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RESEARCH PAPER

Effectiveness of Geo Gebra Software on the Basis of Achievement in Mathematics of Class IX Students

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ABSTRACT

The present study has generated some interesting findings concerning the benefit of using GeoGebra Software for teaching Mathematics topic as compared to the traditional method of teaching. Results indicated that GeoGebra Software based teaching significantly improved student"s performance on the achievement test. However, there were significant differences in student"s achievement when the students who were taught using GeoGebra Software compared to those taught using traditional methods. GeoGebra Software based teaching seems to be very effective in enhancing student"s conceptual understanding.

Key words: *GeoGebra Software, Achievement and ICT*

INTRODUCTION

The purpose of the Research Proposal is to examine the use of GeoGebra software on the students to clarify their concepts and develop better pedagogy to teach geometry at high school level. This will help them to visualize the geometry shapes with little effort using technology. It will increase their knowledge on geometry and pedagogy of Geometry to apply to their teaching in elementary schools.

From surveys conducted by various institutes such as National Achievement Survey, State Achievement survey, Parham, shows that the understanding of mathematics in our school children are very poor. Through my Research Proposal I want to address the one very important area of mathematics i.e. Geometry at High School. Initially I will work with Class 9th.

The main objective of the study are to compare mean scores of conceptual understanding in Mathematics at pre and post stages of group taught through GeoGebra Software, to compare mean scores of conceptual understanding in Mathematics at pre and post stages of Male and Female students taught through GeoGebra Software.

NEED AND IMPORTANCE OF THE STUDY

Programs in teacher education and professional development must continually update practitioners" knowledge of technology and its classroom applications. Such programs should include the development of mathematics lessons that take advantage of technology-rich environments and the integration of technology in day-to-day instruction, instilling an appreciation for the power of technological tools and their potential impact on students" learning and use of mathematics. All teachers must remain open to learning new technologies, implementing them effectively in a coherent and balanced instructional program. These tools, including those used specifically for teaching and learning mathematics, not only complement mathematics teaching and learning but also prepare all students for their future lives, which technology will influence every day.

CONCEPTUAL AND OPERATIONAL DEFINITIONS:

GEOGEBRA SOFTWARE:

GeoGebra Software is a transformative tool in mathematics, it allows learners to visualize and manipulate. It is an open source application with a very active developer community. GeoGebra Software empowers teachers and learners of mathematics.

ACHIEVEMENT:

Achievement is a measure of knowledge gained by Plan Programme, effort or skill which gives satisfaction.

ICT (Information and Communication Technology):

ICT is defined as the term used to describe the tools and processes to access, retrieve, store, organize, manipulate, produce and/or exchange information by electronic and automatic means. These include hardware, software and telecommunication in the form of personal computer, scanners, digital canvass, C.D. and D.V.D. players and program like data base system and multi-media applications.

OBJECTIVE OF THE STUDY

- To compare mean scores of conceptual understanding in Mathematics at pre and post stages of group taught through GeoGebra Software.

HYPOTHESIS OF THE STUDY

$H_0$1- There is no significant difference in mean scores of conceptual understanding in Mathematics at pre and post stages on selected concepts using GeoGebra Software.

DELIMITATION OF THE STUDY:

The Present Study conducted on two classrooms of a Government Higher Secondary School Khorpa, Raipur District.

POPULATION:

The term „Population" is used in research to describe any group of individuals, events or observations in which the researcher is interested. In the present study, the term population refers to class IX students of Government School of Chhattisgarh.

SAMPLE:

In the present investigation Government Higher Secondary School Khorpa, Raipur district of Chhattisgarh was the field of study. The sample of the study comprised 50 pupils each studying in Government Higher Secondary School Khorpa, two sections of the IX class.

TOOLS:

The researcher had used Achievement Test for the study.

Administration of the Test:

ADMINISTRATION OF THE PRE-TEST:

Before the start of the experiment, the sample subjects were contacted and rapport was established with them. They were oriented about the tests to be used. Pre-test on Achievement Test were administered to the students of two groups by the researcher himself. Cooperation of the class teacher was sought for administering the tests properly. The instructions pertaining to the tests were explained verbally in clear terms to the students before administering the test. The administration of the tests was carried out as per norms and instructions contained in respective test manuals.

ADMINISTRATION OF POST-TEST:

Immediately after the instructional treatment was over, the researcher tested the subjects of experimental group and control group on the dependent variables i.e. Academic Achievement.

ANALYSIS AND INTERPRETATION OF THE DATA:

The hypothesis constructed is based on the variables. To test the significance of H_{01} hypothesis t-test is performed using SPSS software and the result is analyzed.

Table 1: Number of Students: Control Grouu and Experimental Group

Number of Students			
		Value Label	N
Control Group	0	MALE	23
	1	FEMALE	27
Experimental Group	0	MALE	24
	1	FEMALE	26
Total			100

Table 2: Mean and Mean Gain Achievement Scores of Class IX Students

			Mean		**Mean Gain**	
S.No.	Group	N	Pre-Test(1)	Post-Test(2)	(2)-(1)	t-value
1	Control	50	42.14	54.10	11.96	-12.60
2	Experimental	50	40.70	64.84	24.14	-29.36

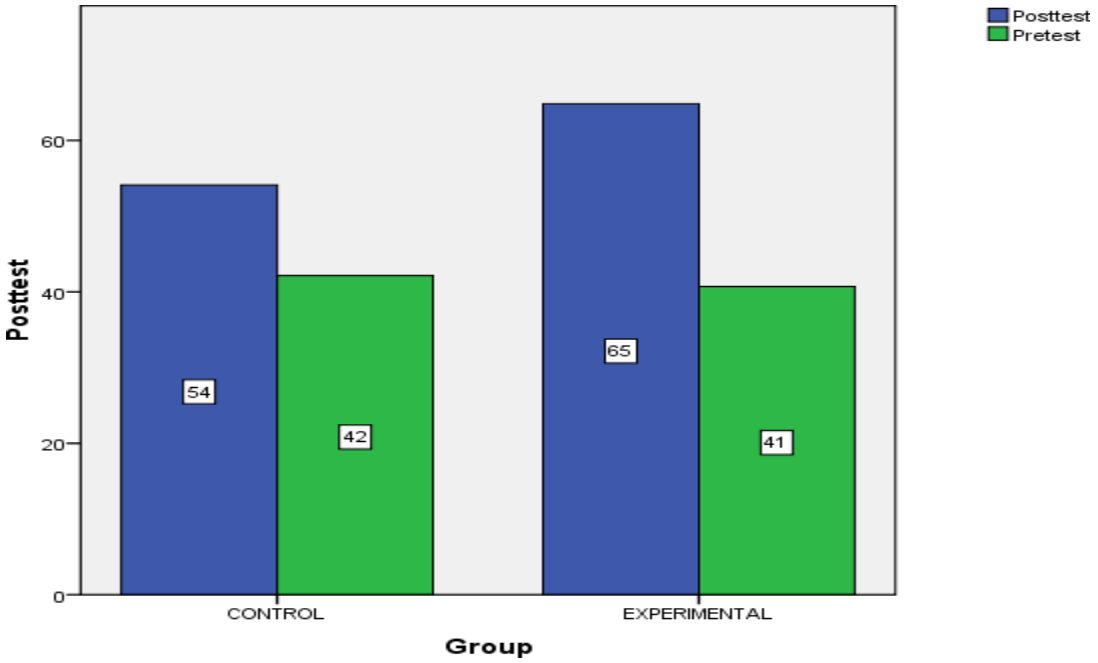

Fig: 1: Group wise pre-test post-test mean achievements

HYPOTHESIS:

$H_0$1: There is no significant difference in mean scores of conceptual understanding in Mathematics at pre and post stages on selected concepts using GeoGebra Software.

ANALYSIS:

In order to verify the above hypothesis the t-test was administered on the data. The outputof SPSS software is presented as below.

The results in Table 2 show that the mean score obtained by the experimental group is much higher (64.84) than that obtained by the control group (54.10) in the Post-test. Hence, students of experimental group showed a tremendous improvement in the post test scores after the intervention. Further, when the significance of the mean difference between the two groups was tested, t-value thus, computed was 12.18 which are more than the Table value of at 0.01 levels, indicating a significant difference between the mean post-test scores of experimental and control

groups. Thus the null hypothesis that "There is no significant difference in mean scores of conceptual understanding in Mathematics at pre and post stages on selected concepts using GeoGebra Software" is rejected.

FINDINGS

The present study has generated some interesting findings concerning the benefit of using GeoGebra Software for teaching Mathematics topic as compared to the traditional method of teaching. Results indicated that GeoGebra Software based teaching significantly improved student‟s performance on the achievement test. However, there were significant differences in student‟s achievement when the students who were taught using GeoGebra Software compared to those taught using traditional methods. GeoGebra Software based teaching seems to be very effective in enhancing student‟s conceptual understanding. A significant difference has been observed between the mean achievement pretest scores and the post- test scores of control group related to their academic achievement.

CONCLUSION

The study provides potential inputs for teacher education. Given the current widespread use of ICT at all levels and for all subjects, it is imperative that pre-service teachers should learn the new technology. Besides pre-service training of teachers in the making, in-service training may also be given to the existing teachers to refurbish their acumen for teaching that is teaching effectively and meaningfully.

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