Chapter – V

CONCLUSIONS, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH
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5.1 Conclusions

On the basis of analysis and interpretation of data the following conclusions can be laid down:

(I) There was no significant difference between the mean achievement scores of the experimental and control group students at Pre test level.

(II) There was a significant difference between the mean achievement scores of the experimental and control group students at Post test level.

(III) There was a significant difference between the mean achievement scores of the experimental and control group students at Delayed post test level.

(iV) There was no a significant difference between the mean achievement scores of the male students of experimental and control group students at Pre test level.

(V) There was a significant difference between the mean achievement scores of the male students of experimental and control group students at Post test level.

(VI) There was a significant difference between the mean achievement scores of the male students of experimental and control group students at Delayed post test level.

(VII) There was no a significant difference between the mean achievement scores of the female students of experimental and control group students at Pre test level.

(VIII) There was a significant difference between the mean achievement scores of the female students of experimental and control group students at Post test level.
(IX) There was a significant difference between the mean achievement scores of the female students of experimental and control group students at delayed Post test level.

(X) There was no a significant difference between the mean achievement scores of the urban students of experimental and control group students at Pre test level.

(XI) There was a significant difference between the mean achievement scores of the urban students of experimental and control group students at post test level.

(XII) There was a significant difference between the mean achievement scores of the urban students of experimental and control group students at delayed Post test level.

(XIII) There was no a significant difference between the mean achievement scores of the rural students of experimental and control group students at Pre test level.

(XIV) There was a significant difference between the mean achievement scores of the rural students of experimental and control group students at Post test level.

(XV) There was a significant difference between the mean achievement scores of the rural students of experimental and control group students at delayed post test level.

(XVI) There was no a significant difference between the mean achievement scores of the Upper class Socio economic status students of experimental and control group at Pre test level.

(XVII) There was a significant difference between the mean achievement scores of the Upper class Socio economic status students of experimental and control group at Post test level.

(XVIII) There was a significant difference between the mean achievement scores of the Upper class Socio economic status students of experimental and control group at delayed post test level.

(XIX) There was no a significant difference between the mean achievement scores of the Upper middle class Socio economic status students of experimental and control group at pre test level.
(XX) There was a significant difference between the mean achievement scores of the Upper middle class Socio economic status students of experimental and control group students at post test level.

(XXI) There was a significant difference between the mean achievement scores of the Upper middle class Socio economic status students of experimental and control group students at delayed post test level.

(XXII) There was no a significant difference between the mean achievement scores of the Middle class Socio economic status students of experimental and control group at pre test level.

(XXIII) There was a significant difference between the mean achievement scores of the Middle class Socio economic status students of experimental and control group at post test level.

(XXIV) There was a significant difference between the mean achievement scores of the Middle class Socio economic status students of experimental and control group at delayed post test level.

(XXV) There was a significant difference between the mean achievement scores of the Upper lower class Socio economic status students of experimental and control group at Pretest level.

(XXVI) There was a significant difference between the mean achievement scores of the Upper lower class Socio economic status students of experimental and control group at post test level.

(XXVII) There was a significant difference between the mean achievement scores of the Upper lower class Socio economic status students of experimental and control group at delayed post test level.

(XXVIII) There was a significant difference between the mean achievement scores of the Lower class Socio economic status students of experimental and control group at Pretest level.

(XXIX) There was a significant difference between the mean achievement scores of the Lower class Socio economic status students of experimental and control group at Post test level.

(XXX) There was a significant difference between the mean achievement scores of the Lower class Socio economic status students of experimental and control group at delayed post test level.
(XXXI) There was no significant difference between the mean achievement scores of the Govt. School students of experimental and control group at Pre test level.

(XXXII) There was a significant difference between the mean achievement scores of the Govt. School students of experimental and control group at Post test level.

(XXXIII) There was a significant difference between the mean achievement scores of the Govt. School male students of experimental and control group at delayed post test level.

(XXXIV) There was no a significant difference between the mean achievement scores of the Public School students of experimental and control group at Pre test level.

(XXXV) There was a significant difference between the mean achievement scores of the Public School students of experimental and control group at Post test level.

(XXXVI) There was a significant difference between the mean achievement scores of the Public School students of experimental and control group at delayed post test level.

(XXXVII) There was a significant difference between the mean achievement scores of the experimental group students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test and Posttest-Delayed posttest.

(XXXVIII) There was a significant difference between the mean achievement scores of the experimental group male students at two levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test. But there was no significant difference between Posttest-Delayed Post test level of pairing.

(XXXIX) There was a significant difference between the mean achievement scores of the experimental group female students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test and Posttest-Delayed posttest.

(XL) There was a significant difference between the mean achievement scores of the urban students of experimental of students at all the
three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test and Posttest-Delayed posttest.

(XLI) There was a significant difference between the mean achievement scores of the experimental group rural students at two levels of pairing i.e. Pretest-Post test, Pretest-Delayed Posttest, but there was no significant difference between Posttest-Delayed Post test level of pairing.

(XLII) There was a significant difference between the mean achievement scores of the experimental group upper class SES students at two levels of pairing i.e. Pretest-Post test, Pretest-Delayed Posttest, but there was no significant difference between Posttest-Delayed Post test level of pairing.

(XLIII) There was a significant difference between the mean achievement scores of the experimental group upper middle class SES students at two levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test, but there was no significant difference between Posttest-Delayed Post test level of pairing.

(XLIV) There was a significant difference between the mean achievement scores of the experimental group middle class SES students at two levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test, but there was no significant difference between Posttest-Delayed Post test level of pairing.

(XLV) There was a significant difference between the mean achievement scores of the experimental group upper lower class SES students at two levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test, but there was no significant difference between Posttest-Delayed Post test level of pairing.

(XLVI) There was a significant difference between the mean achievement scores of the experimental group lower class SES students at two levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test, but there was no significant difference between Posttest-Delayed Post test level of pairing.

(XLVII) There was a significant difference between the mean achievement scores of the experimental group Govt. School students at two
levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test, but there was no significant difference between Posttest-Delayed Post test level of pairing.

(XLVIII) There was a significant difference between the mean achievement scores of the experimental group Public School students at two levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test, but there was no significant difference between Posttest-Delayed Post test level of pairing.

(XLIX) There was a significant difference between the mean achievement scores of the Control group students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test and Posttest-Delayed posttest.

(L) There was a significant difference between the mean achievement scores of the Control male group students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test and Posttest-Delayed posttest.

(LI) There was a significant difference between the mean achievement scores of the Control group female students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test and Posttest-Delayed posttest.

(LII) There was a significant difference between the mean achievement scores of the Control group urban students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test and Posttest-Delayed posttest.

(LIII) There was a significant difference between the mean achievement scores of the Control group rural students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post test and Posttest-Delayed posttest.

(LIV) There was a significant difference between the mean achievement scores of the control group upper class SES students at two levels of pairing i.e. Pretest-Post test, Posttest-Delayed Posttest, but there was no significant difference between Pretest-Delayed Posttest.
(LV) There was a significant difference between the mean achievement scores of the control group upper middle class SES students at two levels of pairing i.e. Pretest-Post test, Posttest-Delayed Posttest, but there was no significant difference between Pretest-Delayed Posttest.

(LVI) There was a significant difference between the mean achievement scores of the Control group of middle class SES students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Posttest and Posttest-Delayed Posttest level of pairing.

(LVII) There was a significant difference between the mean achievement scores of the Control group of upper lower class SES students at two levels of pairing i.e. Pretest-Post test, Posttest-Delayed Posttest, but there was no significant difference between Pretest-Delayed Post level of pairing.

(LVIII) There was a significant difference between the mean achievement scores of the Control group of lower class SES students at two levels of pairing i.e. Pretest-Post test, Posttest-Delayed Posttest, but there was no significant difference between Pretest-Delayed Post level of pairing.

(LIX) There was a significant difference between the mean achievement scores of the Control group of Govt School students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post and Posttest-Delayed Posttest levels of pairing.

(LX) There was a significant difference between the mean achievement scores of the Control group of Public School students at all the three levels of pairing i.e. Pretest-Post test, Pretest-Delayed Post and Posttest-Delayed Posttest levels of pairing.

5.2 Educational Implications

On the basis of the findings, the present study has following educational implications:

(i) The results of the present study are indicative of the fact that instructional treatment has an impact on the learning outcomes of the
students. The Students who were taught science by using constructivist approach attained better scores than the students who were taught with Conventional or traditional approach. Constructivist approach is more effective than the Conventional methods of teaching science to enhance the achievement in science. The teachers should use the constructivist approach in teaching of science, as in the Constructivist method, the learner constructs his own knowledge or experiences on the bases of his previous experiences and prior knowledge. This emphasizes the learning through the meaning making process rather than the memorization of concepts. So, this method can be practiced in the schools to facilitate meaningful learning among the learners and able to apply the learned knowledge in various day to day life situations.

(ii) The findings of the present study highlight the shift from teacher centered to learner centered classroom wherein the students are given full freedom to explore and discover the things on their own. The present study will be very useful to the teacher to creating the innovative classrooms situations wherein the students are meaning maker which is the ultimate aim of the learning. The role of teacher is just as guide and facilitator.

(iii) This study also revealed that the students have really enjoyed the classroom experiences and also felt that constructivist approach was not stressful. This study led to healthy relationship among the teacher and taught. The study also gives a picture of an innovative and democratic classroom where the priority is given to the students autonomy and good teacher student relationship.

(iv) The Model of the present study involves the active participation through the class, it not only improving their achievement level, but also the scientific attitude and attitude towards science. Thus it ids suggested that the school teachers should provide conducive environment to enhance the achievement and favorable attitudes.

(v) The results of the this study, it is suggested that the teachers should provide suitable learning situations wherein the students get firsthand
experience of handling the equipments, making the use of senses, explore and experiment and lastly, infer the results.

(vi) As the constructivist philosophy believes in both individual and group construction of knowledge. So the teachers have to provide the opportunities to the students to work individually and within the group. This study also emphases that the students learn more effectively if they exposed in groups as they are able to share their information and knowledge with each other.

(vii) The pre-service and in-service training programs on Constructivist approach could be organized so as to develop the understanding and necessary skills for successful implementation of the constructivist teaching model in the classroom situations.

(viii) This study also emphasized the importance of a variety of learning experiences to advance different levels of learning. This focuses the change in the trend of teaching from transmission of knowledge to construction the meaning of concepts based on prior experiences.

(ix) It is suggested that the Constructivist system of instruction may be used to all type of learners irrespective of their social background and sex. The teachers should put more emphases on imparting information at Comprehension level than merely at knowledge level. Also he should provide conducive environment in building favorable attitude towards the constructivist teaching.

(x) It is found that children more and enjoy learning more when they are actively involved, rather than passive listeners.

(xi) Constructivism promotes social and communication by creating a classroom environment that emphasizes collaboration and exchange of ideas, students must learn how to articulate their ideas clearly as well as to collaborate on tasks effectively by sharing in group projects.

(xii) Education works best when it concentrates on thinking and understanding rather than on rote memorization. Constructivism concentrates on learning how to think and understand.

(xiii) Constructivism gives students ownership of what they learn, since learning is based on students questions and explorations, and often the students have a hand in designing the assessments as well.
the creative instincts develops students abilities to express knowledge through a variety of ways, the students are also more likely to retain and transfer the new knowledge to real life situations.

(xiv) Constructivist learning is transferable, in Constructivist classrooms; students create, organizing principles that can take with them to other learning settings.

(xv) Constructivism stimulates and engages students by grounding learning activities in an authentic, real world context. Students in Constructivist classroom learn to question things and to apply their natural curiosity to the world.

(xvi) A democratic managed learning environment was found suitable for the basic learning of concepts and principles. Democracy in school classroom helps to create an environment of mutual faith and cooperation, but appears to exert little pressure for higher attainments in the learning of complex concepts and principles, therefore, a blend of guided democratic ways with a tradition of discipline and hard work may help learners in advanced and complex learning.

(xvii) The Higher authorities like NCERT, SCERTs, DIETs and Teacher Training Institutes should include the constructivist method of teaching in the teacher training programs. The pupil teachers are also to be taught with the theory of constructivism and should be allowed to practice during their teaching practice at schools.

5.3 Suggestions for Further Research

The scope of present study was delimited in a number of ways to assess the Effectiveness of the Constructivist approach in two Schools of Distt Solan of Himachal Pradesh. In the light of the results and findings of the study following suggestions are brought forth:-

(i) As the results of the Constructivist approach are more encouraging when compared with traditional teaching methods, Constructivist Approach and its different techniques should be included in the curriculum at all the level of education.
(ii) Constructivist Approach should be used in Science teaching and learning at the level of Elementary school, High school and College level.

(iii) The present study was conducted only a ten units of science syllabus prescribed by HPBSE. More studies may be conducted on larger portions of the total curriculum, in order to cross-validate the present findings.

(iv) Science laboratories should be designed to provide Constructivist learning.

(v) The Conferences, Seminars, Debates on Constructivism or Constructivist Teaching and learning should be introduced to the teachers at all the levels of education.

(vi) More Comprehensive research with longer period should be undertaken to determine the effect of Constructivist approach on teaching and learning.

(vii) Similar studies should also be conducted on other subjects.

(viii) Science teachers should incorporate Constructivists based teaching strategy in their methods of teaching.

(ix) Teachers can be provided with occupational training on preparing material accordance to Constructivist theory.

(x) Other Science units can be prepared as activity booklets according to Constructivist learning principles.

(xi) The present study was conducted on a sample of 140 grade students of 6th grade. Similar studies may also be conducted on large samples.

(xii) The present study was delimited to a few dimensions pertaining to constructivist approach. Further research may also be undertaken on other variables of Constructivist approach.

(xiii) The present study was restricted to the two schools of Distt Solan similar study on Constructivist Approach may also be conducted in other schools of the districts of Himachal Pradesh and other State.
Research can be carried out to see the effect of Constructivist learning principles on student attitudes towards course achievement and retention can be examined for other course subjects.

Research can be carried out to see the effectiveness of Constructivist learning principles on development of students' attitudes towards cooperation and teamwork can be patterned.

Research can be carried out to see the effect of constructivist learning principles on development of students' critical thinking, creative thinking, and problem-solving skills.

Transfer of learning from one situation to another is utmost importance. Therefore, Constructivist approach may be studied in relationship with intelligence, school climate, teachers' personality, etc.