

Efficacy of Educomp Smart Class

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Abstract:- Explosion of knowledge is opening new branches of knowledge. Nowadays we have entered into wisdom society from knowledge society. ICT has changed the all aspects of human being. Way of living is being changed and thus role of society as well as school is also is shifting from conventional class room to ICT oriented smart classroom further more to virtual classroom. Innovative apparatus, devices are mushrooming, hence being a teacher we cannot live isolated. If we do not make ourselves ICT-friendly we cannot perform our duty accordingly.

Smart class is today's demand; it does not completely do away with the traditional method of teaching. Rather it seeks to club the use of technology with conventional methods of teaching. The consequential merchandise is a harmonious blend of the modern and the traditional. For instance, the teacher while teaching a lesson on tsunami will supplement the information given in books by showing a video of how a tsunami erupts. All of us know that if we teach by doing or playing and with audio visual aid, learning occurs perfectly.

Keywords: *Smart Class, Educomp, Information and Communication Technology,*

1. INTRODUCTION

Smart classrooms are basically technologically and electronically enhanced classrooms. There is not a set list of requirements for a smart classroom. Because there are an unlimited number of technological tools for education, there is no limit to what can be included in a smart classroom. What is more important is the overall effect of such smart classrooms over the psyche of the students and to what extent does it motivate the students in achieving higher goals of life. [16]

National curriculum Framework-2005, NCERT, has declaimed that math and science should be a grass root subjects not only in the form of subject as well as a thinking style or a way of living. The importance of systematic reasoning in Mathematics cannot be overemphasised, and is intimately tied to notions of aesthetics and elegance so dear to mathematicians. Proof is important, but in addition to deductive proof, children should also learn when pictures and constructions provide proof. Proof is a process that convinces a sceptical adversary; school mathematics should encourage proof as a systematic way of argumentation. The aim should be to develop arguments, evaluate arguments, make and investigate conjectures, and understand that there are various methods of reasoning. [9]

Historically, math's teachers have always faced quite a challenge when it comes to bringing math to life. Pupils have often had to observe experiments from a distance or learn difficult concepts from textbooks and diagrams. Times have changed and teachers now have a range of tools available to them to help make math's fun. ICT and the internet have a huge role to play in this.

Teaching media is a means of enhancing teaching and learning in schools. They contribute significantly to the teaching - learning process. Teaching media which are a broad-range of resources can be employed to enhance effective and efficient communication in the teaching-learning process (Abimbade, 1997). [1] They can be used to support and stimulate classroom teaching, cognitive development and socio-moral development. Teaching media also promote sensible placing of the learning process, group and individual learning. Wilkson (1974) stated that learning takes place through two simultaneous words "assimilation" which denote fitting into the existing system of languages structure and "accommodation" which means that a system has been added to or a new concept established.[15] Messick (1976) describes cognitive styles as habitual modes of information processing. In other words, different modes of information processing or different approaches to gaining understanding are adopted by different groups while facing a learning task. [9] Research

reports by different scholars who experimented in this aspect of human behaviour show that all individuals do not learn in the same way. The mode of information process by individual is not the same. This then implies that the manner in which knowledge is structured and presented would affect the learning efficiency and performance of learners depending on their cognitive styles or orientation.

In examining large-scale state and national studies, as well as some innovative smaller studies on newer educational technologies, Schacter (1999) [13] found that students with access to any of a number of technologies (such as computer assisted instruction, integrated learning systems, simulations and software that teaches higher order thinking, collaborative networked technologies, or design and programming technologies) show positive gains in achievement on researcher constructed tests, standardized tests, and national tests. Cavanaugh's synthesis (2001) of 19 experimental and quasi-experimental studies of the effectiveness of using videoconferencing and telecommunications for K-12 academic achievement found a small positive effect in favor of science education and more positive effect sizes for interactive distance education programs that combine an individualized approach with traditional classroom instruction. [4] Boster, Meyer, Roberto, & Inge (2002) examined the integration of standards-based video clips into lessons developed by classroom teachers and found increases student achievement. The study of more than 1,400 elementary and middle school students in three Virginia school districts showed an average increase in learning for students exposed to the video clip application compared to students who received traditional instruction alone. [2]

Michigan's Freedom to Learn (FTL) initiative, an effort to provide middle school students and teachers with access to wireless laptop computers, has been credited with improving grades, motivation and discipline in classrooms across the state, with one exemplary school seeing reading proficiency scores on the Michigan Education Assessment Program (MEAP) test, administered in January 2005, reportedly increasing from 29 percent to 41 percent for seventh graders and from 31 to 63 percent for eighth graders (Eschol News, 2005). Osafehinti, N. (1990), Effects of video and audio rolling graph

among students in achievement and retention in the understanding of schistosomiasis [5] ; C. Matt Graham, Scott Anchors & Brian E. Doore [3] ; Leeds Elike M (2007), "Impact of digital Video on communication skills in business education", advocates Information and Communication Technology on communication skills. [7] And Martin, Florence; Klein, James, Effects of Objectives, Practices, and, Review in Multimedia Instruction. [8] any researchers have been done in math's, and others subject collectively, but variables and factors which affects the learning differ from one situation to another situation so researcher wants to access the effects of multimedia class /smart class on senior secondary students in Agra district.

Rational of the study

In present scenario we are facing a time of information evolution, in the ever changing world our teachers and students requires the right information from the right sources today. Technology offers the opportunity to change the roles that teachers and student have traditionally played. If the goal of creating high performance learning organization is to be released, the reinvention of education has to incorporate these new tools. A new vision of technology place in education is required if teachers and student are to develop the skills necessary to meet the challenges of high tech society. Educational Technology has a significant positive impact on achievement in all subjects, areas, across all levels of school, and in regular classroom as well as those for special need student. Many study reveals that use of technology in education enhance the learner analytical skills, problem solving skills etc. a wide range of initiative are taken place all over the world at different level of education India is also one of them but rate of using technology in proper and systematic way is very low. While in Japan 94 % (1997). Public school was computer equipped. Efforts to connect the organization to the internet are being driven by societal pressure. This does not eliminate the need to check whether these will be positive consequence for such a move. One aspect of this question is how effective the ICT are in education. [16]

Educomp smart class is one of the application is one the application of ICT. Educomp smart class is transforming the way teachers teach and student learn. Educomp smart class is a digital initiative pioneered and invented by Educomp. Smart class provides a very systematic way of learning through curriculum and well equipped computer classes. Hence researcher has decided to know that is it really has significant effect on the achievement of student? How much they progressed? Who is beneficiary? At the core of Educomp smart class, is a vast repository of digital instruction materials exactly mapped to meet with the specific objectives laid out by different learning standards and curricula by schools across the country? This repository is aggregated and continuously populated through ongoing development at Educomp Digital state of the art Products and Solutions (DIPS) group, located in NEPZ and Bangalore. [16] The content repository consists of thousands of highly animated, lesson specific, 3D and 2D multimedia modules built with an Instructor-led design that allows the teacher to effectively explain the lesson in a typical classroom of diverse set of learners. Educomp smart class also provides a large repository of 3D animated modules and videos mapped to school curriculum .The modules are embedded in a template that allows the teachers to teach a chosen lesson in class. Frame by frame, with engaging and instructionally sound animated set of visuals while retaining complete control on the pace of delivery. The curriculum reach unfolds from kindergarten to grade twelve covering subjects like Mathematics, Science, English, EVS, Social Studies, Physics, Chemistry, Biology, History, Geography, Economics and Business Studies. Our repository consists of multimedia 2D and 3D modules. Therefore it has been decided to work on smart class with the title "Efficacy of Educomp Smart Class." [17]

Objectives of the study:

- To study of effectiveness of Educomp smart class for enhancing students academic performance in .
- To study of attitude of students when multimedia uses in classroom.

Hypotheses of the Study: There exists no significant difference between the performances of

students in math when they are exposed to Educomp smart class and conventional I classroom.

Delimitation of the study: This research was conducted only in the Agra city only. The U.P board School of Hindi Medium was included in the study. This research was conducted only in one subject math and only X class students was taken, While others subject like chemistry, Physics, English, History, Geography etc was not conducted. Only minimum multimedia tool was used in the research.

Variables of the study: Independent variables i.e. Educomp smart class and Conventional classroom, **Dependent variables** i.e. Achievement of marks in Math's and Student's attitude towards the use of multimedia in classroom.

2. Materials and Methods

Design of the Study: Design of the study is being stated as Method of study under the following heads: here Quasi Experimental Method is employed. It served as the direct sources of valuable knowledge concerning effect of smart classroom. Study group was divided in two parts, control group and experimental group. Experimental Group was taught through Educomp smart class approach and control group was taught through conventional method of teaching. Then after few days an achievement test was taken and on the basis of data result was analyzed. In quasi experimental type of experiment research used Two Group Randomized Matched Subjects Post Test Design.

Sample: In present study the selection of data will carried out in two phases which are as follows: **Phase-I Selection of School**, here Simple Random Sampling Method is used for the selection of Schools and one school was selected. **Phase-II Selection of Students**, Researchers used the pre test, (matched subject) Simple Random Sampling Method for the selection of students. In its first a pre test was administrated on class x students, and on the basis of marks students was kept in a list on rank basis. Then that student who was closely together in securing marks was kept alternatively in experimental and control group. Sample size was 40 students. In which 20 students was kept in control group and 20 students was in experimental group.

Tools & Techniques: Educomp videos for class X, Self Made power point presentation, Laptop, Projector, Achievement test in maths, Attitude questionnaire created by Dorek Rhonda, are being used in this study. **Statistical Technique:** Mean, Standard deviation, t-test are being applied to analysis the data.

Significance of study: Educomp smart class will enable the teacher to enrich their content delivery or making the abstract concept concrete. Teacher can also provide the quantum of knowledge in short time period and main points of the topic can be teach effectively. These Educomp videos will also help in reducing the classroom problem as absenteeism, lack of interest in subject matter, lower achievement of marks in particular subject, classroom indiscipline etc. Student retention, understanding, and analysis, reasoning power can be increases by using these videos in teaching learning process. Low achievers and average students will be benefited by this smart classroom because a minimum level of learning can be achieved. Through the smart classroom teacher's deficiency like speed of delivering the content (high/slow), lack of mastery over content etc can be minimized. By smart class method, students understand difficult topics in an interesting manner through audio-visual aids. These audio- visual aids/ images display the data and the mathematical relation of the topics for interpretation, especially of multi-dimensional cases. The teacher's are also benefited in a way that they can improve their teaching and learning skills by delivering our module contents and supporting our course using computers and Information Technology. Smart classroom help in producing high quality product (smart student). Understanding subject not only make the student constructive also help in the technological development.

The detailed outline of the procedure of the study is presented under the following headings,

- 1.Method of the study,
- 2.Sample and its selection,
- 3.Selection of the tool,
- 4.Description of the tool,
- 5.Administration of the tool,
- 6 scoring of the tool,
- 7.Statistical techniques used for analyzing the data.

Method of the Study: In the present study the independent variable are Teaching through Educomp Smart Class, and Conventional Classroom

Teaching and depended variables are student achievements in math's and students attitude towards using multimedia in class room.

Design of the Study: Here the Two Group Randomized Matched Subjects Post Test Only Design is selected. This design instead of using random assignment of subjects to experimental and control groups uses a technique of matching. The variables selected for matching must have a significant correlation with the dependent variable and can be measured conveniently. The pre test scores on the dependent variable can be used very effectively for the matching procedure.

Research Design:

- Randomly Assigned Group after Matching Independent Variable Post Test
- Experimental Group Instruction through Educomp Smart Class T2
- Control Group Instruction through Conventional Classroom T1
- Two Group Randomized Matched Subjects Post Test Only Design

Selection of the Sample Units: For selecting the sample researcher first took the pre test of the class X on the basis of pre test (achievement in math's) researcher selected a pair of those subjects who was as close together as possible. For this purpose ranking of the subject on the matching variable technique was used. Under this technique matching is to place all available subjects in rank order on the basis of their pre test scores on the matching variable .regardless of the actual difference .the first two subjects are selected from the rank order list and these constitute a pair, one subject of this pair is then randomly assigned to first group and other to other to the second group. Similarly other subjects are chosen and again one in randomly assigned to first group and the other to second group.

Selection of Final sample units:

Students	Girls	Boys	total
Experimental Group	10	10	20
Control Group	10	10	20
total	20	20	40

Modified version of the Computer Attitude Questionnaire originally created by Dr. Rhonda Christensen and Dr. Gerald Knezek (Christensen & Knezek, 1997) was used.

Achievement test: Two achievement test first pre test and post test in Math’s was used for measuring the achievement of the subjects in the both group.

Tool for study of effectiveness of Educomp Smart Class

Tool designed by	Educomp solution.ltd
Tool designed for class, subject	X class, Maths
Year in which tool was developed	2010
Language of the videos	Hindi
No. of chapters	Lines ,Angles, Triangle, Parallelograms

Tool for measuring students’ Attitude towards Education through Videos:

1.	Tool designed by	Modified version of the computer attitude questionnaire originally created by Dr. Rhonda Christensen and Dr.Gerald Knezek (Christensen & knezek, 1997),
2.	Tool designed for class	Teachers and students
3.	Language of the tool	English
4.	No. of items	20
5.	Reliability	0.88

The Educomp multimedia package has been developed on important concepts in the units – history of geometry and great mathematician, Lines, Angles, Triangle, and Parallelograms in the syllabus

in math’s prescribed for 9 th standards in the UP state syllabus. The concepts were presented with supportive, extra information, attractive pictures, useful animation and effective sounds. Question and Activities meant to promote students understanding on given topic. Educomp Smart Class program had a larger impact on two of the three key learning goals of all students – comprehension and retention. So, Researcher used the videos of Educomp smart class designed for IX th standard in math’s. This survey provided information to determine student attitude toward the use of a whiteboard in the classroom.

Validity and Reliability of the Instruments:

Instruments used was the pre-test and post-test. Pre-test aims to measure students' abilities before learning and testing process to find a level of validity and reliability of the instrument. While the post-test aims to measure student learning outcomes after the learning process. To ensure validity, item construction procedures were followed in developing MAT (math Achievement test).Two experienced math’s teachers checked the test in terms of clarity of words, content validity appropriateness to the class and readability. The MAT was administered on the two categories of sampled students. In math’s test, there were 10 items from the chapter LINES AND ANGLES, 5 items from HISTORY OF MATHEMATICIAN 8 items from TRIANGLES and 7 items from PARALLELOGRAMS. Half spilt method was used to determine the reliability index of the instrument estimate at 0.64 spearman brown proficiency formula. For determining the multimedia package face and content validity, These were developed with the assistance of math’s teachers as well as prescribed syllabus of U.P. Board Based, on the suggestions of math’s teacher made, few amendments were made, by mapping out the instruments for subjects to have mental models after the viewing of video tape, video tape programmed and certified their adequacy for the study. The recorded videotaped lessons have the reliability of 0.84 which was calculated by Educomp Dun street board research and advisory. Reliability and validity was appropriate for the study.

PROCEDURE: The experiment was conducted in an U.P. Board Hindi medium secondary school. At first a pre test /Achievement test was administrated

to identify the level of students and on the basis of those marks students were placed in groups (control and experimental group) by giving them rank. The experimental group was taught by the investigator through the Educomp multimedia package. The control group was taught by researcher in the traditional way. The content and time provisions were same for both groups . At the end of programme an Achievement test was administrated on both groups. For determine student attitude toward the use of a whiteboard in the classroom a rating scale was also filled by students. Thus by this method and procedure data was collected.

STATISTICAL TECHNIQUE: The role of statistics in research is to function as a tool in designing research, analyzing its data and drawing conclusions and there from. in order to arrange and flush out the data meaningful, the following statistical technique were used: **1.** Descriptive statistics; **2.** Inferential statistics; **3.** Graphical representation of data

Analysis of the data: Section 1- Effectiveness of Educomp Smart Class. Section 2- Students attitude towards the use of multimedia in classroom for instruction.

3. Results and Discussions

Section 1: In this section researcher analysis the data concerning first objective and hypothesis of objective is as follows: Hypothesis One: There is no significant difference in the performance of students in math's when they are exposed to (i) Educomp smart classroom (ii) Conventional classroom instruction. For the purpose of study this section is further divided in three sub section:

- I. Difference between the means of the control group and the experimental group in the pre Test
- II. Difference the means of the control group and the experimental group in the Post test
- III. Difference between the mean achievement scores of boys and girls

Sub-section 1: Difference between the means of the control group and the experimental group in the pre Test- After selecting students in control and

experimental group researcher first administrated the pre test on both groups of same difficulty level, for determining that both groups are equal. The scores of students in the two groups were analyzed using t test. The results of the analyses and discussions are as stated below. Scores were analyzed using mean, standard deviation t test and the result is as shown in Table 3. 1.

Table 3. 1
Significance of the difference between the means of the control group and the experimental group in the pre Test

Groups	N	M	S.D	T – value
Control	20	19	3.15	0.86
Experimental	20	21	3.17	

This table 3.1 revealed that students in control group have mean 19and standard deviation 3.15 and students in experimental group have mean 21, and standard deviation 3.17. For determining the significance of difference t- test was used. t- Value was calculated 0.86. The calculated t- value was less than the table value at .05 levels. This reveals that the two groups were not significantly different in their achievement in the pre test. After ascertaining that the two groups do not differ significantly, the investigator introduced Educomp smart class to the experimental group and taught the control group through conventional method.

Sub section -2: Difference the means of the control group and the experimental group in the Post test- After three weak researchers introducing the respective treatments the same achievement test was administrated to both (control group and experimental group) the group again. The results of the test are given below and were analyzed in such a manner which depicted in table given below:

Table 3.2
Significance of the difference the means of the control group and the experimental group in the Post test

Groups	N	M	S.D	t- value
Control	20	21.40	4.46	3.85
Experiment al	20	36.85	6.43	

This table 3. 2 revealed that students in control group have mean 21.40 and standard deviation 4.46 and students in experimental group have mean 36.85, and standard deviation 6.43. For determining the significance of difference t- test was used. t- Value was calculated 3.85. The calculated t value 3.85 is greater than the table t-value at 0.05 levels. This revealed that the two groups differ significantly in their achievement, its mean that second teaching method is very effective than first teaching method. Students who received the instruction through Educomp class achieved the high marks rather than who received the instruction conventional teaching method. By using videos, animated pictures charts cartoon and other way of resenting content increased the students learning and their memory, understanding skills increased.

Thus we can say that Achievement of experimental group is better than the control group. Hence **null hypothesis is rejected** that there is no significant difference in the performance of students when they are exposed to Educomp smart class and conventional class room.

Sub section 3: Difference between the mean achievement scores of boys and girls- In this section researcher was interested to know that Educomp class are equally effective for girls and boys. So he analyzed the scores of boys and girls of experimental group. For analyzing the significance of difference between girls and boys of t-test was used. Table 3.3 show the students mean and standard deviation.

Table 3. 3

Significance of the difference between the mean achievement scores of boys and girls

Groups	N	M	S.D	t- value
Male	10	15.32	5.102	0.67
Female	10	14.28	5.011	

This table 3. 3 revealed that male students in experimental group have mean 15.32 and standard deviation 5.102 and female students in experimental group have mean 14.28, and standard deviation 5.011. For determining the significance of difference t- test was used. Calculated t- Value was 0.67. The t value 0.67 was less than the table value to be significant at 0.05.its mean that boys and the girls do

not differ in their achievement in maths in the post test. This shows that package is equally effective with boys and girls.

Section 2: The second research question addressed in this study was Students’ attitude towards the use of multimedia in classroom for instruction.

This research question basically deal with that really students of experimental group like receiving instruction through multimedia and what’s their attitude towards it. For assessing it researcher used a 4 point rating scale name Modified version of the Computer Attitude Questionnaire originally created by Dr. Rhonda Christensen and Dr. Gerald Knezek (Christensen & Knezek, 1997).

Study of student attitude has been done in the following ways: Classification of scores and their interpretation

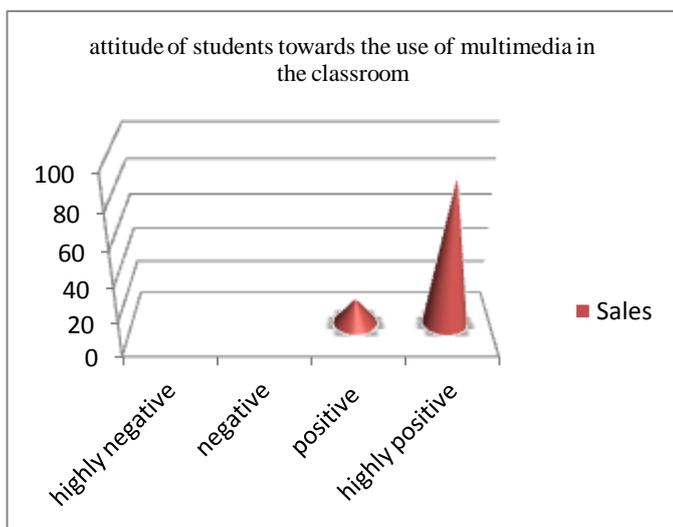
First a researcher set criteria for knowing that what will be the student’s attitude when they got a particular score in rating scale. Scores and their interpretation were as follows:

Table 3.2.1

Scores	Interpretation	Attitude
35-40	Strongly agree	Highly positive
25-35	Agree	Positive
15-25	Disagree	Negative
10-15	Strongly Disagree	Strongly Negative

Table 3. 2. 1- interpretation of scores: The minimum scores of the rating scale were 10 and maximum scores were 40. Student’s scores were laid between the ranges 10-40. The results indicate that the students who participated in the survey enjoy the use of the Active Board as an instructional tool and believe that it helps to provide additional opportunities for learning. The student responses also validate that they understood the questions being asked of them and realize the scoring tool. The students also feel that the ActivBoard is easy to use and that technology in general will benefit them in the long run. At last based on the results of rating scale, students’ attitude is positive. On the student survey, there

were no questions that were rated anything less than a (agree). The average for all twenty questions from all students was midway between “agree” and “strongly agree”. The statements with which the students agreed most often were all related to enjoying using the whiteboard in the classroom. From student’s response it was found that 20 students, 17 students have highly positive and only three students have positive attitude. Thus 85% students have highly positive attitude and 15% students have positive attitude. A bar diagram of student’s attitude on the basis of % is as follows:



This bar diagram clearly shows that students have a positive and strongly positive attitude towards the use of multimedia.

4. Conclusion & Recommendations

Findings of Research: Findings of research are divided in two parts:

- Findings of research With smart class programme
- Findings of research Without smart class programme

❖ Findings of research with smart class programme:

- For most of the standards the score distribution was found to be more positively skewed for test sections than control sections, implying a higher concentration of

scores at the higher end. The ranges of scores, particularly for the higher standards, were found to be larger for the control sections.

- These Educomp classes improve teachers' effectiveness and productivity. Educomp class brings abstract and difficult curriculum concepts to life. It makes learning an enjoyable experience for students. It enables multi-sensory learning in classrooms. It improves academic performance of students. It enables instant formative assessment of learning Outcomes in class.
 - In general the attentiveness of the students was observed in terms of their focus on the video that was being played out on the interactive white board; attentiveness was found to be higher when the digital content were being played out.
 - Revision of the day’s chapter done efficiently, with all topics getting touched upon at the end of the class. The diagrams, irrespective of subject and topics were clear and colorful, thus drawing the students’ attention.
 - The teacher’s space of movement within the class was observed to be largely restricted to the area near the control panel.
 - It Improves student attendance in the class room. It Increased student comprehension. Students Attitude found positive towards the Educomp classes. It helps in self and Strong study. Educomp classes helps in student retention.
 - The results indicate that the students who participated in the survey enjoy the use of the multimedia as an instructional tool and believe that it helps to provide additional opportunities for learning.
 - Teachers are the gateway to larger cultures of knowledge. No amount of ICT will ever replace teachers in this respect.
- #### ❖ Findings of research without smart class programme:
- The teachers’ movement space spanned across the entire classroom there by allowing greater control on all the students.
 - The attention levels of students were observed to be marginally less than in the

control sections with some amount of cross-talking among students; For some classes external sounds were observed to be great distracts. In some of the control sections, particularly for higher standards, the number of question asked was higher.

- In the sections where the teacher was not dictating the notes, the students were seen to copy the notes from the board; Substantial time had to be spent on drawing diagrams on the board and the quality of the diagrams were lower than those shown in the test section; Also, time had to be spent on wiping off the contents when the teacher ran out of space on the white board which resulted in some students missing out on the notes written on the board and then having to ask his/her neighbouring students there by generating a buzz of cross-talking in the classroom.
- Certain instances were observed where the teacher missed a sub-topic during revision.

Through the observation exercise certain commonalities were identified across sections, some of them are:

- Dictation of critical notes by teachers took the same amount of time, during certain periods, especially the ones immediately before and after Tiffin breaks and immediately before the school day got over; the attention levels and the palpable restlessness among students were evident irrespective of whether it was a control or test section.

CONCLUSION

In conclusion, the results of the study revealed that the multimedia Instructional strategy enhanced the student's cognitive achievement and also interest in Math's. The students' cognitive achievement and interest in math's were enhanced mostly by the multimedia strategy and minimally by the conventional strategy irrespective of sex. It is evident that the use of video tape in teaching math's concepts provides precise visual feedback and hence incontrovertible evidence of what happened in the class. The Educomp Smart Class program has an

overall positive impact on students more in terms of generating curiosity and grasping complex concepts rather than capturing attention, while it helps teachers in managing time better. The use of an interactive whiteboard as an instructional tool in a ninth grade classroom proved to be statistically significant in increasing student participation. The objective of this study was to examine the effectiveness of using an interactive whiteboard Active Board, to increase student participation in the classroom. I felt that the students would appreciate the greater opportunities to use the Active board as they have demonstrated past excitement and eagerness in use. The results indicate that the students who participated in the survey enjoy the use of the multimedia as an instructional tool and believe that it helps to provide additional opportunities for learning.

Educational implication of the study

Smart class is bringing digital revolutions in the classrooms. Teaching and learning has indeed become very interesting and effective. The old method of chalk and board is being done away with the introduction of visual aids. Education through new technology like the smart class by Educomp has made it easier for the teachers to relate the subject to the pupils and the pupils are very receptive to it. This system is making use of imagination of the student to make them understand the subject in all its pros and cons in such a way that it remains in their memory for long time to come.

For students: Students performance increased in related subject; Students enjoy learning; Students rate of absenteeism decreased; their memory, understanding and application skills' increased. Their participation also increased. It makes Abstracts concepts concrete and difficult topic very easy to understand. By smart class method, students understand difficult topics in an interesting manner through audio-visual aids. These audio-visual aids/images display the data and the mathematical relation of the topics for interpretation, especially of multi-dimensional cases. By these classes, Notes/Pages can automatically be saved and can be printed, emailed or even pasted into a website and It enables tutors to use multimedia resources and the internet with a whole class.

For teachers: It captures the attention of learners; it encourages the involvement of learners in the subject; it reduces teacher's burden in the class; It helps in controlling on external environment like noise etc. Students found more disciplined in the class so discipline problems up to some extent reduces. It helps teacher in explaining the content because it provides diagrams, colourful written data 3D figures etc. The teacher's are also benefited in a way that they can improve their teaching and learning skills by delivering our module contents and supporting our course using computers and Information Technology. This interactivity provided by CAL is effectively used in bridging the gap between active learning and passive teaching, thereby making learning a more interesting and enriching experience. It is supposed to a teacher that by using smart class equipment a teacher will play the certain role.

Teachers' role in smart classroom:

Sharing knowledge: The teachers also build upon the knowledge, personal experiences, language and culture that students bring to the learning situational.

Sharing ability: Educomp smart class encourage students' use of their own knowledge ensures that students share their knowledge and their learning strategies.

Mediation: In smart classrooms, teachers can act as mediators to adjust the level of information and helps students discover what to do when they are stumped, and help them learn how to learn.

For governments and administrators

It helps in preventing stagnation and wastages problem. Is the major obstacle to achieve 'Universalitation of Education', (Article 45 of Constitution of India: Free and Compulsory education up to the age group of 6-14), It does not only focus on study material as well as it makes students to thing how curricula should be developed, how time table should be set. It helps in Distance learning, correspondence course etc.

Suggestions and recommendations

Teacher should be full of other resources like charts etc, in case if electricity goes, it would hinder the all teaching process. Videos should not be continuously show, otherwise it will create boring situation in the

classroom. If possible videos should be distributed in the class if any student is absent in the class. Teacher should be enough trained in using technology. Proper infrastructure should be developed. Teacher should not completely rely on teaching through video, he must also focus on slow learners, and important topic should be repeated in the class. Teachers have to give background about the course content, skills, and instruction to students. School administration should take interest in implementing this programme for al level. Because **behind every perfection there is science.**

As a result of this study, it is highly recommended that the video instructional strategy should be given more emphasis during teaching and learning maths in secondary schools. Efforts should be made towards the integration of this instructional strategy in other related subjects and conducive environment is provided for teachers to exhibit their talents in making teaching-learning process to be more meaningful. There are many issues related to the use of the whiteboard in the classroom that still need to be examined. First of all, before resources are utilized to begin permanently placing whiteboards in classrooms, information needs to be gathered on whether or not all teachers prefer to have whiteboards in their classrooms. There is no need to begin spending funds on placing whiteboards in the classrooms of teachers who do not prefer or plan to use them. One factor that may be involved with this issue is whether or not teachers feel adequately trained to integrate Whiteboards and technology in general, into their curricula. On the issue of resources, it would also be appropriate to study methods of obtaining the funding to place more whiteboards into classrooms.

Finally, it must be noted once again that it is possible that the nature of the activities, the accompanying software programs and the level of engagement built into the lessons may have been factors that contributed to the positive effect of whiteboard use in this study, in addition to or rather than the whiteboard itself. Therefore, more study would need to be conducted on the types and natures of lessons that are delivered in conjunction with the use of whiteboards. Multimedia in classroom should be used as a tool rather that a novelty.

How is Educomp smart class implemented in Schools? Provision of digital content mapped to schools syllabus: All hardware, equipment and accessories – installation and maintenance must be provided and accessed. Initial and ongoing training of teachers frequently organised. Day to day support and monitoring of usage might be conducted. Full time manpower deployed in school to assist incorporation. Above all, schools do not have to worry about the funds required to set up the infrastructure to run Educomp smart class. Any school can adopt the program by entering into a contract with Educomp and pay a nominal subscription fees on a per student per month basis.

Scope for further research: No research is complete in itself, but previous research guides to the next coming researches. It has much scope for further researches. Further research can be done by taking large size sample. New research can be done for different class. Further research can be done in other subjects also like science, English, social science etc... New research can be performed by changing study variables like motivation, interest, regularity of students, teacher's effectiveness in using Educomp class programme etc. Further researches can be done in two different areas like rural and urban areas.

School administrator's attitude towards implementing Educomp technology in the classroom may be the new topic for further research. Thus there is lots of scope for further researches. Educomp smart class and present curriculum, teaching method, discipline, etc may be the further research topic.

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