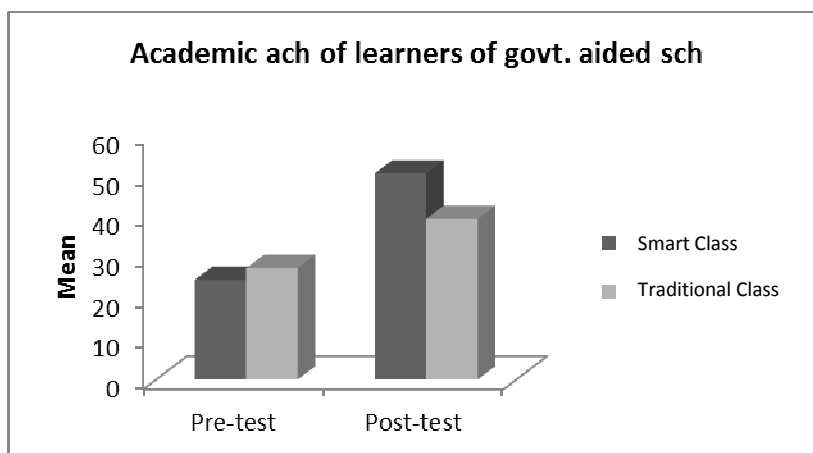


Figure 2. Mean Score of Smart Class and Traditional Class Learners of Government Aided School

The data indicated by the graph clearly shows that there is more improvement in the academic performance of the experimental group as compared with that of the control. The 't' value (4.61) which is significant at both 0.05 and 0.01 level indicates that the smart class technology is better than the traditional class where chalk and talk method was used. On the basis of this analysis, Hypothesis 2 (There is no significant difference in academic achievement of secondary

school learners of smart class and traditional class in government aided school) is rejected.

CONCLUSION

In both the cases, i.e. in government school as well as in government aided school, it was found that learning through smart class technology is more effective in comparison to traditional class because achievement level of students taught

using smart class technology is higher than the traditional class. It is because as compared to traditional class, in smart class, the display surface is large as well content is of different types, which encourages a high level of student interaction. The effectiveness of smart class technology was studied by giving intervention and assessing the level of achievement. Smart class technology enhanced the achievement level because through smart class technology instruction can be given in visual learning, audio learning and tactile learning. As it appeals to the dominant senses i.e. sound, sight and touch, it makes the learning effective. In the study after conducting the pre-test on learners of both the schools, the group with low mean score was taken as experimental group and taught with digital content and interactive white board in smart class. The other group i.e. control groups of both schools were taught by traditional lecture method using chalk and talk method. In the independent variable of t-test of both the schools, government and government aided, it was found that there is a significant difference in the post-test scores of learners taught by smart class and traditional class. Thus the null hypotheses are rejected. The mean score of post-test of experimental group is higher than that of the control group. The difference of mean value indicates that the learners taught by smart class technology perform better than the learners taught by traditional method. This is because the multi-media aspects of digital board increase the engagement and attention span of learners. Biology is a subject, where there is maximum scope of using smart class technology. Using smart technology images, diagrams can be shown in 3D, 2D form, and experiments can be shown through simulation.

Videos of different processes and scientific phenomena increase the concepts' clarity and makes teaching learning process interesting. As per the above discussed aspects of the smart class technology, it can be concluded that smart

class is effective because it creates a conducive teaching learning environment by presenting information in various forms and touching all three psychological domains.

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