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Effectiveness of EDUCOMP smart classroom teaching on achievement in mathematics at elementary level

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Abstract

This study analyses the effect of Educomp Smartclass room teaching on achievement in Mathematics at elementary level. The study consists of 80 students of class VIII of Navyug Public School, Sonipat (Haryana). Achievement test containing 60 Questions was used to collect the data. Experimental group, consisting of 40 students, was taught using Educomp Smartclass room and control Group of 40 students was taught using Conventional classroom. It was found that mean scores of achievement in mathematics of Educomp Smartclass teaching group was higher than Conventional Classroom teaching group. Sex has no effect on the achievement in mathematics among VIII Graders using Educomp Smartclass. Sex has no effect on the achievement in mathematics among VIII Graders using Conventional Classroom teaching.

Keywords: Educomp Smartclass, Conventional Classroom, Achievement

Introduction

In the present era of globalization, the explosion of technologies is impacting the world in more ways than one can imagine. For example, the way industries and economies are managed have considerably changed. The rapid transmission of data and information has enabled cross-border collaborations to be more efficiently executed, thus allowing businesses to be run more efficiently. Out-sourcing thus becomes more prevalent and new economies such as those of China and India have prospered as a result. Technology has facilitated and in some cases caused paradigm shift in the way business used to be operated (Friedman, 2006). Creative and critical thinking as well as problem solving skills are now much more in demand. In the face of changing demands on the type of human resource that should be developed, educators are also emphasizing these new skills in educational curricular reviews. The use of information and communication technologies (ICTS) in education is seen as a way to produce a more educated knowledge-based work force.

“The illiterate of 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn.”

One of the most commonly cited reasons for using ICTs in the class- room has been to better prepare the current generation of students for a workplace where ICTs, particularly computers, the internet and related technologies, are becoming more and more ubiquitous. Technological literacy, or the ability to use ICTs effectively and efficiently, is thus seen as representing a competitive edge in an increasingly globalizing job market.

Smart Classroom vs. Traditional Classroom

When we compare the two terms we find that traditional classrooms are the one in which instructions are confined to the four walls only. There is a definite pattern to be observed while in the case of Smart class, it is not so. It doesn't mean that traditional classes are not appropriate but with the time one has to change. As John Dewey said, “If we teach today as we taught yesterday, we rob our children of tomorrow.” Therefore it is the need of the hour to integrate student-teacher-technology as one. Introduction of smart classrooms does not mean to uproot the conventional ways rather it means the integration of old with new.

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Shortly after the internet explosion of the 1990s, technology was immediately integrated into the classrooms. In the traditional system the teacher is the only controller of the learning environments. Power and responsibility are held by the teacher and they play the role of instructor and decision maker. In this method the teachers regard students as having 'knowledge holes' that need to be filled with information. In such a situation a teacher is assisted and updated with the modern technological know-how, which enables the learning process more effective and efficient. It is rather next to impossible to uproot the old system completely because the instruction process is not complete without the teacher-learner interaction. We must recognize the speed with which technology progresses and be alert by adjusting our techniques as necessary. It also is appropriate to acknowledge that some technology applications remain constant when properly inserted into an aligned curricular plan. Although technology offers teachers one of the most powerful helpers impacting how education is provided and improved, the ultimate success of our educational institutes still remains in training and supporting quality, exceptional frontline teachers.

Educomp Smartclass

Educomp Smartclass, is a technology solution within the classroom that has transformed teaching and learning, across nearly 20,000 schools, reaching out to millions of learners. Using mapped to curriculum 2D-3D digital content across all school subjects it has, (as testified by a Dun and Bradstreet research) paved the way for vastly improved teaching learning outcomes. For learners it has meant aroused interest levels, more engagement, and yes better comprehension of critical concepts. For teachers it has meant ease of facilitation and superior teaching outcomes. It's a unique solution, with four interlocked components:

1) Content- Educomp smartclass 'Class transformation System (CTS)' is arguably the most versatile application that covers every aspect of the teaching learning process. Over half a million teachers have been benefitting from its meticulously mapped to curriculum instructor led Digital Content. CTS is also equipped with highly effective facilitation tools including, Teaching Ideas, MCQ based Assessments, Diagram Maker, Mind-Maps, Simulations, Worksheets, Topic Synopsis and a vast directory of topic relevant web links.

2) Technology – 'Digital Teaching System (DTS)' is a proprietary hardware with built-in computing, interactivity, power back-up, stereo speakers and a Document camera. DTS is designed keeping stringent conditions of classrooms in mind.

3) Academic Support –A dedicated 'Academic Support Group (ASG)', ensures that schools adopting Educomp smartclass are able to make a smooth transition to the digital learning environment. Teachers are trained to handle hardware and structure lesson plans around digital content. Vriti, set of processes, ensures optimal use of Smartclass.

4) Affordability -For mass adoption model, Educomp offers smartclass at affordable monthly installments to schools.

Significance of the Study

Technology offers many benefits to enhance education. Most importantly, technology integration has the potential to increase student motivation (Anderson, 2000).

Technology empowers students by engaging students in the learning process. The nature of the task shifts from teacher centered to student-centered. Research indicates that

challenging and engaging academic tasks that build upon students' prior knowledge and enable students to construct their own understanding of the content are more apt to enhance student motivation and increase student self-confidence in the cognitive abilities (Brophy, 1983; Meece, 1991; Miller & Meece, 1999). Research also identifies the benefits of technology integration as the technical aspects to enhance the quality of work, promote access of resources, positively impact student learning, and promote student meta-cognitive skills (Heafner & McCoy, 2001; Scheidet, 2003).

As noted by Driscoll (1994), *"We no longer can view learners as empty vessels waiting to be filled, but rather as active organisms seeking meaning."*

In today's world, teachers need to be equipped not only with subject expertise and effective teaching methodologies but with the capacity to assist students to meet demand of the emerging knowledge based society with new forms of ICT and need to have the ability to use that technology to enhance the quality of learning. The search for ways to integrate technology into mathematics education is influenced by two main factors. First is the explosion of technologies that is influencing all aspects of life and the development of human resource. Knowledge-based workers need to be technology savvy as well as having critical and creative thinking skills. Second is the mathematics education reform that is now emphasizing the development of mathematical processes.

During the last two decades, researchers have become increasingly aware of the important role teachers play for student achievement, with the implicit assumption that better teacher performance in terms of mathematical content knowledge, pedagogy and technology integration in combination with knowledge about research outcomes would sufficiently prepare teachers for an easy and effective integration of new technology into their classrooms. Hence, the need for the study effect of Educomp Smartclass room on achievement in Mathematics at Elementary level.

Objectives of the Study

1. To compare the effect of Educomp smart classroom and conventional classroom teaching on the achievement in mathematics among VIII graders.
2. To compare the mean achievement scores of male and female VIII graders in mathematics to be taught through Educomp Smart Classroom teaching.
3. To compare the mean achievement scores of male and female VIII graders in mathematics to be taught through Conventional Classroom teaching.

Hypotheses of the Study

1. There will be no significant difference in the effects of Educomp Smart classroom and Conventional Classroom teaching on the achievement in mathematics among VIII graders.
2. There will be no significant difference in the mean achievement scores of male and female students in Mathematics to be taught through Educomp Smart Classroom teaching.
3. There will be no significant difference in the mean achievement scores of male and female students in Mathematics to be taught through Conventional Classroom teaching.

Method of research

The present study is an attempt to study the effect of Educomp Smartclass on the students' achievement in

mathematics. Keeping this thing in mind, the investigator used pre-test, post-test experimental method to conduct this study.

Research Design

In the present study, pre-test post-test control group quasi experimental, design was employed. Experimental group was taught using Educomp Smartclass and the control group was taught using Conventional classroom using chalk and talk method for a period of 30 working days.

Sampling

In the present investigation, Sonipat district of Haryana was the field of study. The sample of the study comprised 40 pupils each studying in two sections of the VIII class of Navyug Public School, Sonipat situated in Haryana. One section formed the control group and the other section formed the experimental group, the selected sections were equated on intelligence and socio-economic status.

A schematic view of the phases of experiment is presented in Table - 1.

Table 1: Phases of the study

Stage	Control Group	Experimental Group
I. Pre-testing	1.Measurement of intelligence of pupils	1.Measurement of intelligence of pupils
	2.Measurement of socio-economic status of pupils	2.Measurement of socioeconomic status of pupils
	3. Measurement of achievement in mathematics	3. Measurement of achievement in mathematics
II. Treatment	Teaching mathematics through conventional method	Teaching mathematics through Educomp Smartclass method
III. Post-testing	1. Measurement of achievement in mathematics	1.Measurement of achievement in mathematics

Independent Variables

Educomp Smartclass used teaching and traditional teachings were the two independent variables for the study.

during the course of the study, first, before beginning the experimental treatment, i.e. at the pre-test stage and then after completing the experimental treatment, i.e. at the post-test stage.

Dependent Variables

Achievement in mathematics was taken as dependent variables. Achievement in mathematics was measured twice

The independent variables, dependent variables, control variables and the kind of control employed in the study are summarized in Table - 2.

Table 2: Control Employed to Variables

Independent Variables	Dependent Variables	Control Variables	Control Employed
Method of Teaching	1.Achievement In Mathematics	1. Nature of school	1. Administrative (Single School)
		2. Grade Level	2. Administrative (Only VIII class chosen as sample and taught)
		3. Teacher	3. Both the groups were taught by the same teacher (investigator hereby)
		4. Subject to be Taught	4. Administrative (Same units of Mathematics taught in both groups)
		5. Duration of treatment	5. The two groups taught for 30 days, 40 minutes each period daily.
		6.Pupils' socio-economic status	6. Belonged to the same milieu.
		7.Pupils' intelligence	7. No need.

Tools Used

For the present investigation, the following tools will be used:

A. Standardized Tests

1. Group Test of Intelligence (GGTI) by Dr. G.C. Ahuja (1990)
2. Socio-Economic Status Scale (SESS-UR), by Ashok K. Kalia and Sudhir Sahu (2011).

B. Self-developed Tools

3. Mathematics Achievement Test (To be developed by investigator)

Statistical Techniques

Descriptive statistics such as mean and S.D worked out on the score of achievement in Mathematics and 't' test was employed for testing the significance of difference between

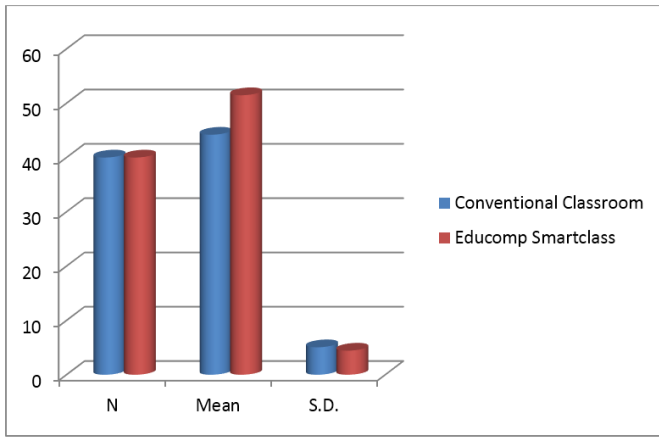
the means of pupils' achievement in mathematics on pre - test, post -test and gain scores.

Results and Discussion

Concerned Null Hypothesis (H₀1) - There will be no significant difference in the effects of Educomp Smartclass and Conventional Classroom teaching on the achievement in mathematics among VIII graders.

Table 3: Mean, S.D and t – value of Achievement in mathematics of VIII Graders using Educomp Smartclass teaching and Conventional Classroom teaching.

Groups	N	Mean	S.D.	t-value	Significance
Conventional Classroom	40	44.20	5.0596	6.837	.01*
Educomp Smartclass	40	51.475	4.437		



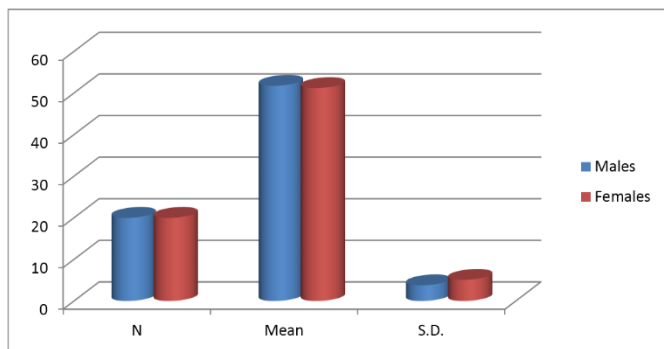
Graph 1

Table - 3 reveals that t-value 6.837 for difference in the mean scores of class VIII students' achievement in mathematics with conventional classroom teaching and Educomp Smartclass teaching is significant at 0.01 and .05 levels of significance (critical value=2.66). It shows that there is significant difference in achievement in mathematics of VIII grader's with respect to Educomp Smartclass teaching and Conventional Classroom teaching. Thus, the null hypothesis H_01 i.e. 'There will be no significant difference in the effects of Educomp Smartclass and Conventional Classroom teaching on the achievement in mathematics among VIII graders' is rejected. When results are compared in the context of the mean scores, Graph-1, it is found that mean scores of achievement in mathematics of Educomp Smartclass teaching group (Mean-51.475) is higher than Conventional Classroom teaching group (Mean44.20). It may therefore be concluded that Educomp Smartclass teaching helps in enhancing the achievement of students in mathematics in comparison to the conventional classroom teaching.

Concerned Null Hypothesis (H_02): There will be no significant difference in the mean achievement scores of male and female students in Mathematics to be taught through Educomp Smartclass teaching.

Table 4: Mean, S.D and t – value of Achievement in mathematics of male and female VIII Graders using Educomp Smartclass teaching.

Groups	N	Mean	S.D.	t-value	Significance
Males	20	51.75	3.781	0.388	Not Significant
Females	20	51.20	5.094		



Graph 2

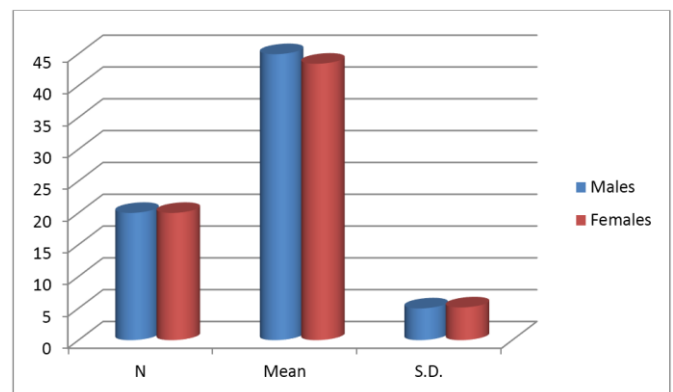
Table - 4 clearly shows that the t-value 0.388 is not significant at 0.01 level (critical value=2.70) with df =38. It reflects that the value of Achievement in mathematics of male and female VIII Graders using Educomp Smartclass teaching does not

differ significantly. Thus the null hypothesis namely, H_02 i.e. 'There will be no significant difference in the mean achievement scores of male and female students in Mathematics to be taught through Educomp Smartclass teaching' is accepted. Further, the mean achievement score of male students is 51.75, which is slightly higher than the mean achievement score of female students i.e. 51.20. It may therefore be concluded from the findings that sex has no effect on the achievement in mathematics among VIII Graders using Educomp Smartclass.

Concerned Null Hypothesis (H_03): There will be no significant difference in the mean achievement scores of male and female students in Mathematics to be taught through conventional classroom teaching.

Table 5: Mean, S.D and t – value of Achievement in mathematics of male and female VIII Graders using Conventional Classroom teaching.

Groups	N	Mean	S.D.	t-value	Significance
Males	20	44.95	4.989	0.936	Not Significant
Females	20	43.45	5.145		



Graph 3

The table - 5 clearly shows that the t-value 0.936 is not significant at 0.01 level (critical value=2.70) with df =38. It reflects that the value of Achievement in mathematics of male and female VIII Graders using Conventional Classroom teaching does not differ significantly. Thus the null hypothesis namely, H_03 'There will be no significant difference in the mean achievement scores of male and female students in Mathematics to be taught through conventional classroom teaching' is accepted. Further, the mean achievement score of male students is 44.95, which is slightly higher than the mean achievement score of female students i.e. 43.45. It may therefore be concluded from the findings that sex has no effect on the achievement in mathematics among VIII Graders using Conventional Classroom teaching.

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