

**CONSTRUCTION AND TRY OUT OF COMPUTERIZED  
PROGRAMME LEARNING FOR THE STUDENTS OF  
STANDARD 9<sup>TH</sup> GUJARATI SUBJECT**

**Research Report For**

**Minor Research Project**

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**Principal Investigator**

**Dr. Rakeshkumar R. Patel**

**(M.A.,M.Ed., Ph.D.)**

**Assistant Professor**

**PRAKASH COLLEGE OF EDUCATION, AHMEDABAD, GUJARAT  
GUJARAT UNIVERSITY, NAVRANGPURA, AHMEDABAD-380 009.**

**GUJARAT**

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## Full of Abbreviation

1. NS = Not Significant
2. M. Dif = Mean Difference
3. SD = Standard Deviation
4.  $SD^2$  = Square of Standard Deviation
5. SED = Standard Error of Mean

## **1. Introduction**

Every subject has appropriate teaching method. The outcome of the subject teaching depends upon the subject and the method of teaching selected. It is believed that social science subject is somewhat difficult to learn. But in the age of self learning method, self learning material, technology solution is there. Today, definition of knowledge has changed. Knowledge does not mean strength. Knowledge means revolution. Revolution is rule of the World. In any field, revolution is necessary to bring renovation. Therefore, revolution is very essential in education process. Since ancient time, the education process is all about the lecture method in which the teacher is at the centre. but now this method is not useful now a days as it motivates children for ramming only. In present time the necessity of changing society and scope of education have increased, numbers of students have increased, schools have increased and emphasis is placed on self learning. Under these circumstances, Education which is given to students in the class in traditional method, Cannot satisfy the thirst of knowledge of every child and because of that some students fail to gain knowledge and become poor in study. If required time, guidance and learning literature are provided to students, studying slowly and speedily, they may get mastery in study.

Today, we can personally see results and changes coming in the education field. The use of teacher-oriented method, viz. only teacher speaks or educate and students study or hear, is slowly decreasing. Under these circumstances, students themselves actively take part in education process, the emphasis is being placed on the matter of bringing desirable change in their behaviour when they learn. Therefore, for keeping pace with changing situation or time, keeping psychological principles in 2 centre, some self-learning methods were developed. Principle of Learning through activity, increases activeness of students towards education. Today, on entering idea of self-Learning in Teaching, various kinds of self-

Learning and student-oriented methods are introduced in class-room like Computer Aided Learning (C.A.L.), Computer Aided Instruction (C.A.I.), Computer Aided Material (C.A.M.), Computerized Programme Learning Material (C.P.L.M.), Programme Learning Method, Teaching Model Method, Supervised Study Method, Group Discussion Method, Project Method, Demonstration Method, Educational Tour Method etc. All the above mentioned methods are needed to be implemented in the classrooms. for the effective Education.

Now a days it has become necessary to impart education to students as per their personal abilities to reach this aim the idea a new method. “Programme Learning” has been developed.

So, while preparing subject-matter of the subject, which is to be learnt by the students, put the same before the student. So, the students themselves read, think and understand it and they may go ahead as per their capacity and interest and enthusiasm of students in the concerned subject develop and their self-confidence increases, which is the purpose of Programme Learning Method. According to Shah (1993), there are three kinds of Programme Learning.

1. Linear or Extrinsic Programme
2. Branched or Intrinsic Programme
3. Mathetics

#### **Linear or Extrinsic Programme:-**

Skinner B.F. of Haward University of America can be called Contributor of Linear Programme. In Linear Programme, submission of data is prepared by small patterns. In every pattern, single idea, example 3 or rule is included, wherein presentation of educational material is serially arranged. So, students may easily switch over from one pattern to another pattern and may themselves exercise it. Linear Programme enunciates three principles.

1. Active Response
2. Minimum Errors

### 3. Knowledge of Results

Teacher Centered learning method in the classroom is one of the parts of our educational system since ancient time. Lecture method is used for completing given syllabus in limited time. But, in this situation, students become passive listeners. Moreover, in country like India, numbers of schools are increasing and with that increasing the task of education to reach the change in social need. In our nation generally in one class, there are almost seventy students and it is almost impossible for the teacher to know the weakness and strength of every student to teach him/her according to his virtue. Generally, in our classroom, average students are mostly focused and that is why, some students are left behind in study. Because of this negative thinking regarding particular subject arises in the mind of the students. If we provide proper time, guidance and some reference materials to slow learners and fast learners, they can learn better. Nowadays it is expected that students get involved in the learning situation at own. This is the way to cope up with the changing situation and to keep in mind the psychological principles. One should develop self learning methods for study to satisfy the need of every student in the classroom.

It is necessary to make Teaching learning Process effective, so the use of Team Teaching, Self-learning Method, Assignment Method, Project Method, Supervised Study Method should be increased. By keeping in mind, student's capability, self-learning methods are 4 developed in the field of education and technology. Among all self-learning methods, some are more effective and some are less effective. Apart from this, when students learn themselves, the interaction between teacher and students is less. When teacher includes his own skills for the students to make learning process more active and effective, students make more progress in the particular subject. That's why, if we want to develop self-learning method in the absence of teacher, we have to keep in mind the students' activeness

and readiness for learning. Keeping in mind this effect, the investigator had decided to assess one self-learning method.

Today, most of the teachers are seen carrying out educational activity by using traditional method. Therefore, for using new method in education, keeping individual difference of students in mind and inspiring them with ideas, was produced earlier. Researcher, by preparing computerized programme learning material of Gujarati subject of Standard-9<sup>th</sup>, decided to take the present study for verifying its effectiveness in terms of the achievement of the students.

## **2. Statement of the Problem**

The investigator has decided to construct and Try out Computerized Programme Learning for Gujarati Subject. The title of the present study is,

*“Construction and Try Out of Computerized Programme Learning for the Students of Standard 9<sup>th</sup> Gujarati Subject”*

## **3. Definition of the Key Words**

⇒ **Construction**

⊙ **Theoretical Definition**

**According to L.P. Agrawal (2005),**

“The first step in the construction of an adequate test is to have a full and clear understanding of the objectives of the study and the nature of the data needs.”

**According to The Merriam-Webster's online Dictionary (2011),**

"The arrangement and connection of words or groups of words in a sentence: syntactical arrangement"

**According to Terry & Thomas (1977) construction means,**

"Programmed instruction term for the construction of an answer either in writing or by performance actively, not by passive choice"

### ⊙ **Operational Definition**

In the present study, the term construction indicates specially the construction of a Computerized Programme Learning for standard-9<sup>th</sup> students of Gujarati Subject.

### ⊙ **Programme :**

#### ⊙ **Theoretical Definition**

According to Skinner:-

**“Programme is such a process in which the arrangement of the content is done through the rows of small steps, as a result the student learns new and different things as well as principles by self learning by going from known to unknown”.**

#### ⊙ **Programme Learning:**

According to Skinner:-

**“Systematic arrangement of small pieces of knowledge is called a programme and the entire process for it is called programme learning.”**

#### ⊙ **Operational definition:-**

“Slides are prepared on computer by systematic analysis of the unit of social science in small steps, which will be known as computerized programme learning.

#### ⊙ **Computerized Programme Learning Material:**

The Programme prepared by Flash and Video Visual software of computer based on Grammar of Gujarati Subject of Standard-9<sup>th</sup> is considered as computerized programme.

“Programme of learning material prepared by using computer software means Computerized Linear Programme.”

#### 4. Objectives of the Study

The objectives of the present study were as follows:

1. To Prepare computerized teaching material of figure of speech for the students of standard-9<sup>th</sup>.
2. To compare experimental group and control group on educational achievement in Gujarati Grammar unit Figure of Speech.
3. To compare the achievement of experimental group of boys and girls.
4. To compare the achievement of grant in aid school and non grant in aid school students on Gujarati Grammar unit figure of speech.
5. To compare the achievement of grant in aid schools experimental group of boys and girls.
6. To compare the achievement of non grant in aid schools experimental group of boys and girls.

#### 5. Variables of the Study

The demographic variables in the study are:

**Table-1**

**Classification of Variables According to Categories**

<b>Sr. No</b>	<b>Type of Variable</b>	<b>Variable</b>	<b>Level</b>	<b>Category</b>
1	Independent	Teaching Method	2	❖ Computerized Assisted Learning ❖ Lecture Method
2	Dependent	Gender	2	❖ Boys ❖ Girls
3	Dependent	Types of School	2	❖ Grant in Aid ❖ Non Grant in Aid

## 6. Hypotheses of the Study

After stipulating the objectives as well as the title of the research study the researcher proposes the solutions of the problem of his research on an adhoc basis in terms of statements which are called Hypothesis. These Hypothesis are to be tested or verified from the evidences available in the form of collected data.

In the present study the researcher had prepared Spiritual Intelligence Scale.

**Hypotheses in the present study were as follows:**

- Ho<sub>1</sub> There will be no the significant difference between the mean scores achievement test achieved by students of Experimental Group and Control Group.
- Ho<sub>2</sub> There will be no the significant difference between the mean scores achievement test achieved by boys and girls of experimental Group.
- Ho<sub>3</sub> There will be no the significant difference between the mean scores achievement test achieved by boys of experimental Group and control group.
- Ho<sub>4</sub> There will be no the significant difference between the mean scores achievement test achieved by girls of experimental Group and control group.
- Ho<sub>5</sub> There will be no the significant difference between the mean scores achievement test achieved by Students of grant in aid and non grant in aid schools.
- Ho<sub>6</sub> There will be no the significant difference between the mean scores of achievement test achieved by students in Experimental control group of grant in aid and non grant in aid schools
- Ho<sub>7</sub> There will be no the significant difference between the mean scores of achievement test achieved by students in Experimental and control group of grant in aid schools

Ho<sub>8</sub> There will be no the significant difference between the mean scores of achievement test achieved by students in Experimental and control group of non grant in aid schools

## **7. Limitations of the Study**

Limitations of the present study were as follows:

- ⊙ The scope of present study is limited to Ahmedabad City of Gujarat State.
- ⊙ This study is conducted for the Standard-9<sup>th</sup> Students of Gujarati medium.
- ⊙ This study is limited to Unit Figure of Speech of Gujarati Grammar only.

## **8. Population, Sample and Method of the Study**

### **⊙ Population of the study**

According to Patel (2011), population means,

*"When statistical information or data is to be collected from any field then a group covering of all units on which data is to be collected is called a population"*

According to Siddhu (1985)

*"Population means an aggregate or the totality of the subject regarding which inferences are to be made in a sampling study"*

According to Walter R. Borg,

*"A population is any group of individuals that have one or more characteristics in common that are of the interest of researcher"*

Here, the researcher had decided to prepared Computerized programmed for the Standard-9<sup>th</sup> students of Gujarati medium of Ahmedabad City. Therefore, all the students of Standard-9<sup>th</sup> of Ahmedabad City (Gujarati Medium) of educational year 2013-14 became the population for the present study.



While selecting a sample, following points would be kept in mind:

- t Sample should be representative of the population
- t Each member of the population should have the chance to be selected
- t Sample should be selected without any bias.

The inquiry based on a small fraction of units from the population is called a sample. The population for the present study was the students of standard-9<sup>th</sup> of Gujarati Medium of the ahmedabad city , so one Grant-in Aided and one Self Finance schools of Ahmedabad City were selected by random sampling method. Students of selected schools were selected using cluster sampling technique. The detail about the sample has been tabulated in table-2.

**Table-2**  
**Sample of Study**

Sr. No.	Name of Schools	Type of School	Experimental Group		Control Group		Total
			Boys	Girls	Boys	Girls	
1	Kum Kum Vidhyalaya	Grant in Aid	15	15	15	15	60
2	Sarawati Vidhyalaya, Sola	Non Grant in Aid	15	15	15	15	60
<b>Total Students</b>			<b>60</b>		<b>60</b>		<b>120</b>

☉ **Method of the Study**

Looking into nature of the present research study i.e. Prepare of computerized learning material for Figure of Speech of Standard-9<sup>th</sup> students. So, Experimental Research Method was selected for the present study. Detail of Experiment give below :

**1. Selection of Experimental Design :**

Selection of experimental design is first and most important step in any experimental research. According to John W. Best,

“Experimental design is the blueprint of the procedures that enable the research to test hypothesis by reaching valid conclusions about relationships between independent and dependent variables.”

Mainly there are three types of experimental design used in experiment research which are given below :

- I. **Pre Experimental Design**
- II. **True Experimental Design**
- III. **Quasi Experimental Design**

For the present study, True experimental design was used. In this design two classroom of standard-9<sup>th</sup> considered as a group. Standard-9 (A) considered as a Experimental Group and Standard-9 (B) considered as a Control Group from each school selected in sample.

## **9. Tools of the Study**

The following tool was used to for the collecting the data of the present study.

- (I) Self Made Achievement test Based on Blue Print. (Attached Appendix-1)
- (II) Computerized Programme Learning(CD Attached Appendix-2)

## **10. Construction of the Computerized Programme Learning**

### **☉ Unit Selection**

For present research study the researcher reviewed related literature and discussed with the teachers of the schools to determine which units of Gujarati Subject’s Grammar can be made easy; the units that are tough to teach with traditional methods and can be taught easily with the help of Programme Learning Method. The researcher also discussed with school teachers, principals and the students about the lessons which have not been taught in the classroom employing innovative methods in the classrooms. On the basis of reviewing related literature and discussion held with students, teachers and principals of the schools, the

researcher determined the Figure of Speech unit of Gujarati Grammar that were being selected for research study.

### ⊙ Construction of Computerized Programme Learning Material

Investigator has finalized Figure of Speech Unit for computerized material. For construction of programme investigator had prepared different frames and give it to the experts of education faculty to check this content. List of expert given in table-3

**Table-3**  
**List of Experts**

<b>Sr. No.</b>	<b>Name of Experts</b>	<b>Qualification</b>	<b>Designation</b>
1	Dr. A. D. Shah	M.Com., M.Ed., M.Phil. Ph.D.	Principal, Prakash College of Education, Ahmedabad
2	Dr. Satishprakash S. Shukla	M.Com., M.Ed., Ph.D.	Associate Professor, Department of Education, Gujarat University
3	Dr. C. P. Patel	M.Sc., M.Ed., Ph.D.	Principal, A.G. Teachers College
4	Dr. Manoj C. Shastri	M.Sc, M.Ed., Ph.D.	Associate Professor, Department of Education, Gujarat University

<b>Sr. No.</b>	<b>Name of Experts</b>	<b>Qualification</b>	<b>Designation</b>
5	Dr. M. L. Joshi	B.Sc, M.Ed., Ph.D.	Principal, Vision College of Education
6	Dr. Shradhha Barot	M.A., M.Ed., GSET, Ph.D.	Assistant Professor, Department of Education, Saurashtra University
7	Dr. Pathik D. Barot	M.Com., M.A., M.Ed., M.Phil., NET, Ph.D.	Assistant Professor, Swami Vivekanand Sarvodaya Bank Edu. College
8	Dr. G. S. Patel	M.A., M.Ed., NET, GSLET, Ph.D.	Assistant Professor, A. G. Teachers College

After taking suggestions from experts on computerized programme learning material investigator made necessary corrections into programme and then finalized computerized programme on Figure of Speech unit of Gujarati. Comprised programme CD attached in appendix-2.

## **11. Data Collection**

Research had taken permission from principals of secondary schools selected for the present study. First of all students selected for sample divided in group which are given below :

1. Computerized Linear Programme Learning Method - Experimental Group
2. Traditional Learning Method - Control Group

Schedule and detail of experiment taken in schools selected in sample given in table-4

**Table-4**  
**Time Table of Experiment**

<b>Kum Kum Vidhyalaya, Maninagar (Grant in Aid School)</b>					
<b>Sr. No.</b>	<b>Date</b>	<b>Time</b>	<b>Group:1 Experimental Group Standard-9(A)</b>	<b>Time</b>	<b>Group:2 Control Group Standard-9(B)</b>
<b>1</b>	16-06-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>2</b>	17-06-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>3</b>	18-06-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>4</b>	19-06-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>5</b>	20-06-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>6</b>	21-06-14	2 <sup>nd</sup> period	Exam	5 <sup>th</sup> period	Exam

**Table-5**  
**Time Table of Experiment**

<b>Saraswati Vidhyalaya, Sola (Non Grant in Aid School)</b>					
<b>Sr. No.</b>	<b>Date</b>	<b>Time</b>	<b>Group:1 Experimental Group Standard-9(A)</b>	<b>Time</b>	<b>Group:2 Control Group Standard-9(B)</b>
<b>1</b>	10-07-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>2</b>	11-07-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>3</b>	12-07-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>4</b>	14-07-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>

<b>5</b>	15-07-14	2 <sup>nd</sup> period	<b>Experimental Group</b>	5 <sup>th</sup> period	<b>Control Group</b>
<b>6</b>	16-07-14	2 <sup>nd</sup> period	Exam	5 <sup>th</sup> period	Exam

After completion of experiment achievement test based on blue print was administered on the students of standard-9<sup>th</sup> both grant in aid school and non grant in aid school. Necessary instruction given to the Students to fill up achievement test After the completion, test were collected back to check whether the students had filled up all the necessary information properly or not. Thus, data was collected from the entire sample.

## 12. Data Analysis and Interpretation

After the completion of the data collection, Collected Data gathered were classified according to variables and frequency distributions were also prepared for different groups. Based on the frequency distribution of each group, statistical measurements as below were carried out.

1. Mean and Standard Deviation
2. Significance of difference of means between groups
3. Presentation of graphs as required per group.

### ⊙ Testing of Null Hypothesis

**Ho<sub>1</sub> There will be no the significant difference between the mean scores achievement test achieved by students of Experimental Group and Control Group.**

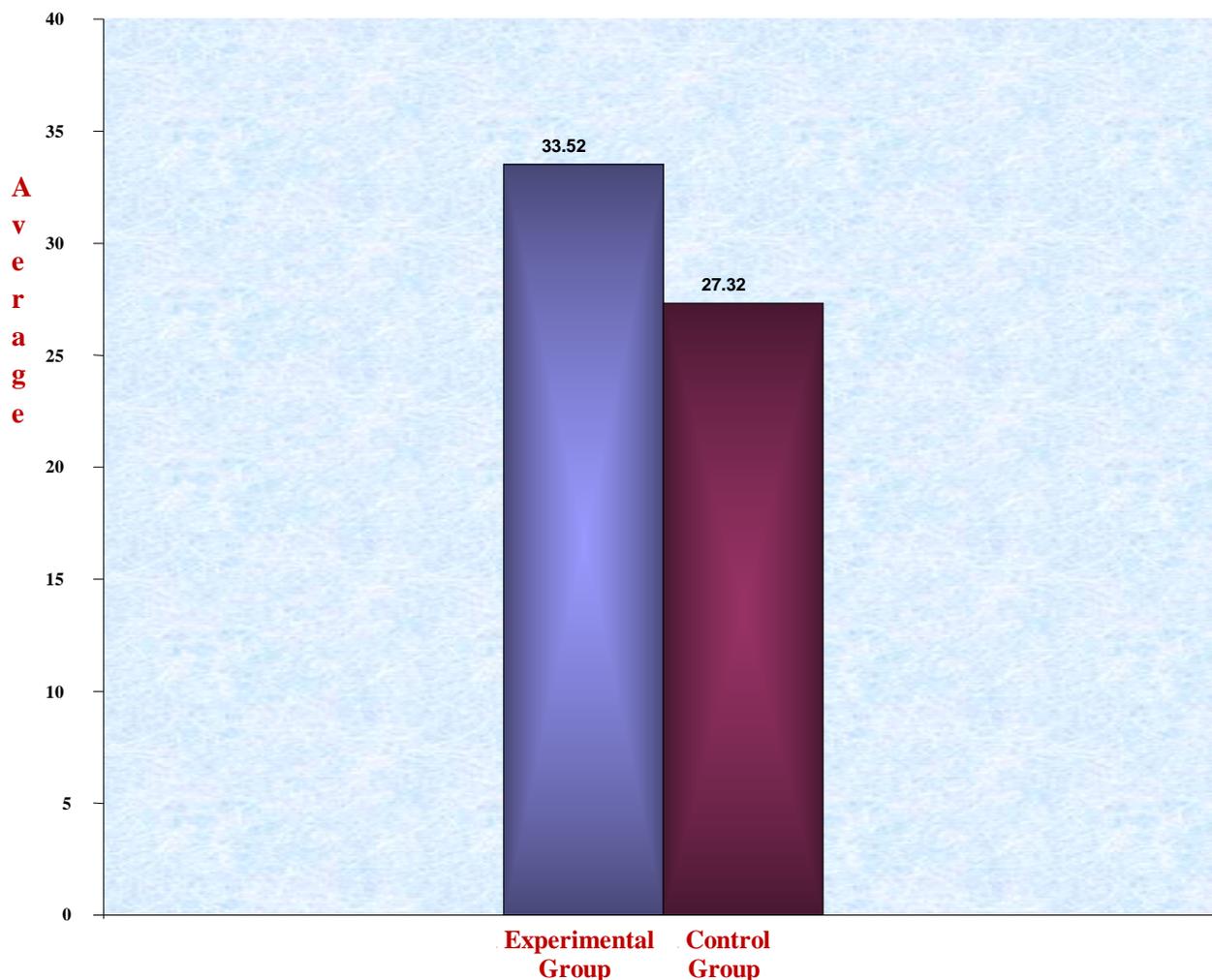
**Table-6**

**Mean, Standard Deviation, Standard Error and t-value of Experimental and Control Group**

<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>SD<sup>2</sup></b>	<b>SED</b>	<b>M. Diff</b>	<b>t Value</b>	<b>Significance</b>
<b>Experimental</b>	60	33.52	1.89	3.58	0.56	6.2	11.07	0.01
<b>Control</b>	60	27.32	3.87	14.999				

As shown in table-6, Mean of scores achieved on the achievement test by experimental group students is 33.52 and control group students is 27.32; standard deviation is 1.89 and 3.87; standard error of mean difference is 0.56 and t-value is 11.07. So, it can be said that calculated t-value is greater than table value 2.56 at 0.01 level. So, Null Hypothesis (**H<sub>01</sub>**) is rejected at 0.01 level of significance.

Thus, it can be said that significant difference found between of experimental group students and control group students. Hence, by comparing mean scores, experimental group student's means scores is higher than the mean of scores achieved by the control group students. Thus, experimental group students were found to have higher in achievement than control group students which shows that teaching method is affecting variable to achievement. *Graphical presentation of mean of achieved score as per table-6 is given in graph -1.*



**Graph-1**

**Comparison of mean scores of Experimental and Control Group students**

**Ho<sub>2</sub> There will be no the significant difference between the mean scores achievement test achieved by boys and girls of experimental Group.**

**Table-7**

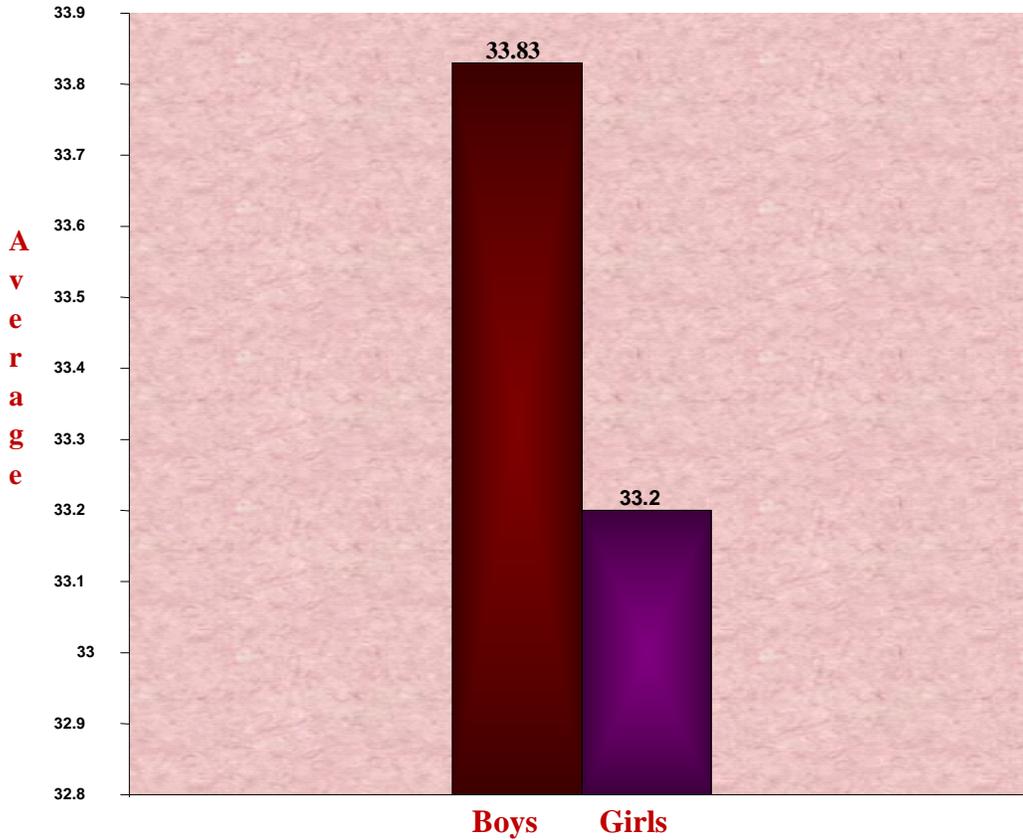
**Mean, Standard Deviation, Standard Error and t-value of Experimental group according to gender**

<b>Experimental Group</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>SD<sup>2</sup></b>	<b>SED</b>	<b>M. Diff</b>	<b>t Value</b>	<b>Significance</b>
<b>Boys</b>	30	33.83	2.12	4.49	0.49	0.63	1.29	NS

<b>Girls</b>	30	33.2	1.60	2.58				
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As shown in table-7, Mean of scores achieved on the achievement test by experimental group boys is 33.83 and experimental group girls is 33.2; standard deviation is 2.12 and 1.60; standard error of mean difference is 0.49 and t-value is 1.29. So, it can be said that calculated t-value is less than table value 1.96 at 0.05 level. So, Null Hypothesis (**H<sub>0</sub>**) is accepted.

Thus, it can be said that, there is no significant difference found between boys and girls of experimental group. So, boys and girls of experimental group were found to have equal in achievement which shows that gender is not affecting variable. *Graphical presentation of mean of achieved score as per table-7 is given in graph -2.*



**Graph-2**  
**Comparison of mean scores of Boys and Girls of Experimental Group**

**Ho<sub>3</sub>** There will be no the significant difference between the mean scores achievement test achieved by boys of experimental Group and control group.

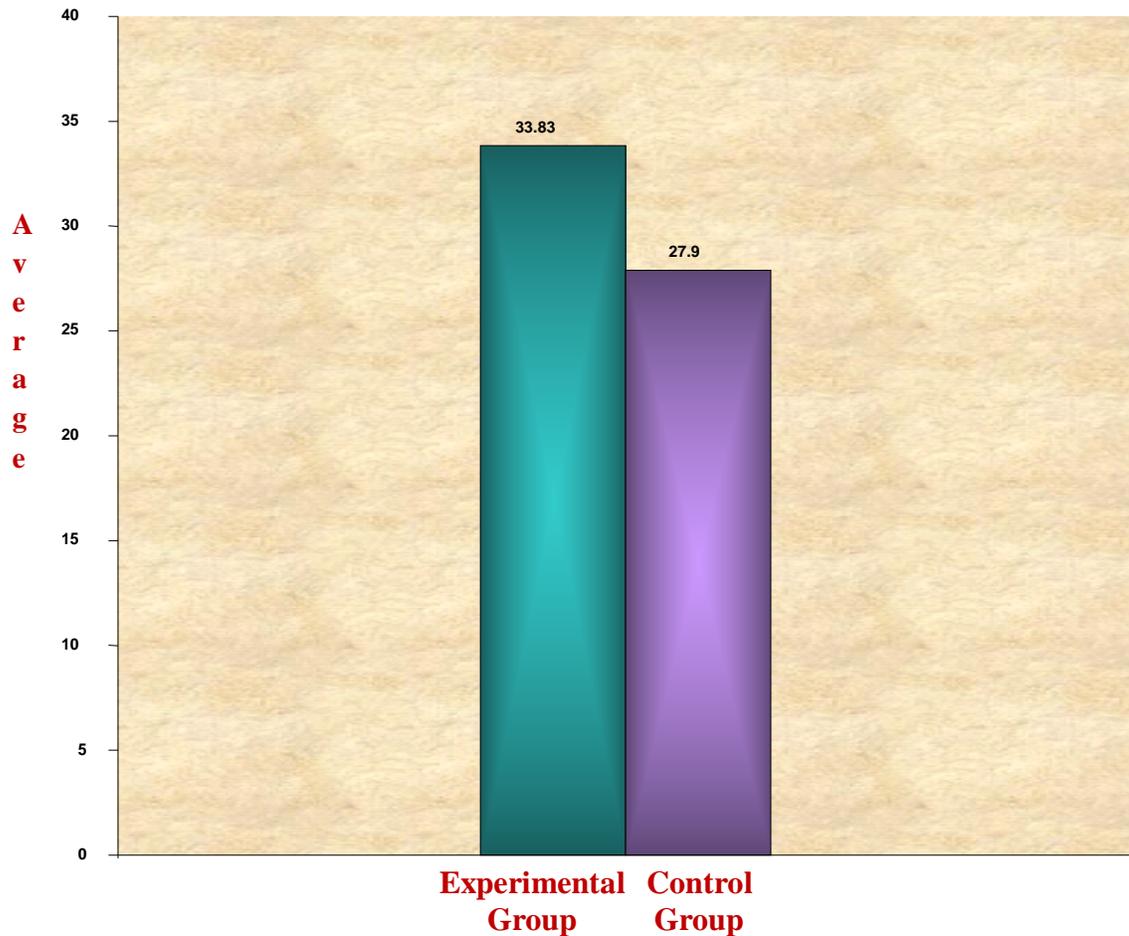
**Table-8**  
**Mean, Standard Deviation, Standard Error and t-value of boys of Experimental group**

Boys	N	Mean	SD	SD <sup>2</sup>	SED	M. Diff	t Value	Significance
<b>Experimental</b>	30	33.83	2.12	4.49	0.85	5.93	6.98	0.01
<b>Control</b>	30	27.9	4.13	17.06				

As shown in table-8, Mean of scores achieved on the achievement test by boys of experimental group is 33.83 and boys of control group is 27.9; standard

deviation is 2.12 and 4.13; standard error of mean difference is 0.85 and t-value is 6.98. So, it can be said that calculated t-value is greater than table value 2.56 at 0.01 level. So, Null Hypothesis ( $H_0$ ) is rejected at 0.01 level of significance.

Thus, it can be said that significant difference found between of boys of experimental and control group. Hence, by comparing mean scores, boys of experimental group means scores is higher than the mean of scores achieved by the boys of control group. Thus, boys of experimental group were found to have higher in achievement than boys of control group which shows that teaching method is affecting variable to achievement of boys. *Graphical presentation of mean of achieved score as per table-8 is given in graph -3.*



**Graph-3**  
**Comparison of mean scores of Boys of Experimental and Control Group**

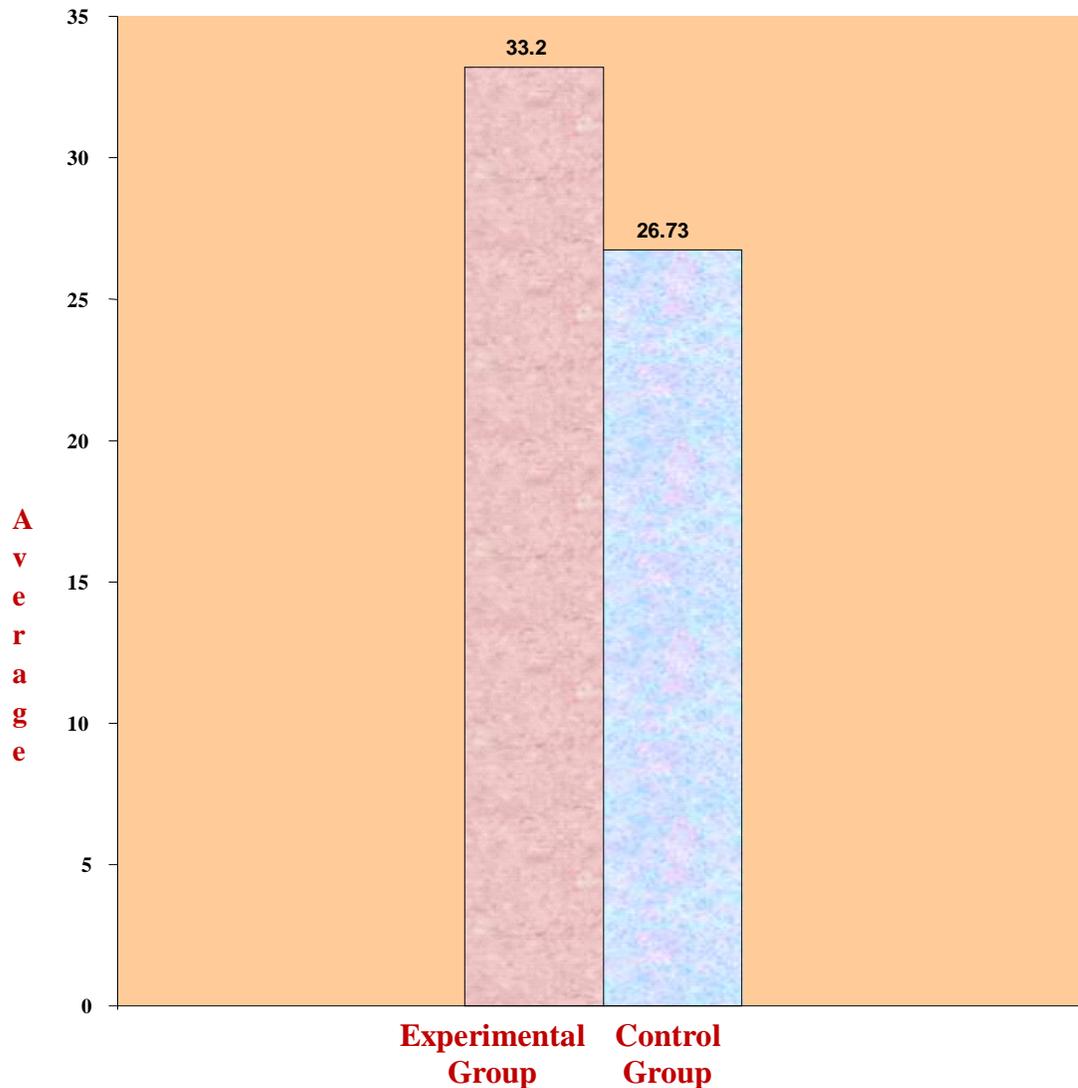
**Ho<sub>4</sub>** There will be no the significant difference between the mean scores achievement test achieved by girls of experimental Group and control group.

**Table-9**  
**Mean, Standard Deviation, Standard Error and t-value of girls of**  
**Experimental group**

Girls	N	Mean	SD	SD <sup>2</sup>	SED	M. Diff	t Value	Significance
<b>Experimental</b>	30	33.2	1.60	2.58	0.71	6.47	9.11	0.01
<b>Control</b>	30	26.73	3.57	12.74				

As shown in table-9, Mean of scores achieved on the achievement test by girls of experimental group is 33.2 and girls of control group is 26.73; standard deviation is 1.60 and 3.57; standard error of mean difference is 0.71 and t-value is 9.11. So, it can be said that calculated t-value is greater than table value 2.56 at 0.01 level. So, Null Hypothesis (**Ho<sub>4</sub>**) is rejected at 0.01 level of significance.

Thus, it can be said that significant difference found between girls of experimental and control group. Hence, by comparing mean scores, girls of experimental group means scores is higher than the mean of scores achieved by the girls of control group. Thus, girls of experimental group were found to have higher in achievement than girls of control group which shows that teaching method is affecting variable to achievement of girls. *Graphical presentation of mean of achieved score as per table-9 is given in graph -4.*



**Graph-4**  
**Comparison of mean scores of Girl of Experimental and Control Group**

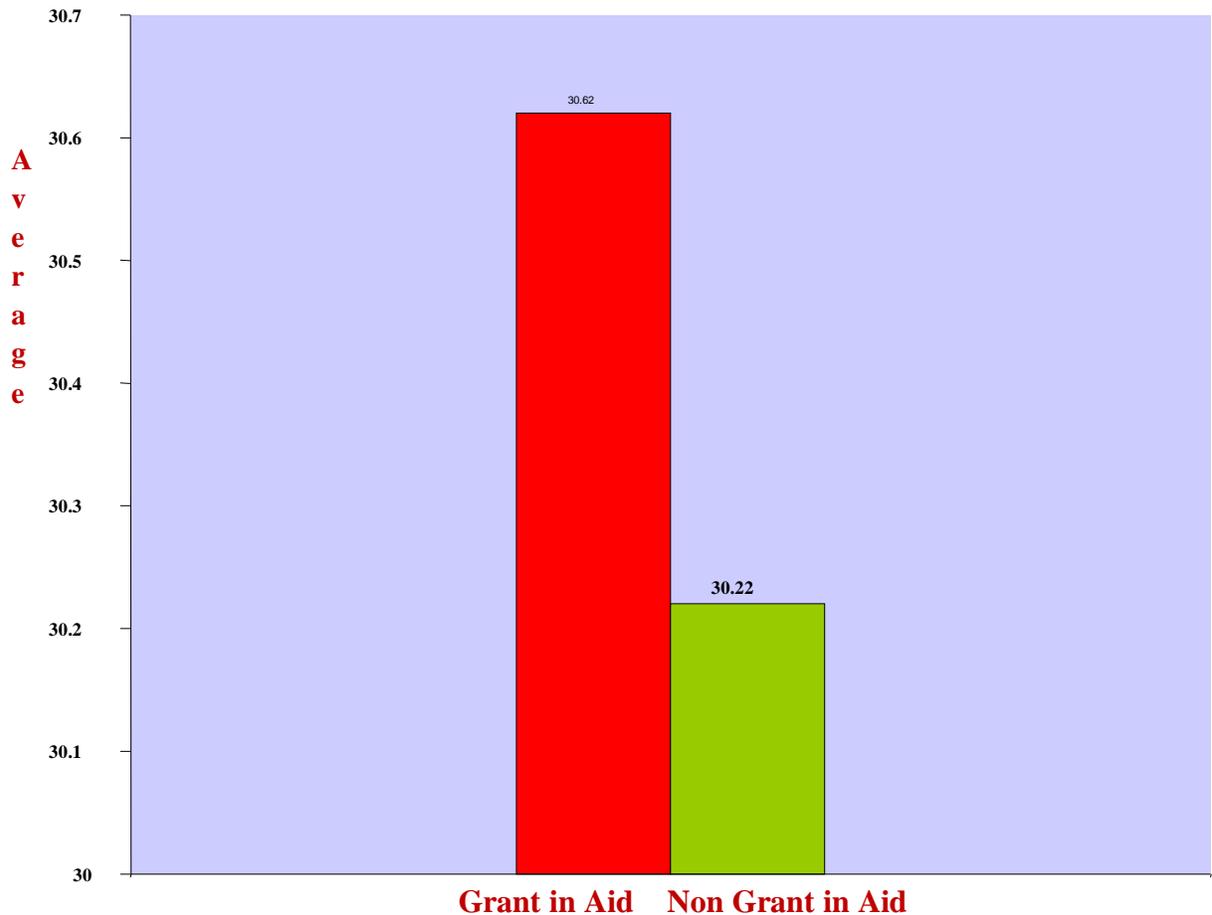
**H<sub>05</sub>** There will be no the significant difference between the mean scores achievement test achieved by Students of grant in aid and non grant in aid schools.

**Table-10**  
**Mean, Standard Deviation, Standard Error and t-value according to Types of schools**

Types of Schools	N	Mean	SD	SD <sup>2</sup>	SED	M. Diff	t Value	Significance
Grant in Aid	60	30.62	4.31	18.58	0.80	0.4	0.50	NS
Non Grant in Aid	60	30.22	4.41	19.45				

As shown in table-10, Mean of scores achieved on the achievement test by students of grant in aid schools is 30.62 and students of non grant in aid schools is 30.22; standard deviation is 4.31 and 4.41; standard error of mean difference is 0.80 and t-value is 0.50. So, it can be said that calculated t-value is less than table value 1.96 at 0.05 level. So, Null Hypothesis ( $H_0$ ) is accepted.

Thus, it can be said that, there is no significant difference found between students of grant in aid and non grant in aid schools. So, students of grant in aid and non grant in aid were found to have equal in achievement which shows that types of schools is not affecting variable. *Graphical presentation of mean of achieved score as per table-10 is given in graph -5.*



**Graph-5**  
**Comparison of mean scores of Grant in Aid and Non Grant in Aid**  
**Schools Students**

**Ho<sub>6</sub> There will be no the significant difference between the mean scores of achievement test achieved by students in Experimental control group of grant in aid and non grant in aid schools**

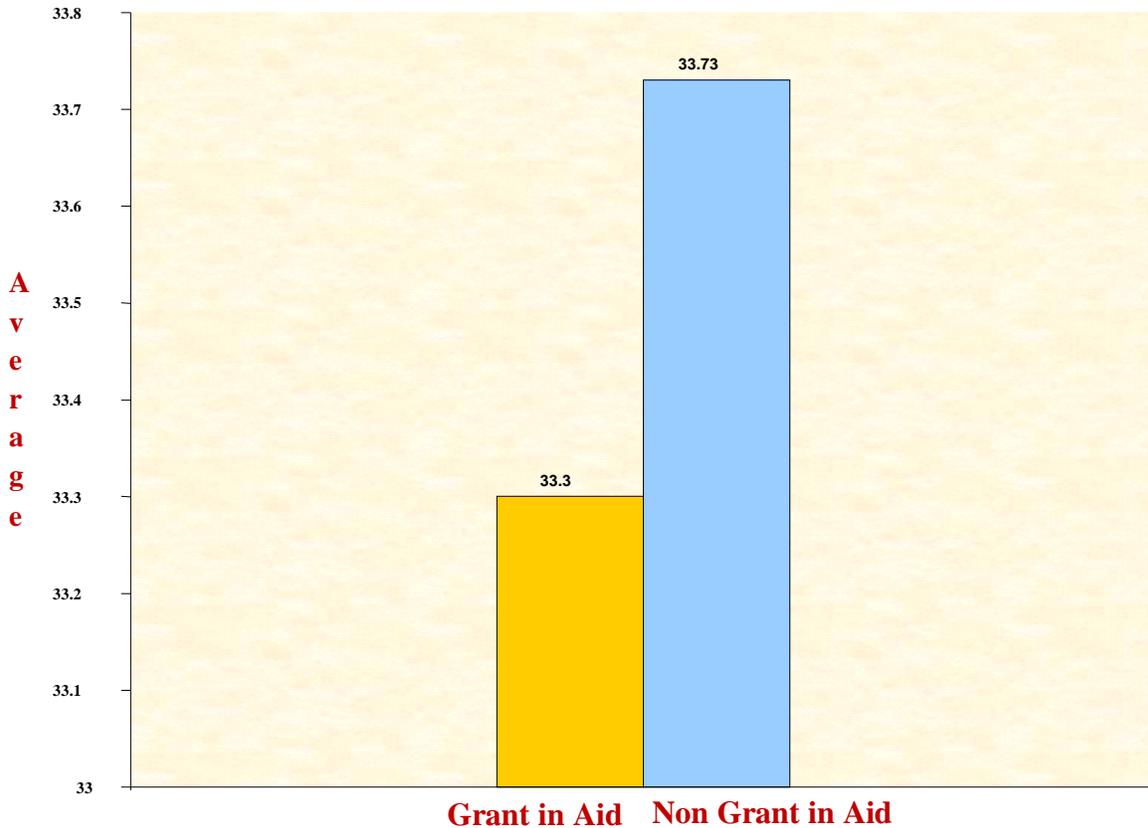
**Table-11**

**Mean, Standard Deviation, Standard Error and t-value of Students of Experimental group as per types of Schools**

<b>Experimental Group</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>SD<sup>2</sup></b>	<b>SED</b>	<b>M. Diff</b>	<b>t Value</b>	<b>Significance</b>
<b>Grant in Aid</b>	30	33.3	1.95	3.80	0.49	0.43	0.88	NS
<b>Non Grant in Aid</b>	30	33.73	1.84	3.37				

As shown in table-11, Mean of scores achieved on the achievement test by students of experimental group of grant in aid schools is 33.3 and students of experimental group of non grant in aid schools is 33.73; standard deviation is 1.95 and 1.84; standard error of mean difference is 0.49 and t-value is 0.88. So, it can be said that calculated t-value is less than table value 1.96 at 0.05 level. So, Null Hypothesis (**Ho<sub>6</sub>**) is accepted.

Thus, it can be said that, there is no significant difference found between students of experimental group of grant in aid and non grant in aid schools. So, students of experimental group of grant in aid and non grant in aid were found to have equal in achievement. *Graphical presentation of mean of achieved score as per table-11 is given in graph -6.*



**Graph-6**  
**Comparison of mean scores of Experimental Group students**  
**of Grant in Aid and Non Grant in Aid Schools**

**Ho<sub>7</sub> There will be no the significant difference between the mean scores of achievement test achieved by students in Experimental and control group of grant in aid schools**

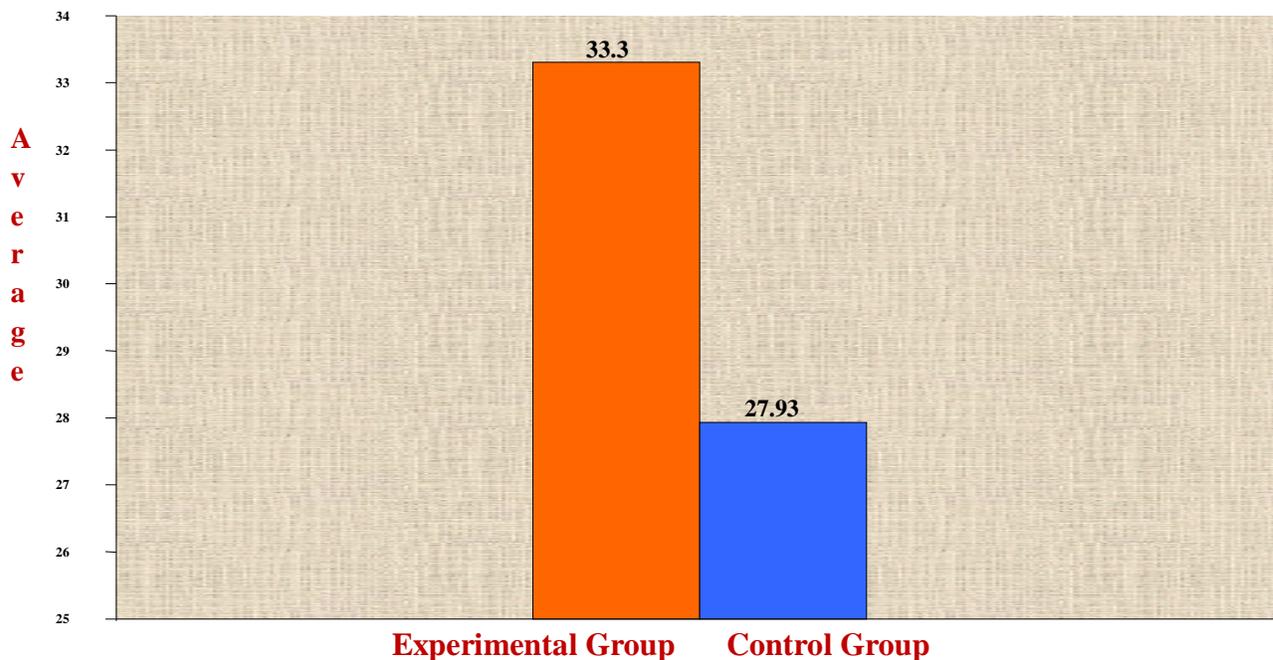
**Table-12**

**Mean, Standard Deviation, Standard Error and t-value of Students of Experimental and control group of grant in aid school**

<b>Grant in Aid Schools</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>SD<sup>2</sup></b>	<b>SED</b>	<b>M. Diff</b>	<b>t Value</b>	<b>Significance</b>
<b>Experimental Group</b>	30	33.3	1.95	3.80	0.88	5.37	6.10	0.01
<b>Control Group</b>	30	27.93	4.38	19.17				

As shown in table-12, Mean of scores achieved on the achievement test by students of experimental group of grant in aid school is 33.3 and students of control group of grant in aid school is 27.93; standard deviation is 1.95 and 4.38; standard error of mean difference is 0.88 and t-value is 6.10. So, it can be said that calculated t-value is greater than table value 2.56 at 0.01 level. So, Null Hypothesis ( $H_0$ ) is rejected at 0.01 level of significance.

Thus, it can be said that significant difference found between students of experimental and control group of grant in aid school. Hence, by comparing mean scores, students of experimental group means scores is higher than the mean of scores achieved by the students of control group of grant in aid school. Thus, students of experimental group were found to have higher in achievement than students of control group which shows that teaching method is affecting variable to achievement of grant in aid school. *Graphical presentation of mean of achieved score as per table-12 is given in graph -7.*



**Graph-7**  
**Comparison of mean scores of Experimental Group students of Grant in Aid Schools**

**Ho<sub>8</sub> There will be no the significant difference between the mean scores of achievement test achieved by students in Experimental and control group of non grant in aid schools**

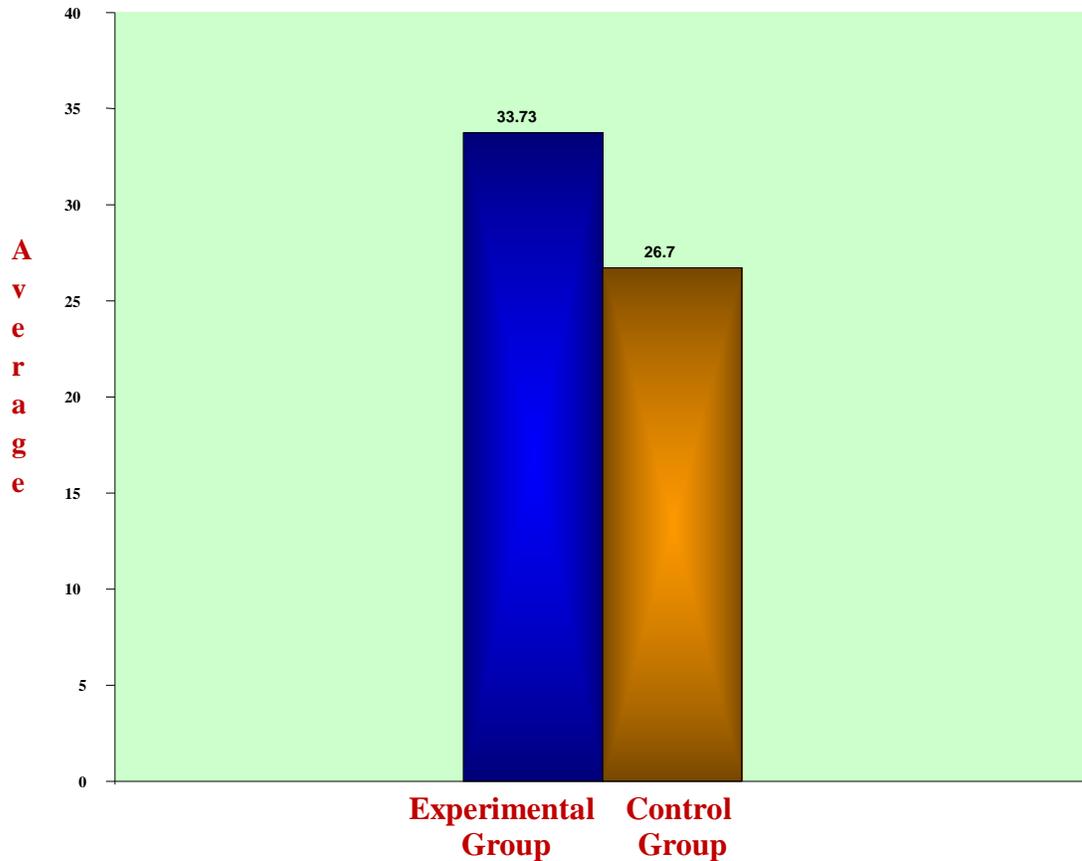
**Table-13**

**Mean, Standard Deviation, Standard Error and t-value of Students of Experimental group of non grant in aid school**

<b>Non Grant in Aid Schools</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>SD<sup>2</sup></b>	<b>SED</b>	<b>M. Diff</b>	<b>t Value</b>	<b>Significance</b>
<b>Experimental Group</b>	30	33.73	1.84	3.37	0.68	7.03	10.34	0.01
<b>Control Group</b>	30	26.7	3.25	10.56				

As shown in table-13, Mean of scores achieved on the achievement test by students of experimental group of non grant in aid school is 33.73 and students of control group of non grant in aid school is 26.7; standard deviation is 1.84 and 3.25; standard error of mean difference is 0.68 and t-value is 10.34. So, it can be said that calculated t-value is greater than table value 2.56 at 0.01 level. So, Null Hypothesis (**Ho<sub>8</sub>**) is rejected at 0.01 level of significance.

Thus, it can be said that significant difference found between students of experimental and control group of non grant in aid school. Hence, by comparing mean scores, students of experimental group means scores is higher than the mean of scores achieved by the students of control group of non grant in aid school. Thus, students of experimental group were found to have higher in achievement than students of control group which shows that teaching method is affecting variable to achievement of non grant in aid school. *Graphical presentation of mean of achieved score as per table-13 is given in graph -8.*



**Graph-8**  
**Comparison of mean scores of Experimental Group students of**  
**Non Grant in Aid Schools**

### 13. Major Findings

- 1) Effect of teaching method found on achievement of students. experimental group students were more superior than control group students as far as achievement of gujarati subject concern.
- 2) Effect of gender not found on achievement of students. boys and girls of experimental group were found to have equal as far as achievement of gujarati subject concern.
- 3) Effect of teaching method found on achievement of boys of standard-9<sup>th</sup>. Boys of experimental group were more superior than boys of control group students as far as achievement of gujarati subject concern.

- 4) Effect of teaching method found on achievement of girls of standard-9<sup>th</sup>. Girls of experimental group were more superior than girls of control group students as far as achievement of gujarati subject concern.
- 5) Effect of types of school not found on achievement of students. students of grant in aid and non grant in aid schools were found to have equal as far as achievement of gujarati subject concern.
- 6) Effect of teaching method not found on achievement of students. students of experimental group of grant in aid and non grant in aid schools were found to have equal as far as achievement of gujarati subject concern.
- 7) Effect of teaching method found on achievement of grant in aid schools students of standard-9<sup>th</sup>. Grant in aid schools students of experimental group were more superior than students of control group as far as achievement of gujarati subject concern.
- 8) Effect of teaching method found on achievement of non grant in aid schools students of standard-9<sup>th</sup>. Non grant in aid schools students of experimental group were more superior than students of control group as far as achievement of gujarati subject concern.

## **14. Conclusion**

In conclusion, the present study indicated that the computerized learning material and achievement test have satisfactory properties to use as a tool to measure effectiveness. This study will be is very useful for the further research in this field; this tool will provide the facility to measure effectiveness of programme learning to the future researcher.

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*y{ĒkōkĒ: p<sup>TM</sup>ŌrMkxe „ Ūk r<sup>TM</sup>{kōy fkyo*
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*([kūke ykōjĒ), y{ĒkōkĒ: „ ũshkĒ p<sup>TM</sup>ŌrMkxe „ Ūk r<sup>TM</sup>{kōy fkyo*
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## Appendix-1

### Achievement Test Based on Blue Print and Answer key

#### Blue Print

Table-1

Marks and Percentage according to Types of Questions

Sr. No.	Type of Questions	No. of Questions	Marks	Percentage (%)
1	Essay Type	-----	-----	-----
2	Short	-----	-----	-----
3	Objective	40	40	100.00
<b>Total</b>		40	40	100.00

Table-2

Marks and Percentage according to Content

Sr. No.	Content	No. of Questions	Marks	Percentage (%)
1	Types of ALANKAR	06	06	15.00
2	ALANKARYUKT WORD	06	06	15.00
3	ALANKARYUKT Statement	06	06	15.00
4	Example of ALANKAR	22	22	55.00
<b>Total</b>		40	40	100.00

**Table-3**

**Marks and Percentage according to General Objectives**

<b>Sr. No.</b>	<b>Content</b>	<b>No. of Questions</b>	<b>Marks</b>	<b>Percentage (%)</b>
1	Knowledge	07	07	18.00
2	Understanding	23	23	57.00
3	Application	07	07	18.00
4	Skills	03	03	07.00
<b>Total</b>		40	40	100.00

**Table-4**

**Three Dimensional Table**

Sr. No	Chapter Name	Obj.	Knowledge			Understanding			Application			Skills			Total
		Type of Question	Essay	Short	Objective	Essay	Short	Objective	Essay	Short	Objective	Essay	Short	Objective	
1	<b>Types of ALANKAR</b>				2 <sup>(2)</sup>			2 <sup>(2)</sup>			2 <sup>(2)</sup>			---	6 <sup>(6)</sup>
2	<b>ALANKARYUKT WORD</b>				1 <sup>(1)</sup>			2 <sup>(2)</sup>			2 <sup>(2)</sup>			1 <sup>(1)</sup>	6 <sup>(6)</sup>
3	<b>ALANKARYUKT Statement</b>				2 <sup>(2)</sup>			1 <sup>(1)</sup>			2 <sup>(2)</sup>			1 <sup>(1)</sup>	6 <sup>(6)</sup>
4	<b>Example of ALANKAR</b>				2 <sup>(2)</sup>			18 <sup>(18)</sup>			1 <sup>(1)</sup>			1 <sup>(1)</sup>	22 <sup>(22)</sup>
<b>Total</b>			7 <sup>(7)</sup>			23 <sup>(23)</sup>			7 <sup>(7)</sup>			3 <sup>(3)</sup>			40 <sup>(40)</sup>

**Note: - Figure in ( ) Bracket shows No. of Questions & Figure out of ( ) Bracket shows Marks of Questions**

# **Achievement Test for Gujarati Subject Grammar**

## **Topic Figure of Speech**

# **Answer key of Achievement Test**

**Appendix-2**  
**Computerized Programme**  
**CD**