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## **To Compare The Effectiveness Of Compute Based Instruction And Traditional Method On Academic Achievement And Retention Of 9<sup>th</sup> Class Science Students In Terms Of Instructional Objectives I.E. Application And Skill / Creativity.**

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### **ABSTRACT**

Education is considered to be a key factor in the development of any nation. As this imbibes knowledge skill and inculcates values as well contributes towards human resource development. In this study researcher compare the effectiveness of two method i.e. computer based instruction and traditional method on academic achievement and retention of 9<sup>th</sup> class science students in terms of instructional objectives i.e. application and skill / creativity. This study was done in Kurukshetra city where one English medium CBSE school choose for experimentation. Only four units of 9<sup>th</sup> class Biology, Selected duration of the study was three months. The data was analyzed by using mean, SD., and T-ratio. The findings of the study reveals that computer based instruction are more effective than the traditional method of teaching in turns of instructional objectives i.e. Application & Skill/creativity.

### **INTRODUCTION**

Education is considered to be a key factor for the growth and process of any society. It not only imbibes knowledge, skills and inculcates values but also contributes in building human capital, which breeds, dives and sets technological innovation and economic growth. Education prepares the masses for leading a meaningful and qualitative life and living, but for that meaningful experiences and exposure have to be provided to the learners. So, in the context of formal education the school system has to be provided with all pre-requisite inputs including competent teachers having sound pedagogical understanding of the contents, its development and sequential presentation besides understanding of psychological

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principles of learning and understanding of learners in their socio-cultural context. Therefore, it calls for knowledge/understanding of methodologies of teaching/ methodological discourse for effective classroom teaching learning process. In a usual practice traditional method of teaching has been predominantly used by teachers more than 3000 years ago and is still dominant form of knowledge transfer. Now-a-days information Technology and Computers have changed every sphere of human life, the society as well as total educational system. Now-a-days computer based instruction create an interactive environment in classroom and the subject like science basically demands interaction in the classroom to learn the concept long lasting and create conceptual understanding of concepts. There is a clear relationship between the science and the instruction given by the computer.

### **SIGNIFICANCE OF THE STUDY:**

In contemporary teaching and learning of science concept computers play an important role. The American Association for the advancement of science (1993) has played a key role in developing the benchmarks for science literacy, to employ computers in science classrooms. According to this association "computer have become invaluable in science because they speed up and extend people's ability to collect, store, compile and analyze data, prepare research reports and share data and ideas with investigators all over the world." Many researchers 'Subhramanyam and Rao (2011), Mehar (2010), Patel (2008), Dange and Wahab (2006), Jayaraman Patel (2006). Chang (2004), Sharma and Sansanwal (2002), Bates (2000), Meera (2000), Khirwadker (1998), Kulik (1994), Jeyamani (1991) have indicated a positive impact of computer based instruction on the academic achievements of students in different suggests like chemistry, mathematics, geography etc. On the basis of literature had been conducted in the field of computer based instruction in different science subjects like mathematics, physics and t/V chemistry, but there has been observed a dearth of researchers in the field of Biology. Biology is a science subject that lays emphasis on parts and functions of plants and animals. It is generally seen that subject like Biology has many theoretical concepts that are difficult to understand by students easily. Most of the students develop misconceptions about many concepts. In many cases, it is found that traditional educational methods are neither helping the solution of existing problems nor assisting in learning process. In order to overcome this problem, the researcher selected computer base instruction as a method for teaching Biology.

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The present study is an attempt in this direction to see whether computer based instruction are better than traditional method of teaching science to 9<sup>th</sup> class science students with particular reference to Biology. So researcher aims at answering the queries like:

- (1) Does computer based instruction significantly affect the achievement of the students in terms of instructional objectives i.e. Application & skill/ creativity.
- (2) Does computer based instruction affect the retention of the students about the subject matter in terms of instructional objectives i.e. Application & skill/ creativity.

### **OBJECTIVES OF THE STUDY**

- (1) To compare the effectiveness of computer based instruction and traditional method on the academic achievement of 9<sup>th</sup> class science students in terms of instructional objectives i.e. Application & skill/ creativity.
- (2) To Measure the retention of 9<sup>th</sup> class science students after teaching computer based instruction and traditional method in terms of instructional objectives i.e. Application & skill/ creativity.

### **HYPOTHESIS OF THE STUDY**

1. The students exposed to computer based instruction will achieve more in the 9<sup>th</sup> class science subject than those exposed to traditional method in terms of instructional objectives i.e. Application & skill/ creativity.
2. The student exposed to computer based instruction will retain more in the 9<sup>th</sup> class science subject than those exposed to traditional method in terms of instructional objectives i.e. Application & skill/ creativity.

### **SAMPLE OF THE STUDY**

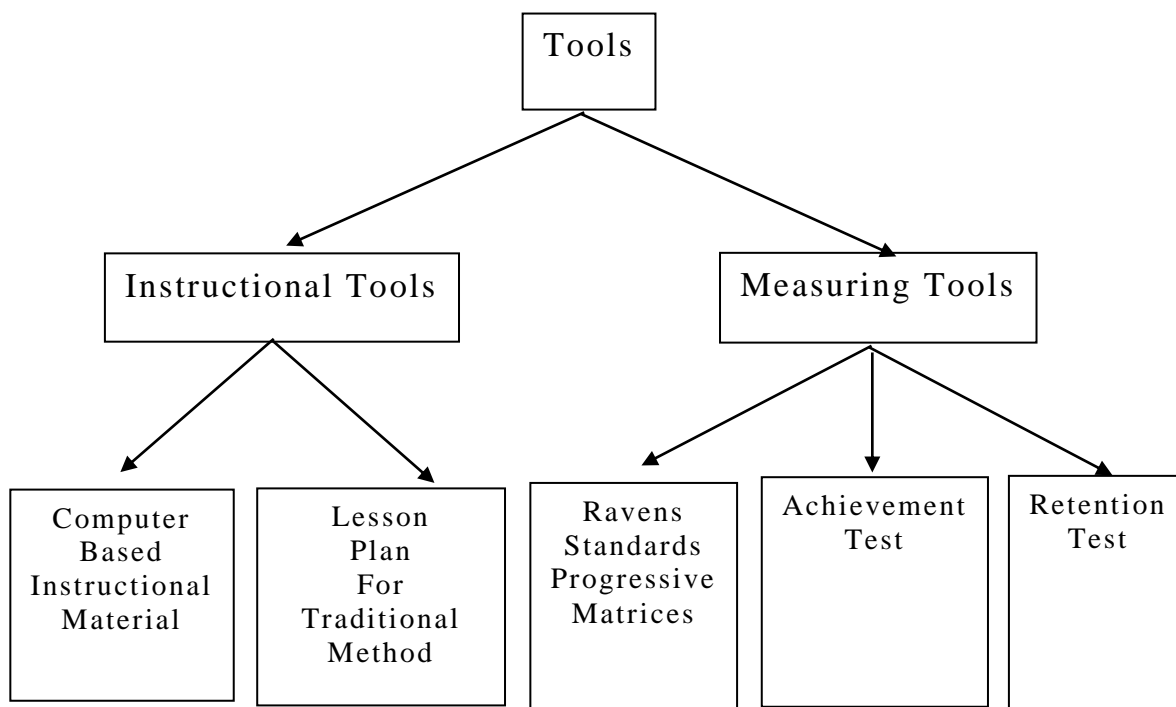
In this study researcher selected 80 students of 9<sup>th</sup> class of district Kurukshetra (Gita Niketan Aavasiya Vidalya) of Haryana were selected randomly.

### **TOOLS USED**

For experimentation following tools were used.

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**STATISTICAL TECHNIQUES USED**

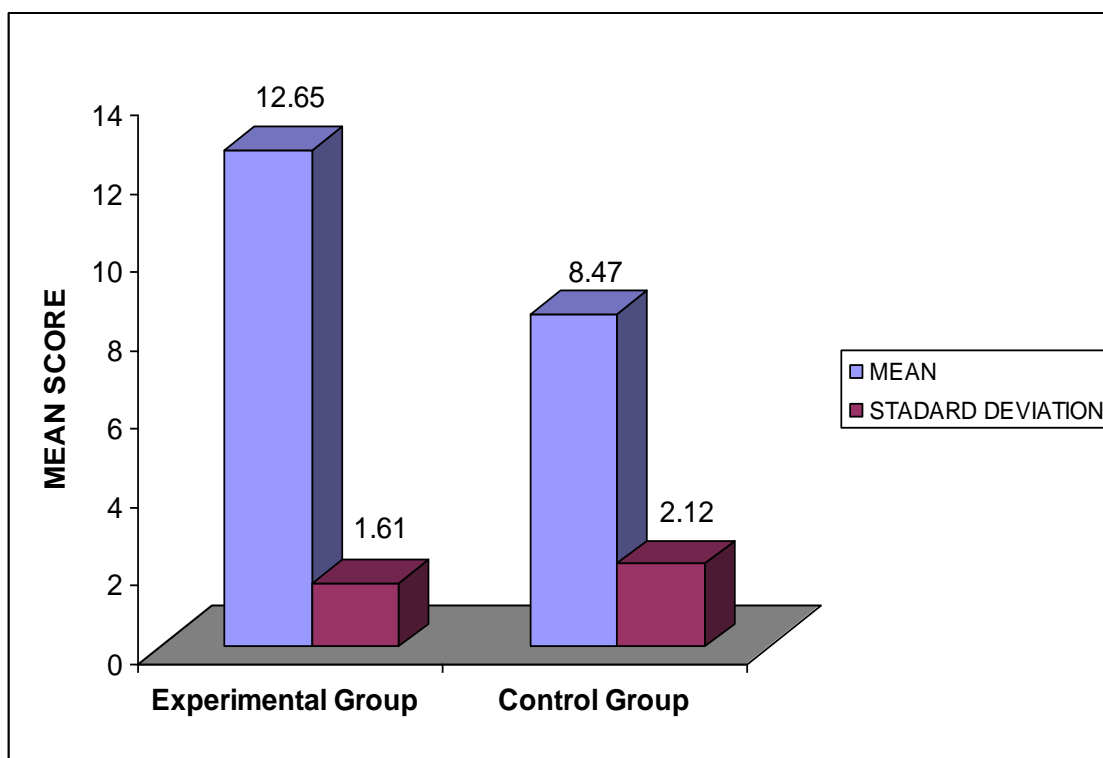
Mean, S.D. and T-ratio were used for analysis of Data.

**TABLE - 1.0 Mean, S.D. and T-ratio of Post Achievement Test Scores of the Control and Experimental Group in Terms of Instructional Objective - Application**

Instructional Objectives	Variables	N	Mean	S.D.	t-ratio	Level of Significance
Application	Experimental Group	40	12.65	1.61	9.90	Significant at 0.01 level
	Control Group	40	8.47	2.12		

Degree of freedom (df) = 78.

**FIGURE - 1.0 Mean and S.D. of Post-Achievement Test Scores of the Control and Experimental Group in Terms of Instructional Objective - Application**



It can be observed from table 1.0 and figure 1.0 that mean score of experimental and control group on post achievement test in terms of instructional objective - application are found to be 12.65 and 8.47 with S.D. 1.61 and 2.12 respectively. The t-ratio between the two groups comes out to be 9.90. It is significant at .01 level of significance. It shows that two groups differed significantly in their achievement. The comparison of mean post achievement test scores further reveals that the means post test score of experimental group is higher than the control group. Hence, it was concluded that the students taught through computer based instruction had better achievement at higher level of learning i.e. application level learning.

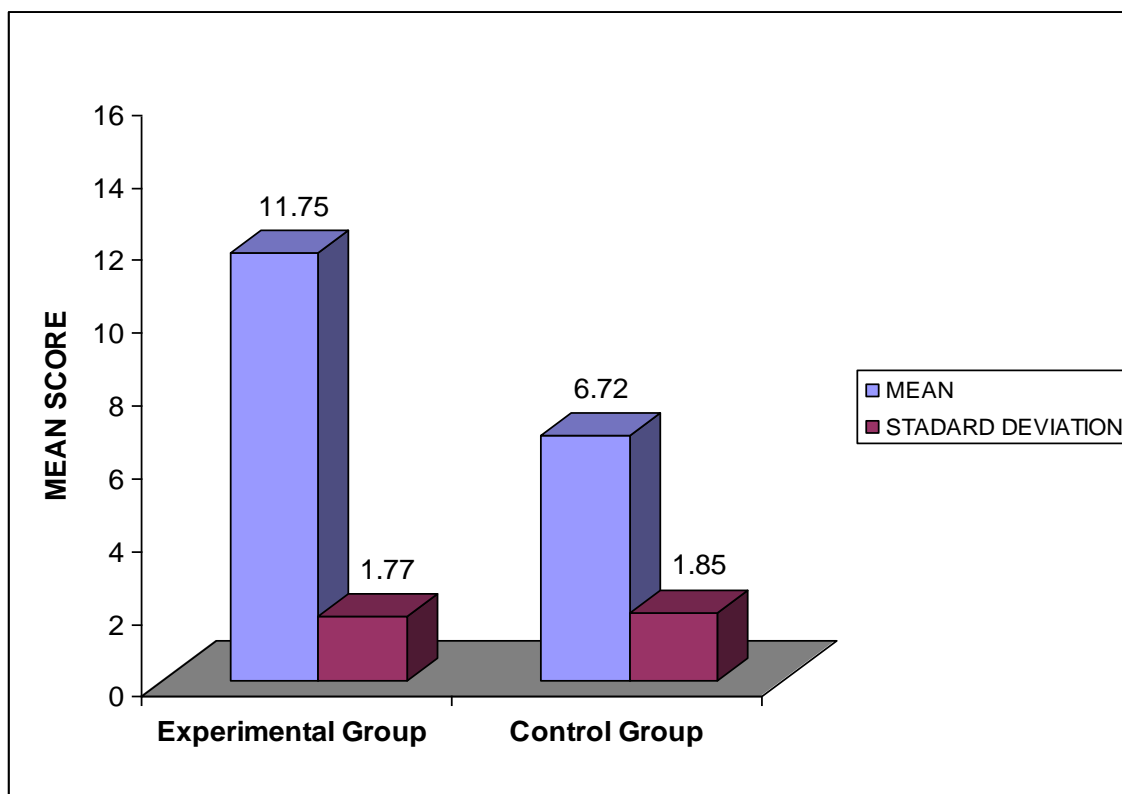
**TABLE - 2.0 Mean, S.D. and T-ratio of Retention Test Scores of the Control and Experimental Group in Terms of Instructional Objective - Application**

Instructional Objectives	Variables	N	Mean	S.D.	t-ratio	Level of Significance
Application	Experimental Group	40	11.75	1.77	12.27	Significant at 0.01 level
	Control Group	40	6.72	1.85		

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Degree of freedom (df) = 78.

**FIGURE - 2.0 Mean and S.D. of Retention Test Scores of the Control and Experimental Group in Terms of Instructional Objective - Application**



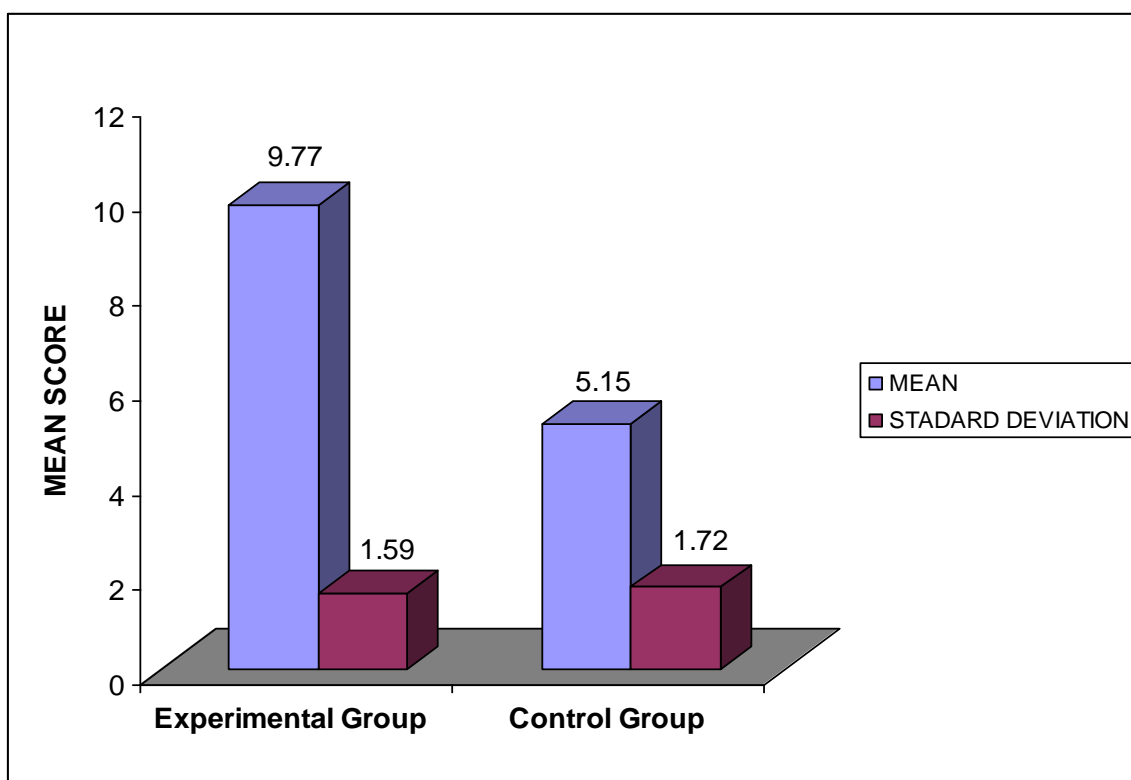
It can be observed from table 2.0 and figure 2.0 that the mean score of experimental and control group on retention test in terms of instructional objective - application are found to be 11.75 and 6.72 with S.D. 1.77 and 1.85 respectively. The t-ratio between the two groups comes out to be 12.27. It is significant at .01 level of significance. It indicates that the students of two groups differ significantly. It is further seen in the table that mean retention scores of experimental group is higher than control group with regard to aforesaid higher order learning objective i.e. application. Hence, it was concluded that students taught through computer based instruction performed better than control group in terms of their retention of higher level of learning i.e. application level learning.

**TABLE - 3.0 Mean, S.D. and T-ratio of Post Achievement Test Scores of the Control and Experimental Group in Terms of Instructional Objective - Skill/Creativity**

Instructional Objectives	Variables	N	Mean	S.D.	t-ratio	Level of Significance
Creativity	Experimental Group	40	9.77	1.59	12.48	Significant at 0.01 level
	Control Group	40	5.15	1.72		

Degree of freedom (df) = 78.

**FIGURE - 3.0 Mean and S.D. of Post-Achievement Test Scores of the Control and Experimental Group in Terms of Instructional Objective - Skill/Creativity**



It is evident from table 3.0 and figure 3.0 that mean score of experimental and control group on post achievement test in terms of instructional objective – skill/creativity are found to be 9.77 and 5.15 with S.D. 1.59 and 1.72 respectively. The t-ratio between the two

groups comes out to be 12.48. It is significant at .01 level of significance. It shows that two groups differed significantly in their achievement. The comparison of mean post achievement test scores further reveals that the means post test score of experimental group is higher than the control group with regard to aforesaid higher order learning objective i.e. skill/creativity. Hence, it was concluded that the students taught through computer based instruction performed better than control group in terms of their achievement at higher level of learning i.e. skill/creativity level learning.

**TABLE - 4.0 Mean, S.D. and T-ratio of Retention Test Scores of the Control and Experimental Group in Terms of Instructional Objective - Skill/Creativity**

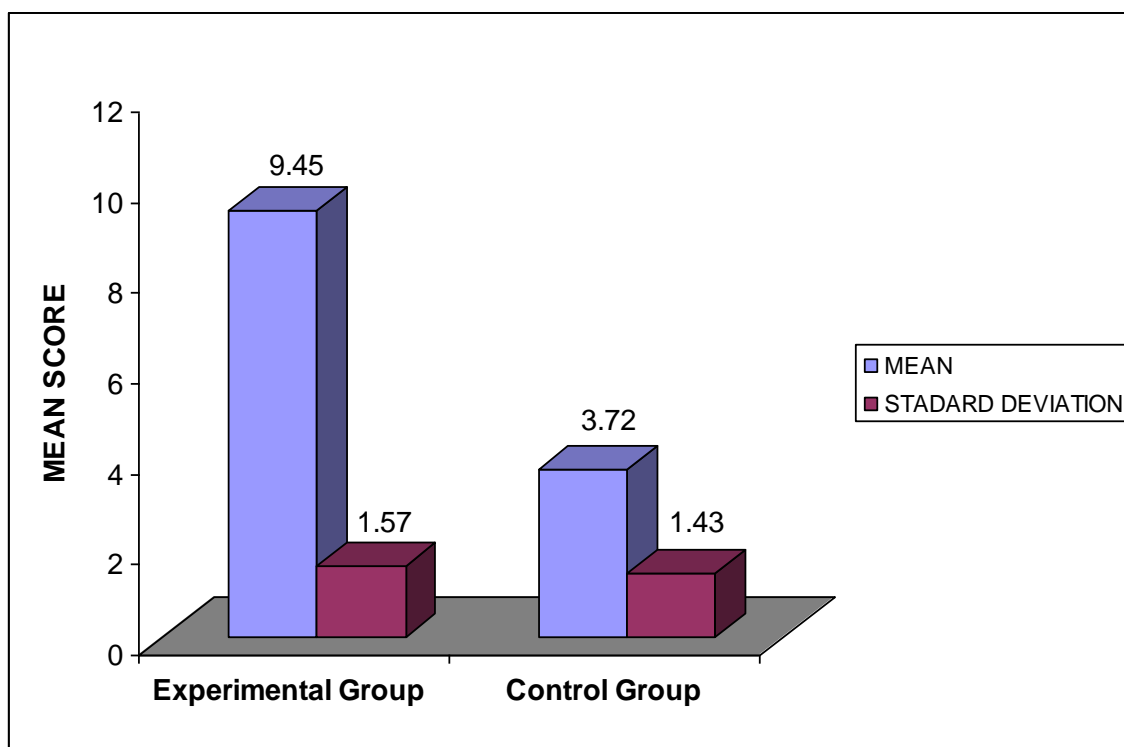
<b>Instructional Objectives</b>	<b>Variables</b>	<b>N</b>	<b>Mean</b>	<b>S.D.</b>	<b>t-ratio</b>	<b>Level of Significance</b>
Creativity	Experimental Group	40	9.45	1.57	17.05	Significant at 0.01 level
	Control Group	40	3.72	1.43		

Degree of freedom (df) = 78.

It is clear from table 4.0 and figure 4.0 that the mean score of experimental and control group on retention test in terms of instructional objective - skill/creativity are found to be 9.45 and 3.72 with S.D. 1.57 and 1.43 respectively. The t-ratio between the two groups comes out to be 17.05. It is significant at .01 level of significance. It indicates that the students of two groups differ significantly in their retention level. It is further seen in the table that mean retention scores of experimental group is higher than control group with regard to aforesaid higher order learning objective i.e. skill/creativity. Hence, it was concluded that students taught through computer based instruction performed better than control group in terms of their retention of higher level of learning i.e. skill/creativity level learning.

**FIGURE - 4.0 Mean and S.D. of Retention - Test Scores of the Control and Experimental Group in Terms of Instructional Objective - Skill/Creativity**





## FINDINGS OF THE STUDY

The findings of the present study can be beneficial for teacher, students, administrator, parents, counselor, social workers, media personnel's, policy maker and other professional working for the education of children.

1. First finding of the study is that the students exposed to Computer-Based Instruction achieved higher scores in science than the students who were taught through traditional method of teaching in terms of instructional objectives i.e. Application & skill/ creativity. The reason of such a finding may be that computer-based instruction provides chance of active participation of the students throughout the unit. It also gives immediate feedback to the students about their responses which motivate them to learn effectively. Such a method of teaching certainly reduces the fear of subject like sciences from the hearts of the students as complex and abstract concepts can be made simple and interesting by illustrating images with text.

2. Second finding of the study is that the students exposed to computer-based instruction retained higher scores in sciences than those taught through traditional in terms of instructional objectives

i.e. Application & skill/ creativity. The reason for such a finding may be that computer-based instructional material were arranged in such a manner that the students for retaining these concepts for longer times. Thus, the administrators should motivate the teachers to develop Computer-Based Instructional material and use it for imparting instructions to the students.

### **Suggestions for Further Research**

The present study throws light on a good number of new areas to be studied by the future researchers. The areas and variables which are not covered by this study may be put to test to explain the factors associated with the achievement in different subjects. The following suggestions were offered for the further work in the field:

1. The present study was confined to the class IX only. Similar researches can be carried out on other classes of school education.
2. The present study was confined to the subject 'Sciences'. Other subjects can consider to develop computer based instruction material modules to enhance the learning of the students.
3. The content of the 9<sup>th</sup> class Science subject was according to the C.B.S.E. curriculum. Further, studies can be extended to the content of other boards of school education like I.C.S.E., H.B.S.E. and various other boards.
4. This study was based on a sample drawn from a limited geographical area. Similar research efforts can be replicated on a sample drawn from wider geographical area, so that results are better confirmed.

### **REFERENCES**

- Altun. T., Yigit, N., & Alev, N. (2007). "The effects of computer supported materials on student achievements and perceptions in science education". Conference IMCL.
- Anshu. (2006). Comparative effectiveness of single medium and multimedia on learning gains of 9th graders in chemistry at different levels of academic achievement and intelligence. Doctoral dissertation, CCS. University, Meerut.
- Balasubramanian, N. & Meera, S. (2002). Relative effectiveness of different modes of computer-based instruction in teaching biology, *EDU TRACKS*, 1(6), 34-37.
- Barad, S. A. (2010). Effectiveness of CAI for science teaching in urban area. *International Research Journal*, 12(1), 19-21.



- multimedia program in, teaching science", EDU TRACKS, 7(8), 27-29.
- Sharma, A., and Sansanwal, D.N.(2002). "Comparison among video-based instructional strategies for teaching science at class IX level in terms of achievement," Indian Educational Abstracts, 3 (1), 31-32. New Delhi: NCERT.
- Sheetal. (2008). Effect of computer assisted instructions on academic achievement of IX class students in biology. Doctoral Dissertation, Kurukshetra University, Kurukshetra.
- Subramanyam, H. and Rao, N.V. (2011). Teachers' perception levels of computer-education and its effectiveness. International journal of education and research, (4), 24-27.
- Vardhini. V. P. (1983). Development of a multimedia instructional strategy for teaching science at secondary level. In M.B. Butch (Ed.), Fourth survey of research in education. New Delhi: NCERT.