USE OF ICT AND SMART CLASSROOM IN HIGHER SECONDARY EDUCATION: A COMPARATIVE STUDY

Anupama Alagannawar   Vidya Singh   Swapna Kulkarni
Asst. Prof   Asst. Prof.   Lecturer

Department of Computer Science,

MIT Arts, Commerce and Science College, Alandi(D), Pune, India

Abstract - In the present study an attempt has been made to study the effectiveness of using Information and Communication Technology (ICT) tools and smart classroom assisted teaching over the traditional method for the students of 8th and 9th grade of higher secondary school. The present study is   conducted in Pune District, Maharashtra. The study is experimental in nature and the sample of study consist of 140 students of 8th and 9th grade from six different English medium schools where two schools having traditional method and four school having smart classroom. Data was analyzed using column graph. The result shows that the teaching through ICT tools and smart classroom is more effective in higher secondary education.

Index terms - Smart classroom teaching, Information and Communication Technology (ICT), Higher Secondary Education.

I .INTRODUCTION

Information and Communication Technology is an important instrument, which can transfer the present isolated teacher and book centred learning environment into a rich learning environment. Blurton (1999) stated that 'ICT' stands for Information and Communication Technologies "a diverse set of technological tools and resources used to communicate, to create, to disseminate, to store and to manage information."To make teaching-learning environment richer and more effective, teachers through power point presentations deliver their lessons. This involves a detailed and complex preparation on the part of the teacher. Students sitting through hour long teaching monologues once characterized the typical classroom. Now, technology is making life easier for both educators and students. New method of teaching has been introduced which is publically known as Smart Class. Smart Class is a revolutionary classroom technology leveraged teaching-learning system that is transforming the way teachers teach and the students learn in schools. It makes use of mapped curriculum 2D and 3D digital content that the teacher could access right in the classroom and project it on whiteboard, to elucidate and explain critical concepts, across virtually all subjects. (What learning can be? 2012).

Technology has become a way of life. It is successfully utilized in resolving many of our problems. Quality education is an essential requisite in today's competitive environment. Technology benefitted us in every aspect of our life right from communication to education. However, effective use of technology to enhance the quality of teaching is a very challenging problem. Over the years, technology has been used to improve the quality of instruction. In ancient days, students were taught in a gurukul where they were taught by the gurus. With the passage of time and progress in life, this system was replaced by modernized culture. New methods of teaching have been introduced and today we witness one of the most versatile gifts of science, known as smart class.

A smart classroom is a classroom that has an instructor equipped with computer and audio-visual equipment, allowing the instructor to teach using a wide variety of media. These include smart interactive white board, DVD's, video lectures, Power Point Presentation (PPT) and more, all displayed through a data projector. Smart class is a digital initiative of EDUCOMP, which is rapidly transforming the way teachers teach and students learn. With the help of school curriculum, smart classes bring in technology right next to the blackboard for teachers in the classroom. This makes learning an enjoyable experience for the students while improving their overall academic performance in school.

II. OBJECTIVE OF THE STUDY

1. To analyze the effectiveness of ICT and smart classroom assisted teaching over the Traditional way of teaching.
2. To evaluate the impact of ICT and smart classroom on teaching and learning.
3. To study the effect of smart classroom learning environment on the performance of higher secondary Education

III. HYPOTHESIS

There is no significant difference between the effectiveness of smart classroom assisted teaching and the traditional method of teaching.

IV. METHOD AND DESIGN OF STUDY

The present study is experimental in nature. After considering the objectives of study first the questionnaires were prepared. We selected the students of 8th and 9th grade from six different English medium schools from Pune district, Maharashtra, India. Out of them two schools are using traditional method and four schools were using ICT tools and smart classrooms. Then a survey is done in all these six different schools.

A. Sampling

Sampling is concerned with the selection of the subset of individuals from within a statistical population. We have taken 140 students of 8th and 9th grade of higher secondary schools from Pune district, Maharashtra.

B. Statistical techniques used

The Collected data is analyzed using

1. *Percentage for each questions:*

   Student's response to the survey questionnaires were analyzed showing percentage for each questions.

2. *2-D Column Chart:*

   Column Charts are used the compare values across categories.

V. RESULT ANALYSIS AND MAIN FINDINGS

A result pertaining to the effectiveness of ICT tools and smart classroom assisted teaching over the traditional blackboard method of teaching is shown below. In order to analyze the effect of smart classroom assisted teaching for 8th and 9th grade students of higher secondary schools, percentage for each question is calculated according the survey done on 140 students and result is shown in Table 1.

TABLE 1 STUDENTS RESPONSE TO SURVEY QUESTIONS

	Questions	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
Q.1	I prefer PPT and video presentation for lesson explanation	61.87	23.74	7.91	6.47
Q.2	I prefer traditional blackboard teaching for lesson explanation	11.51	24.46	23.74	40.28
Q.3	I prefer Smart Class(for example EDUCOMP and AADHYAN) for subject explanation	53.95	30.93	9.35	5.75
Q.4	I was more motivated to learn new material when using video lesson as opposed to traditional approach	56.83	26.61	10.79	5.75
Q.5	I was more motivated to learn new material when using traditional blackboard teaching as opposed to video lessons	12.23	19.4	35.25	33.09
Q.6	Traditional lecture is boring	38.4	31.15	16.66	13.76
Q.7	PPT,video presentation and smart class is boring	12.23	12.94	28.05	46.76
Q.8	The classroom experience was more enjoyable on days when video lesson were used than traditional lesson.	52.17	26.81	14.49	6.47
Q.9	The classroom experience was more enjoyable on days when traditional lesson were used than video lesson.	18.7	22.3	27.33	31.65
		YES	NO		
Q.10	Ability to review lessons when absent while using video, PPT and Smart class	86.95	13.04	NA	NA
Q.11	More instruction attention while using video, PPT and smart class	72.66	27.33	NA	NA
Q.12	Motivation of teacher to students while using video, PPT and smart class	69.06	30.93	NA	NA
Q.13	Ability to pause instruction to take notes while using video, PPT and smart class	89.2	10.79	NA	NA
		Smart classroom Teaching (%)		Traditional Blackboard Teaching (%)	

Q.14	What do you prefer?	79.13	20.86

The above Table 1 depicts that the majority of the students strongly agree that the Smart Classroom Assisted teaching is more effective than the traditional blackboard teaching.

In order to analyze the effect of smart classroom assisted teaching for 8th and 9th grade students of higher secondary schools, 2-D Column chart was prepared and results are shown in Figure 1, Figure 2 and Figure 3.
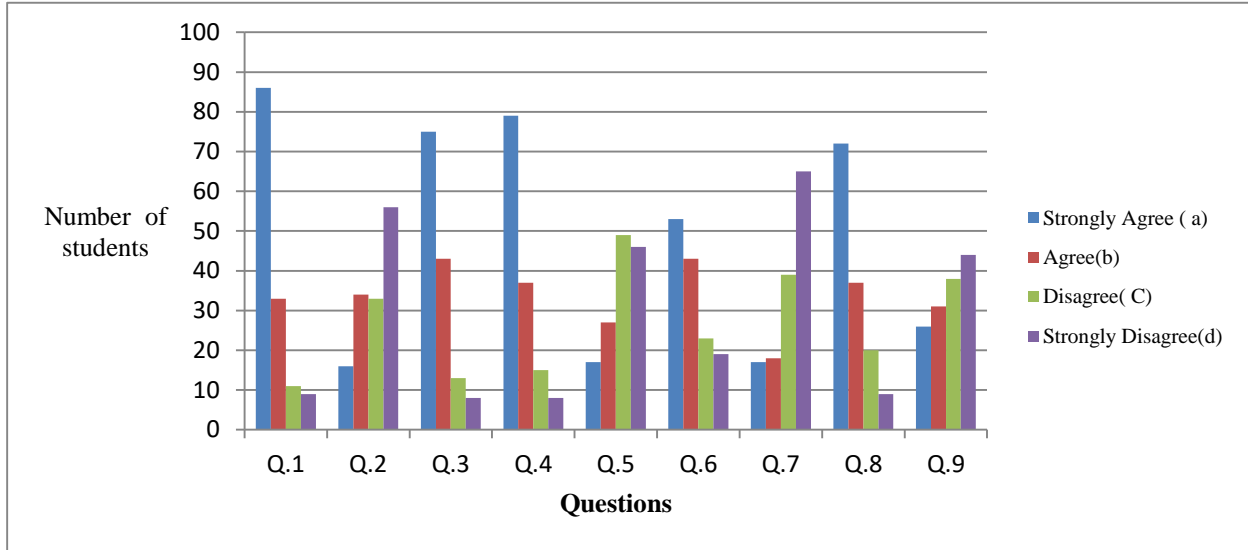

Figure 1. 2-D Column Chart showing the Response to survey Questions (Q.1 to Q.9)

Figure 1 depicts for questions Q.1 to Q.9 and was analyzed and found that the students' response for the survey questions are as follows:

- Lesson explanation and Subject Explanation: students Prefer PPT and Video Presentation for lesson and EDUCOMP and AADHYAN for Subject Explanation.
- Motivation to learn new Material: students are more motivated to learn new material while teaching with video lecture.
- Classroom Experience was more enjoyable: students enjoyed more when smart class teaching is used.
- Traditional Lecture is boring: students felt traditional blackboard teaching as boring.
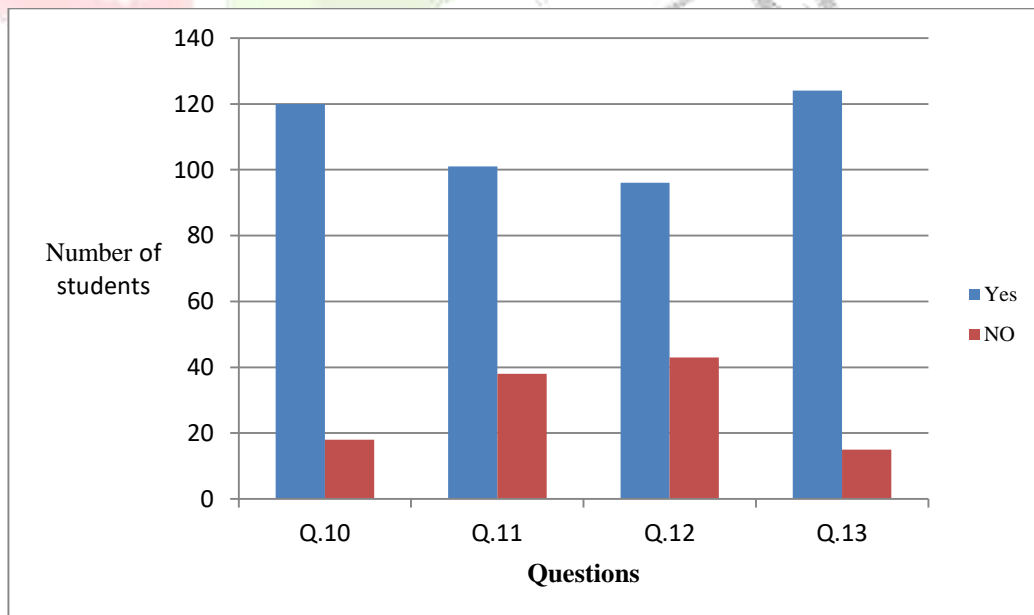

Figure 2.   2-D Column Chart showing the Response to survey Questions (Q.10 to Q.13)

Figure 2 depicts for questions Q.10 to Q.13 and was analyzed and found that the students' responses for the survey questions are as follows:

- Ability to review lessons when absent: Students are able to review the lessons if they were absent for the lecture while using PPT, Video and smart class.
- More instructors' attention and Motivation: Students are able to understand the instructor's instruction better while using PPT, Video and smart class. In addition, there is more motivation of teachers to students as compared to traditional classroom.
- Ability to pause instruction to take notes: Students were able to pause the instruction and could easily take the notes.
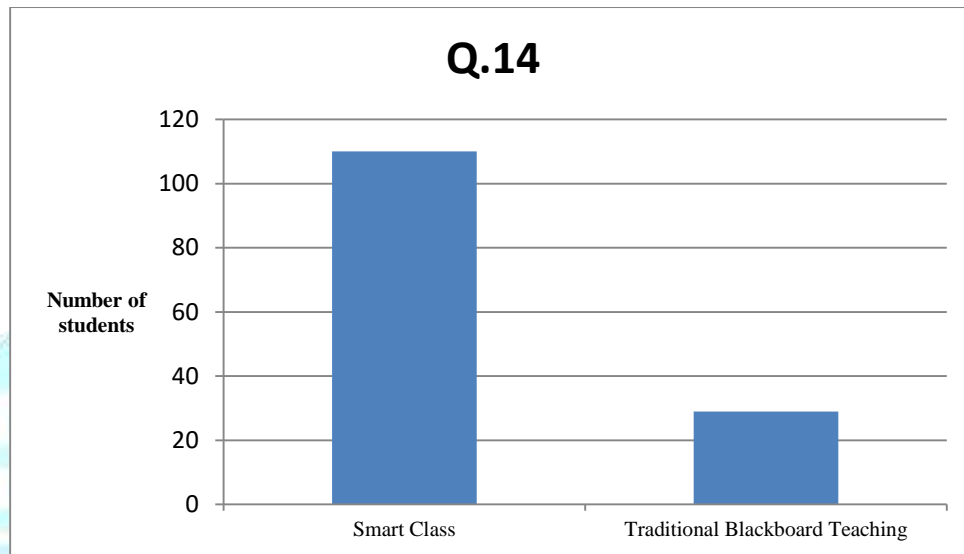

Figure 3. Students Preference to Smart Classroom Teaching and Traditional Blackboard Teaching

Figure 3 show that the majority of students prefer that the Smart Classroom assisted teaching is more effective than the traditional blackboard teaching.

Therefore, it is interpreted that there exists significant difference in the effect of teaching through smart classroom assisted teaching over that traditional blackboard teaching. Therefore, the hypothesis is rejected.

VI. MAIN FINDINGS AND CONCLUSION

Smart classroom comes as a solution for students as it helps in overcoming the problems of learning. Based on analysis and interpretation of data, the following conclusion can be drawn:

1. There exists a significant difference in the effect of smart classroom assisted teaching than the traditional blackboard teaching.
2. Smart classes help students largely. Students can interact, understand and remember things very easily as these are innovative and have more impact than just reading.

3. Smart classes provide better education through presentations and videos as well as all students may not understand the teaching methodology of a teacher but can understand by smart classes. Therefore, such an audiovisual technology needs to be boosted in all kind of schools.

4. Smart classes create an attention in students, which is known as interest. Inclusion of such a tool in schools ultimately enhances students' academic interest.

5. Smart classroom learning help to increase the learning abilities.

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