CHAPTER – 5

SUMMARY AND CONCLUSIONS

The previous chapter dealt with the analysis of data and interpretation of the results. In this chapter, a brief summary of the study is presented under relevant headings which are the genesis of the problem, the statement of the problem, objectives of the study methodology details of the study namely design, sample, instrumentation and data collection, a brief description of the analysis of the data, and the findings of the study. The chapter concludes with a discussion on the implications of the study and suggestions for further research to the field of science education.

5.1 Background of the study

Geography as a school subject is one of the most important subject in secondary school education. It equips students with a body of knowledge to make them functional and socially relevant in the fast changing world. It helps students to appreciate the value of their environment and its vast natural resources. It instills in the students the need to appreciate and develop a sense of responsibility towards their own environment and society. As a subject, it is versatile, expressive and intellectually stimulating. It exhibits a correlation with all other school subjects. Geography is relevant for both the students who are likely to continue to tertiary level and those who would not proceed in the education system.

Teaching Geography in schools is important, exciting, and it is challenging to engage in the teaching-learning experience in innovative and resourceful ways. The pedagogical approaches of geography precisely should wish to teach students about an independently existing world. Since the existing traditional method of teaching Geography has failed to meet the demands of the 21st century classroom and also to achieve the objectives of teaching geography, there is a shift in schools from an instructional
(representational) to a constructivist (presentational) pedagogy. The learning process itself has changed from one in which students passively acquire the objective facts about the world to one in which students actively construct this knowledge through a sequence of activities.

The more recent view about learning is that it not just passive transmission of knowledge from the teacher to the student. The student to learn has to actively construct the new knowledge based on the previous knowledge acquired through his past experience. Hence Constructivist beliefs have recently been applied to teaching and learning in the classroom.

Constructivism entered mainstream educational thought and research in the 1970s through the work of Piaget and Vygotsky and their disciples (Damarin, 2004; Roblyer & Edwards, 2000; Windschitl, 2002). Constructivism forms one of the major theories developed, arising from the work of Jean Piaget's theory of cognitive development. Piaget's stage theory also became known as constructivism, because he believed children needed to construct an understanding of the world for themselves. Piaget's theory saw children as an active agency rather than being passive receptacles.

Constructivism is a theory of knowledge that argues that humans generate knowledge and meaning from an interaction between their experiences and their ideas. During infancy, it is an interaction between their experiences and their reflexes or behavior-patterns. Piaget called these systems of knowledge schemata. Piaget asserts that learning occurs by an active construction of meaning, rather than by passive recipience. He explains that when a learner, encounters an experience or a situation that conflicts with his current way of thinking, a state of disequilibrium or imbalance is created. He must then alter his thinking to restore the equilibrium or balance. To do this, he makes sense of the new information by associating it with what he already knows, that is, by attempting to assimilate it into his existing knowledge. When he is unable to do this, he accommodates the new information to his old way of
thinking by restructuring his present knowledge to a higher level of thinking. Learning is today’s classroom happens in a social context since there is students-teacher and students-students interaction. Hence Social Constructivism has gained importance in today’s context.

Social constructivism emphasizes the importance of culture and context in understanding what occurs in society and constructing knowledge based on this understanding. This perspective is closely associated with many contemporary theories, most notably the developmental theories of Vygotskian social cognitive theory.

The origin of social constructivism is largely attributed to Lev Vygotsky (1896 - 1934). Social constructivism is a sociological theory of knowledge that applies the general philosophical constructivism into social settings, wherein groups construct knowledge for one another, collaboratively creating a small culture of shared artifacts with shared meanings. Social constructivism can be defined as students building or ‘constructing’ their own knowledge through social experiences. When one is immersed within a culture of this sort, one is learning all the time about how to be a part of that culture on many levels. It is emphasized that social culture plays a large role in the cognitive development of a person.

Though the cognitive domain has received a good deal of attention from educationists the development of affective capabilities and social cognitive abilities has taken a back seat both in teaching and evaluation process in the present education system. Group cohesiveness as a social ability increases the chances of an individual to work in groups and through this help individuals gain a psychological satisfaction. Team work in schools is important as it’s a development not only for you but also for others. Great teamwork allows the school as a whole to run effectively and achieve excellent results. It helps to build a positive relationship with those that are within your team, as well as
showing that there is support for one another within the structure. When there is team work, responsibilities and tasks are shared and are completed more effectively and also in a good time scale. Each member or person has their own skill and or expertise, communicating with them helps you to learn, build up your own knowledge and know your own responsibilities. Communication is an invaluable tool in team work; you can ask for advice or even give advice about certain subjects or topics, as well as sharing ideas on them too. When it comes to the pupils, communicating between each other is important as you will share information on the child such as the child’s welfare, medical information or even their progress within the classroom. Social constructivist strategies need to be tested for their effectiveness in developing group cohesiveness among classroom groups which may be developed as a nurturant effect of these strategies.

Group Cohesiveness is the force that brings group members closer together. If the number of members is relatively small, the members will be in constant touch with each other and would have very effective interpersonal communication and high group loyalty. Members will interact among themselves quite frequently. Members keep themselves attached to the group as they feel that their needs would be satisfied by the group. Students in a classroom tend to learn a subject most effectively when they cooperate with each other as a unified group. Group Cohesiveness makes favorable contributions to learning. Cohesion is more beneficial to learning and teaching since the current trend is the constructive approach in which teachers provide lessons that require students to interact with peers in order to develop the students’ social skills. Group Cohesiveness is one of the most important attributes of a successful class. Thus, promoting group cohesion among students in a classroom tends to increase effectiveness of students’ learning.
5.2 NEED AND IMPORTANCE OF THE STUDY

Man is born into, lives and develops in the physical and the social world. Geography is the study of the physical features of the earth and its atmosphere, and of human activity as it affects and is affected by these, including the distribution of populations and resources and political and economic activities. Hence teaching of geography carries a special responsibility in preparing a child to become a well informed constructive participant of this planet earth. The long term outcome of geography teaching should result in student’s increased capabilities to learn more easily and effectively in the future, and find solutions to the problems faced by them in real life by utilizing the geographical knowledge and learning skills acquired by them in their classroom with their peers. Geography teaching aims at development of these meta-cognitive ways of thinking in his social set up. This necessitates that the students be taught to be the active constructors of geographical knowledge rather than act as passive recipients. Hence attempts have been made to find out teaching patterns and strategies which are conducive for developing these cognitive abilities and affective behavior in children and thereby to attain the objectives of teaching Geography. Social Constructivist strategies where the learner develops his/her own knowledge based on the experience that he/she has got while learning is an innovation in this direction.

At the national level, the National Curriculum Framework for school education, 2000 brought out by the National Council of Educational Research and Training (NCERT) emphasized viewing the child as a constructor of knowledge. The NCF-2005 therefore emphasizes on adoption of social constructivist strategies of teaching to subjects at the secondary level. But analysis of the present day teaching of Geography reveals that classrooms remain dominated by teachers and traditional methods of teaching still prevails. Much of Geography teaching and learning is through the chalk and talk method which emphasizes on just a simple transmission of information through the use
of a single text book, the chalk and talk method and controlled question and answer strategies.

However, research studies have shown that this traditional method of teaching geography has failed to accomplish the cognitive and affective objectives of teaching geography. A more student-centered, Social Constructivist approach to teaching Geography would incorporate multiple and varied sources of information, increase emphasis on group processes and encourage student generated questions to guided inquiry and discussion. By engaging students in social constructivist learning environment, they would learn to view issues and problems from different angles and identify multiple perspectives as well as develop their own viewpoints. In this context there is a dire need for a transition from traditional teaching to new approaches which help the student to construct knowledge.

Social Constructivism is an approach which sees what child already knows, how it is related with the present knowledge and how he/she learns a particular concept. It is only very recently however, that Social Constructivism is appearing in Geography teaching. There is unrealized potential for Social Constructivist strategies to achieve the aims of teaching of Geography. Geography teaching using Social Constructivist approach has high scope for developing critical thinking ability and meta-cognitive abilities. Geography teaching in the present era cannot ignore this aspect, since we are aiming at shifting away from the predominance of knowledge transfer in the classroom to a curriculum that promotes higher order thinking skills in students. Moreover, the expansion of knowledge in every sphere of learning demands promotion of autonomous learning skills in students to help them seek information that they need in their career and life and the cognitive and social skills that are required to effectively exploit the available information independently and in a team.
Today team work and Group Cohesiveness is a much valued entity. This could be fostered by collaborative learning within the group. Cohesiveness in the group influences learning and also influences their ability to work in a team. A class room group will not always give evidence of being cohesive nor will it also in all situations. When more than thirty children are grouped in the same room for several hours a day, there are bound to be occasions when disagreements, arguments, and various other types of conflict occur. There is no systematic knowledge available concerning cohesiveness in class room groups, but an analysis of the general nature of cohesiveness and a study of the investigations involving cohesiveness in general provide a number of clues about the kinds of behavior that indicate that a class group may be characterized as having unity or cohesiveness.

Students in a classroom learn a subject most effectively when they cooperate with each other as a unified group. Group cohesion makes favorable contributions to learning. Cohesion has now become more beneficial to learning and teaching since the current trend is the social constructivist approach in which teachers provide lessons that require students to interact with peers in order to develop the students’ knowledge constructive skills. Group cohesiveness is one of the most important attributes of a successful class. Thus, promoting group cohesion among students in a classroom may lead to increase in effectiveness of students’ learning.

The review of related literature in India and abroad revealed that studies are conducted to find the effectiveness of constructivist strategies in different subjects. Very few studies are conducted in the Indian context. As far as teaching of Geography is concerned, there were no research studies found in Indian conditions to assess the effectiveness of Social Constructivist strategies. In the light of the above, the researcher felt it necessary to investigate the Effect of Social Constructivist Strategies on Achievement in Geography and Group Cohesiveness among secondary school students.
5.3 Review of related literature

The reviewed related researches on Social Constructivist Strategies, Achievement in Geography and Group Cohesiveness have been classified under the following four sections in this chapter:

2.1. Studies related to Constructivism and Social Constructivism
2.2. Studies related to teaching Geography
2.3 Studies related to Achievement in Geography
2.4. Studies related to Group Cohesiveness

5.3.1 Insights from review

The overview of the researches reviewed related to Social constructivist Strategies (SCS), Achievement in Geography (AG) and Group Cohesiveness (GC), crystallized some of the issues and observations that helped in framing hypotheses, selection of tools for collection of data, sampling techniques, adopting experimental design and employing statistical techniques for analysis of data for the present study. Researchers have shown that using Social Constructivist Strategies has a great effect on students’ achievements levels. The overview of the related literature in general made clear that there is lot of research conducted on Constructivist in different areas. Apart from this, studies reviewed stressed that Constructivism is an epistemology that views of learning rather than teaching and knowledge cannot simply be transformed from teachers to students, it has to be conceived. One of the study reviewed emphasized the readiness of teacher, curriculum and society for the success of Constructivist strategies. Reviews also enumerated the imported characteristics of Constructivist approach. A drastic change can be deducted from the review with respect to the role of the teacher in the Constructivist paradigm. Along with this, studies stressed the importance of Social Constructivism. Research support for constructivist teaching techniques has been mixed, with some research supporting these techniques and other research contradicting those results.
Social Constructivism as a pedagogical approach has wider scope in various subject areas also. From the reviews it is found that few studies concentrated on the effectiveness of Social Constructivism in ICT, Mathematics, Science and Technology, Physical Education, Education psychology. Studies have found that most students liked working in cooperative groups and appreciated getting help from other students, especially for learning difficult concepts. Several reviews of research have identified Group Cohesiveness as an important variable for a variety of groups (e.g., therapy groups, living units, task groups, sport teams, and exercise groups) and different types of group processes (e.g., influence, conformity, communication, and behavior change). A few studies have focused on the effects of group cohesion building on the development of prosocial behaviors and academic performance of school-aged children. Studies have compared differences between high Cohesive and low Cohesive groups in elementary classes on completion of school tasks.

Reviews were also done in the area of teaching of Geography which is the main focus of this study. All the studies reviewed in this section showed that Constructivist approach is effective in imparting educational curriculum with special reference to science subjects. Cooperative learning, problem solving and jigsaw were some of the strategies applied in the Constructivist approach.

In spite of certain variables been researched upon as an effect of Constructivist approach, there are certain research gaps, which are obvious. For instance very few studies were found which stressed the effect of Constructivist approach on achievement in Geography and group cohesion. The review of related studies revealed that there is no study being conducted to investigate the effect of SCS on achievement in geography and group cohesion at secondary level in the Indian context. Drawing the essential cues along with the research gaps identified from the review carried out, the present study aims to explore
the effect of Social Constructivist Strategies on Achievement in Geography and Group Cohesiveness through the teaching of Geography.

5.4 Statement of the problem

The present study strived to determine whether Social Constructivist Strategies (SCS) of teaching Geography would be more effective than the traditional method with respect to enhancing Achievement in Geography and Group Cohesiveness (GC) of students of secondary school. Teaching strategies using SCS include teaching in contexts that are personally meaningful to students, and which involve collaboration and meaningful activity.

The statement of the problem is,

“Effect of Social Constructivist Strategies on Achievement in Geography and Group Cohesiveness among secondary school students”

5.5 Objectives of the study

The study was undertaken with the following objectives:

1. To develop lesson plans based on Social Constructivist Strategies for eighth standard Geography
2. To study the effect of Social Constructivist Strategies on
   a. Achievement in Geography
   b. Group Cohesiveness in total and component wise
3. To study the interaction effect of Treatment and Gender on Achievement in Geography of students of secondary school
4. To study the interaction effect of Treatment and Gender on Group Cohesiveness of students of secondary school
5. To examine whether there is a significant relationship between Achievement in Geography and Group Cohesiveness of students of secondary schools
6. To qualitatively analyze the opinion of students about Social Constructivist strategies.
5.6 Hypotheses of the study

In pursuance of the objectives of the study the following null hypotheses were formulated:

1. There is no significant difference in post test Achievement scores of experimental and control groups.
2. There is no significant difference in the mean gain scores of Group Cohesiveness of experimental and control groups.
3. There is no significant difference in the mean gain scores of Member’s similarity, Group Success, Nature of the Group, Leadership style, Communication, Competition, Autonomy – components of Group Cohesiveness of experimental and control groups.
4. There is no significant interaction effect of treatment and gender with respect to
   - Achievement in Geography
   - Group Cohesiveness
5. There is no significant relationship between Achievement in Geography and Group Cohesiveness of students secondary school.

5.7 VARIABLES OF THE STUDY

The variables of the present study fall into four categories viz: Independent, Dependent, Moderate and Control Variable.

Independent Variable:
- Treatment:
  - Social Constructivist Strategies of teaching Geography
  - Traditional Method of teaching Geography

Dependent variables:
- Achievement in Geography
- Group Cohesiveness
Moderate variable:
- Gender

Control Variable:
- General Mental Ability

5.8 Operational definitions

Some of the key terms that are used in this study are defined operationally as follows:

- **Treatment**: Treatment refers to the two methods of teaching which were adopted to teach Geography to the eighth standard students. The treatment included teaching of Geography through Social Constructivist Strategies and the traditional method.

- **Social Constructivism**: Social Constructivism extends constructivism into social settings, wherein groups of students construct knowledge for one another, collaboratively creating a small culture of shared artefacts with shared meanings.

- **Social Constructivist Strategies (SCS)**: In this study Strategies of teaching Geography which allow the student to construct their own knowledge while working in groups and those which had scope for MKO and ZPD were used. The following strategies which adopted Social Constructivist principles were used in this study: Cooperative Learning, Collaborative Learning, Concept Mapping, Situated Learning, Anchored Instruction, Problem Solving, Games and Simulation, and Case-based Instruction.

- **Traditional Method of Teaching (TMT)**: Traditional method of teaching is teacher-centered in which teacher imparts knowledge and students simply receive it. In this environment, information is taught to the class in the form of chalk and talk and lecture, making use of learning aids. After teaching he may or may not be able to give scope for interaction. More emphasis is given to rote memory of the content matter rather than the thinking process. Moreover, students are not
expected to think in an exclusive manner even though thinking about different geographical issues is highly important.

- **Achievement in Geography**: Achievement is the act of accomplishing or finishing. Achievement is something accomplished successfully, especially by means of exertion, skill, practice or perseverance, in relation to the prescribed in Geography syllabus. Achievement in Geography in the present study is the total scores obtained by the students in the Geography Achievement test constructed by the researcher.

- **Group Cohesiveness (GC)**: is the extent to which group members like each other, desire to continue to be part of the group, extent of satisfaction with their group membership, attitude towards other members of the group, willingness to cooperate with other group members, willingness to work with others on the assigned tasks, provide more elaborate help and assistance to each other to achieve on-task, stronger perception of group unity, and social responsibility for each other’s learning. The following are the components of group cohesion: Member similarity, Group Success, Nature of the Group, Leadership, Communication, Competition, and Autonomy of Group Cohesiveness. Group Cohesiveness in the present study is represented by the total scores obtained by the students on Group Cohesiveness Scale constructed by the researcher.

  **Members’ Similarity**: The more group members are similar to each other on various characteristics the easier it would be to reach cohesiveness.

  **Group Success**: Group success increases the value of group membership to its members and influences members to identify more strongly with the team and to want to be actively associated with it.

  **Nature of the Group**: refers to heterogeneity or homogeneity of the Groups.
**Leadership:** An effective leader keeps the members of the group to be close together by helping them satisfy their social needs. Effectiveness of the leadership influence group cohesiveness.

**Communication:** Groups whose members are located close together and can interact frequently and easily are likely to be more cohesive and effective than those whose members are scattered.

**Competition:** Group Members value membership more highly when they’re motivated to achieve common goals - especially when those goals mean outperforming other teams.

**Autonomy:** A group may be dependent or independent of other groups and, thus, will have a different structure.

- **General Mental Ability (GMA):** General mental ability is a term which describes the level at which an individual learns, understands instructions, and solves problems and is considered the most important factor, explaining more variation in individual performance than specific abilities. General mental ability in this study is represented by the total scores obtained by the students on Raven’s Standard Progressive Matrices.

### 5.9 Method of the Study:

The present study was an experimental study conducted in order to find out the effect of social constructivist strategies on achievement in geography and group cohesiveness.

The present study was conducted in two stages viz:

a) **Stage 1:** Development and validation of Social Constructivist package for teaching Geography to the experimental group.

b) **Stage 2: Experimentation:** Implementation of SCS to the experimental group and Traditional Teaching approach to the control Group.
Stage 1: The lesson plans for teaching selected content of Geography based on SCS for eighth standard syllabus were developed. The lesson plans were given to experts in the field of Education for scrutiny and the suggestions of experts were incorporated. These lessons were tried out and changes were made to suit the classroom conditions and were thus validated.

Stage 2: Experimentation: Randomized Pre-test Post-test matched group design was adopted as the research design for the present study. The main advantage of this design lies in matching the subjects.

5.9.1 Social Constructivist Lesson plans

Lessons were planned based on the “5E Model” developed by *Roger Bybee* of ‘The Biological Science Curriculum Study’. The 5E model was developed based on the Constructivist principles of learning. The 5Es mean Engage, Explore, Explain, elaborate and evaluate.

- **Engage:** All this stage the task is introduced. Connections to past learning and experience are invoked. A demonstration of an event, the presentation of a phenomenon or problem or asking pointed questions are used to focus the learners' attention on the tasks that will follow. The goal is to spark their interest and involvement.

- **Explore:** Learners should take part in activities that allow them to work with materials that give them a 'hands on' experience of the phenomena being observed. Simulations or models, whose parameter can be manipulated by learners, are provided so that they can build relevant experiences of the phenomena. Questioning, sharing and communication with other learners is to be encouraged during this stage. The teacher facilitates this process.

- **Explain:** The focus at this stage is on analysis. The learner is encouraged to put observations, questions, hypotheses and experiences
from the previous stages into language. Communication between
learners and learner groups can spur the process. The instructor may
choose to introduce explanations, definitions, mediate discussions or
simply facilitate by helping learners find the words needed.

- **Elaborate:** Using the understanding gained in the previous stages, the
  learners are to be encouraged to build and expand upon it. Inferences,
deductions, and hypotheses can be applied to similar or real-world
situations. Varied examples and applications of concepts learnt
strength mental models and provide further insight and understanding.

- **Evaluate:** Evaluation is to be ongoing and should occur at all stages, in
  order to determine that learning objectives have been met and
misconceptions avoided. Any number of rubrics, checklists, interviews,
observation or other evaluation tools are used. If interest in a particular
aspect or concept is shown, further inquiry should be encouraged and a
new cycle that builds upon the previous one can begin. Inquiries may
branch off and inspire new cycles, repeating the process in a spiraling
fractal of interrelated concepts, where instruction is both structured and
yet open to investigation.

The **5E** model is the most effective way of engaging students in
learning. Lesson plans adopting SCSs for teaching of the selected content were
drafted and prepared based on the **5E** model by the researcher. This draft was
sent to experts from the field of education and to a few eighth standard
Geography teachers. The suggestions given by them were incorporated and the
modified final Lesson plans were prepared. Three Social Constructivist lesson
plans in Geography were tried out on secondary school students of eighth
standard of a different school.
5.9.2 Design of the study

In this study the students were matched on their General Mental Ability (GMA) before assigning to the experimental and control group to assure equivalence between the groups prior to experimentation. Students from two schools were administrated Raven’s Progressive Matrices to measure their GMA. The GMA scores were converted to standard T scores. Students who scored nearly the same on GMA were assigned to the two groups of 30 students each in both the schools. These matched groups were randomly assigned as experimental and control group in both school A and school B. Thus two groups of 30 students each in two schools were matched on their GMA and were randomly assigned to the experimental and control groups.

Pre-test on Group Cohesiveness Scale (GCS) was initially administered to both the experimental and control groups in each of the schools before starting the treatment. The two experimental groups in both the schools were taught by adopting SCS by the researcher for a period of three months. Simultaneously the researcher taught the two control groups in both the schools by the traditional method.

Achievement test in Geography and GCS were administered as post tests to both experimental and control groups. The significance of difference between post test scores of Achievement in Geography of experimental and control groups were found to compare the effectiveness of SCS and TMT in enhancing Achievement in Geography. The significance of difference between the mean gain scores of the experimental and control groups were found to compare the effect of SCS and the Traditional Methods of Teaching Geography in enhancing Group Cohesiveness of secondary school students.
5.9.3 Homogenizing the Groups

Since the students who were selected for the treatment were from different schools, the researcher had to make sure that they would have the same ability before the treatment. In order to obtain parallel groups to the experimental and the control groups, the researcher administered Raven’s Progressive Matrices (RPM) to measure their GMA. The students were matched on their General Mental Ability before assigning to the experimental and control group to assure equivalence between the groups prior to experimentation. Students from two schools were administrated Raven’s progressive matrices to measure their GMA. The GMA scores were converted to T scores. Students who scored nearly the same on GMA were assigned to two groups of 30 students in both the selected schools. These matched groups were randomly assigned as experimental and control group in school A and school B. Thus two groups of 30 students each in two schools were matched on their GMA and were randomly assigned to the experimental and control groups.

5.10 Sample of the study

The sample of the study has been selected in two stages. In the first stage the schools were selected and in the second stage the classes were allotted to experimental and control groups.

Stage 1: Selection of schools

Purposive sampling technique was adopted for selecting the secondary schools from Mysore city. The schools were selected based on the following criteria to ensure that schools were comparable;

- Urban private schools
- Availability of ICT facilities
- Strength and regularity of the students
- Administrative co-operation
Stage 2: Selection of classes

Since there were more than two sections of eighth standard in both the schools lottery method was used to select the classes for the experiment. The section consisted of nearly 60 students. They were administered GMA test and those students who were matched on their GMA were selected for the experimental and the control group of the experiment. Table 5.1 shows the number of male and female students in experimental and control groups of both the schools. 30 students out of which 15 male and 15 female students who were matched on their GMA were selected for the experiment. The two sections were randomly assigned as experimental and control groups in both the schools.

Table 5.1: Sampling frame showing the number of male and female students from two schools

<table>
<thead>
<tr>
<th>Schools</th>
<th>School – A</th>
<th>School - B</th>
<th>Total No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>Experimental Group</td>
<td>Control Group</td>
<td>Experimental Group</td>
</tr>
<tr>
<td>Male</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>No. of Students</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

5.11 Tools used for collection of data

To verify the hypotheses of the study, the researcher needed to use valid and reliable instruments. The following are the research tools that were used to collect the necessary data.
Table 5.2: Table showing tools used for data collection

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Variables</th>
<th>Tools used</th>
<th>Standardized/ Constructed by</th>
<th>Validity</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General Mental Ability</td>
<td>Raven’s Standard Progressive Matrices(RPM)</td>
<td>Raven J.C</td>
<td>-</td>
<td>0.80 to 0.90</td>
</tr>
<tr>
<td>2</td>
<td>Achievement in Geography</td>
<td>Achievement test in Geography</td>
<td>Researcher</td>
<td>Face Content</td>
<td>0.97</td>
</tr>
<tr>
<td>3</td>
<td>Group Cohesiveness</td>
<td>Group Cohesiveness Scale (GCS)</td>
<td>Researcher</td>
<td>Face Content</td>
<td>0.98</td>
</tr>
<tr>
<td>4</td>
<td>Reaction of students on Social Constructivist Strategies</td>
<td>Student’s Reaction Scale (SRS)</td>
<td>Researcher</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

5.11.1 Raven’s Standard Progressive Matrices

This tool which is constructed by J.C. Raven (1960) is standardized and the General Mental Ability of the students was measured using this tool. This tool was administered to the students in order to match them on their GMA.

The Raven’s Progressive Matrices (RPM) is a non-verbal test for measuring the GMA of students above the age of eleven. The test consists of five sets of problems and the test on the whole consists of 60 problems, viz., A, B, C, D and E. Each set has 12 problems. Every problem requires the user to select the design that completes the pattern. The problems provide opportunities for grasping the progressive assessment of the person’s capacity for intellectual activity. Each set begins with easy problems and gradually moves on to difficult ones. Each correct response is awarded one mark and the total test marks is 60. The time allotted for the administering of this test is 30 minutes, and the students are given a separate scoring sheet to write their answers.
The correlation of standard progressive matrices with Binet and Wescheler scale range from 0.54 to 0.86. From the Raven’s report, the reliability coefficients of the test vary from 0.80 to 0.90. The progressive matrix has been described as one of the purest and best of the available measures of general intellectual functioning (‘g’). Factor analytic studies reveal high loading up to 0.83 on ‘g’ factor.

5.11.2 Achievement test in Geography

The post-test for Achievement in Geography was developed by the researcher. The post-test in Achievement consisted of multiple choice and short answer items from the content of two chapters of eighth standard Geography text book.

Reliability

The test re-test reliability and Cronbach’s alpha reliability was established for Achievement test in Geography.

- Test re-test reliability

Test re-test reliability method was adopted to establish the reliability of Achievement test in Geography. The test was administered to hundred students of eighth standard from two schools. The same test was re-administered to the same set of students after a gap of one month. The consistency coefficient was calculated for the test and re-test scores using Pearson’s product moment correlation technique. The obtained consistency coefficient was 0.97 which indicated a high reliability of the test.

- Cronbach’s alpha reliability

Cronbach’s alpha method was employed to determine the reliability of Achievement test in Geography. Cronbach’s alpha reliability was found to be 0.95 indicating high reliability.
Validity

Face validity and content validity were established for Achievement test in Geography.

- **Face validity**
  In order to establish the validity of the tool the researcher established its face validity. The researcher, supervisor and a few experts from the field of education and geography teachers approved the newly developed test in terms of its face validity.

- **Content validity**
  In order to establish its content validity, the researcher sent the final tool to ten experts in the field of education. The experts unanimously approved its appropriateness for the intended purpose. Hence the Achievement test in Geography possessed content validity.

5.11.3 **Group Cohesiveness Scale (GCS)**

The researcher thoroughly examined the existing scales of Group Cohesiveness. Many of the existing tools found were constructed for employees in the field of management, for those working in factories and banking and public sectors. Group cohesion scale-Revised (GCS-R) for employees which was constructed by Treadwell, et. al. (2001) and Group Environment Questionnaire (GEQ) for sports team which was used by W. Neil Widmeyer, et al. (1985) were widely found to be used by various researchers. Since there were no suitable scales available to measure the level of Group Cohesiveness of secondary school students, the researcher felt the need to construct the Group Cohesiveness scale.

Among Carron’s nine components of Group Cohesiveness, the following seven were considered for constructing the Group Cohesiveness Scale keeping in view students as a class room group.
- Members’ Similarity
- Group Success
- Nature of the Group
- Communication
- Leadership
- Competition
- Autonomy

**Reliability of the scale**

In order to establish reliability of Group Cohesiveness Scale test re-test method and Cronbach’s alpha co-efficient of reliability were employed.

- **Test re-test reliability**

  In order to establish test re-test reliability, the final scale with 50 items selected through the process of item analysis was administered to 100 secondary school eighth standard students in Mysore city. After a gap of one month the same scale was re-administered to the same set of students. The coefficient of correlation was computed between test and re-test scores. The consistency co-efficient obtained was 0.98. Hence the scale was found to poses high reliability.

- **Cronbach’s alpha reliability**

  Cronbach’s alpha method was employed to determine the reliability of the Group Cohesiveness Scale. Cronbach’s alpha reliability was found to be 0.90, indicating a high reliability.

**Validity of the test**

- **Face validity**: The Group cohesiveness scale possesses face validity
• **Content validity:** The scale included statements representing seven components of group cohesiveness namely Members’ Similarity, Group Success, Nature of the Group, Communication, Leadership Style, Competition and Autonomy. Due weightage was given to all the components while constructing the items. The Group cohesiveness scale were examined by eight experts from the field of education and psychology to determine whether they covered the representative sample of the components that measure group cohesiveness of secondary school students. The experts opined that the items fairly represented the concept. Thus the Group Cohesiveness scale was found to posses content validity.

• **Construct validity:** The tool possesses construct validity since the items included in the final tool have ‘t’ values equal to or more than 1.75 (Allen. L.Edwards).

### 5.11.4 Student’s Reaction Scale (SRC)

A Reaction Scale was constructed in order to know the reaction of students towards Social Constructivist Strategies for teaching Geography. The researcher constructed 25 items statements to collect the opinion of students regarding the method used for teaching, the classroom environment and evaluation techniques adopted, relationship between the teacher and the students and among the students, daily assignments. The Reaction Scale scale was checked for the content validity by the guide, experts and Geography teachers. Some items were modified based on the suggestions of the experts. Totally 20 items were retained for the final form of the scale. Reaction Scale towards Social Constructivist Strategies of Teaching is a three point scale with responses, Yes/ Sometimes/No. The students were supposed to tick one among the three options provided. The reactions of the students were analysed in terms of percentage.
5.12 Statistical techniques used for analysis of data:
The following statistical techniques were used for data analysis to verify the different hypotheses formulated for the study:

1) ‘t’ test
   The ‘t’ test was used to find the significant difference between the post-test means of experimental and control groups on Achievement in Geography and mean gain scores of Group Cohesiveness.

2) Two Way ANOVA
   The principle involved in analysis of variance is the comparison of variability between the various groups with the sum of variability found within the groups. As Two Way ANOVA permits the simultaneous study of two factors as well as interaction between the two, this technique was used for this purpose.

3) Pearson Product moment correlation
   The technique was used to find out the correlation between Achievement in Geography and Group Cohesiveness.

5.13 Limitation of the study
The study has the following limitation:
   - The tool developed by the investigator was not standardized and only the validity and reliability were established.
5.14 Findings of the study

The following are the major findings of the study:

- Social Constructivist Strategies of teaching Geography is more effective in enhancing Achievement in Geography when compared to Traditional Method of teaching Geography.
- Social Constructivist Strategies of teaching Geography is more effective in developing Group Cohesiveness when compared to Traditional Method of Teaching.
- Social Constructivist Strategies of teaching Geography is more effective in fostering Member’s similarity, Group Success, Nature of the Group, Leadership, Communication, Competition, Autonomy - components of Group Cohesiveness when compared to Traditional Method of Teaching.
- Social Constructivist Strategies are equally effective in enhancing Achievement in Geography for both male and female students.
- Social Constructivist Strategies are equally effective in developing Group Cohesiveness for both male and female students.
- A high positive correlation was found between Achievement in Geography and Group Cohesiveness.

5.15 Educational Implications and Recommendations

The following are the educational implications of the findings of the present study:

- The implications of the findings of this study for curriculum development are very clear. Due to the fact that the Social Constructivist Strategies have proved to be more effective in enhancing Achievement in Geography and fostering Group Cohesiveness when compared to Traditional Method of teaching, the present Geography curriculum must be renewed in such a
way that it gives scope for maximum use of Social Constructivist strategies. If Social Constructivist Strategies of teaching Geography are to be incorporated in the curriculum, one important part of the curriculum that should experience this change is the materials used for teaching Geography. That is to say, in planning and implementation of Geography curriculum the use of Social Constructivist skills should come to the fore and gain due importance.

- It was found that social constructivist strategies are equally effective in enhancing Achievement in Geography and group cohesiveness of both male and female students. Hence these strategies can be effectively used with both male and female students.

- This study highlights the shift from teacher-centred to learner-centred classroom wherein students are given complete freedom to explore and discover things on their own when social constructivist strategies are adopted for teaching geography. The role of a teacher is to be a facilitator and guide. Social constructivist strategies are found to be very useful to the teachers in creating innovative classroom situations wherein the students are meaning makers which is ultimate aim of learning. The teachers should be well trained, encouraged and motivated, to adopt social constructivist strategies to transact the geography curriculum.

- Teachers need to examine the constructs or beliefs that influence our decisions about teaching and learning in order for change to occur. By changing our beliefs about teaching and learning, we are able to change our practice. Hence there is a need for bringing change in the beliefs of teachers which would help in implementing constructivist approaches.

- It is found that Social Constructivist Strategies are more effective than the traditional method of teaching Geography in enhancing Achievement in Geography. In this method the learning situations are based on the knowledge gained from previous experience and prior knowledge influences what new or modified knowledge students construct from new
learning experiences. It emphasizes learning through meaning making process rather than memorization of concepts. So this method can be practiced in the schools to facilitate meaningful learning among the students.

- Social constructivist strategies create an innovative and democratic classroom where in the priority is given to the relationship between students and teacher and among the students themselves and student’s autonomy in learning is also valued. It was revealed that the students have really enjoyed the classroom experience and also felt that this method was not at all stressful. SCS of teaching geography have found to have paved a pathway for a healthy classroom, which led to healthy relationship among the students themselves and also with the teacher thus promoting joyful learning.

- This study also revealed that the students liked group work and also expressed that they got ample opportunity to discuss and share with each other. Since the constructivist philosophy believes in both individual construction of knowledge and group cohesiveness, the teachers have to plan and provide group work to the students while teaching in the classroom.

- Prevailing poor performances by students in examination and misconception they hold about some topics in Geography have aroused concern in educational field on the cause and need to alleviate the situation. Social Constructivist strategies need to be integrated with technological innovations in teaching to improve the quality and standard in Geography teaching.

- Social constructivist Strategies has a wide scope for incorporation of ICT in teaching of geography. Hence educationists and school administrators should equip schools with ICT equipments and Geography Laboratory. This provides an opportunity to the teacher and students to utilize them in improving the group cohesiveness and achievement in geography.
When the educational philosophy of Social Constructivism was applied to the classroom environment, its impact on every facet of the class was found. Learning will occur better if only students are exposed to construction of knowledge in personal and social context. In a Social Constructivist teachers shift the way they teach from traditional approach which is transmissive to contemporary approach which is more Social Constructivist. Students are expected to have an active role in learning. Since teachers work together with the students and act as a facilitator to make meaning in students’ learning, learning becomes ‘a reciprocal experience’ between teachers and students (Learning Theories Knowledgebase, 2011). A socio-cultural learning which involves more of classroom interaction which acts as ‘instantiation’ of the schooling in which practice is culturally structured. Further, in making sense of the knowledge, students are ‘appropriating’ the teachers’ explanation and contribution whereas in the Social Constructivist approach, students will employ ‘accommodation and mutual adaptation’ (Cobb, 1994).

Group discussion as a strategy of Social Constructivism allowed the students to express, generalize and transfer their knowledge which later influence the ‘low performance’ students to understand the knowledge. The meaning-making of the students is a dialogic process that involves ‘person in conversation’ in building the knowledge with a more skilled members scaffolding them (Driver et.al, 1994). As this happens, low performance students will ‘appropriate’ the knowledge through their involvement in the activities. Consequently, by applying more group discussion, students could have a stronger foundation for conveying ideas verbally. There is evidence from several studies that argue that a discussion has a fundamental role in shaping students ability in testing, synthesizing and building a deeper understanding in learning. In addition, such discussion which is line with a Social Constructivist approach have to be adopted to increase students ‘motivation, collaborative skills and the ability of problem solving’.
Another point for fostering Social Constructivism in a Geography classroom is to make learning more attractive. Since it is more student-centered, students find themselves more involved in the learning situation. This approach also considers a student as a whole person involving thought, emotion and action. They express their self throughout the learning process and they understand knowledge easily as the appropriating process happen. More over it will enhance students' Geography skills and encourages student self-esteem.

Children were found to learn more, and enjoy learning more when they were actively involved, rather than being passive listeners. Education works best when it concentrates on thinking and understanding, rather than on rote memorization. Social Constructivism concentrates on learning how to think and understand.

Social Constructivist learning is transferable. In Social Constructivist classrooms, students create organizing principles that they can take with them to other learning settings.

Social 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. Social Constructivist assessment engages the students' initiatives and personal investments in their journals, research reports, physical models, and artistic representations. Engaging 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.

By grounding learning activities in an authentic, real-world context, constructivism stimulates and engages students. Students in Social Constructivist classrooms learn to question things and to apply their natural curiosity to the world.

Social Constructivist strategies were found to promote social and communication skills by creating a classroom environment that emphasizes collaboration and exchange of ideas. Students learn how to articulate their
ideas clearly as well as to collaborate on tasks effectively by sharing in group projects. Students exchange ideas and so learn to "negotiate" with others and to evaluate their contributions in a socially acceptable manner. This is essential to success in the real world, since they are exposed to a variety of experiences in which they will have to cooperate and navigate among the ideas of others.

✓ Social constructivism is a theory on how people develop and acquire knowledge. Its main premise is that knowledge and reality are based upon social consensus. This is a theory that challenges the “traditional” model that a majority of Geography programs institute. And which place emphasis on the memorization of facts and concepts. There needs to be a reform in the way Geography is delivered to the students. The Social Constructivist theory plays a crucial role in the way the content of Geography is presented to the students. A Social Constructivist approach would call for a number of changes to occur in Geography classroom. Classroom management and the role of the teacher would have to change from their traditional roles. A key aspect of this would be to start presenting material in a fashion that shows the complexity and multiple perspectives of real world situations. The teacher’s role would shift to that of a guide and facilitator. The classroom environment would begin to take the shape of a “learning community” where interaction is key. In order for changes of this nature to occur in the classroom the teachers need to be well versed in theory and understand its implications. Once the theory and its applications are understood educator will be able to effectively teach Geography to their students. Research demonstrates that Social Constructivist group teaching experiences increase student Achievement and Cohesion. While Social Constructivist group teaching may be effective, the problem is that some teams fail to collaborate. The challenge of managing collaborative work extends beyond the confines of the classroom. Whether in the classroom or in corporate boardrooms, new knowledge is needed to help teams become more
cohesive so that dysfunction is minimized, performance, Achievement and group cohesion are increased.

- Presumably no Geography teacher would object to the view that knowledge is constructed rather than passively received. Ironically, while teachers have become familiar with many of the key terms and catchphrases associated with ‘constructivist learning’, the manner in which constructivist theories have been introduced to them, often bears little resemblance to the original texts and research. Such ‘mistranslations’ of theoretical discourses have meant that teachers are relatively unfamiliar with its core ideas and the developments in epistemology that have driven the emergence of these theories and discourses (Davis and Sumara, 2003) and which have questioned representationist accounts of cognition.

- Students do need to interact, to have discussions, to enquire into issues and solve problems, but the translation of Social Constructivism into classroom practice has tended to treat learners as little more than functionaries who complete the activities required of them and acquire or construct the particular aspects of objective knowledge. Teachers have to adapt their teaching practices in ways that take into account the agency of the learner in the construction of knowledge, but such changes have not also been rooted in changing understandings of Geographical knowledge. Morgan (2006) describes this as a ‘final reflection of the world’ stance to Geographical knowledge, where the main concern has been ‘what we know’ but not ‘how we know’ and where knowledge is stripped of its development. Teachers have thus tended to conceive Geography as a static body of objective knowledge which requires little, if any justification. In other words when subject knowledge is considered the emphasis is on the content of that knowledge but not the character of that knowledge (Kennedy, 1998).
5.16 Suggestions for further research

The following are the suggestions for further research:

1. A study can be taken up to find the effectiveness of Social Constructivist Strategies in different school subjects like language, science and mathematics in comparison with traditional method of teaching.
2. Studies to develop training programs for teachers in Social Constructivist Strategies to develop competencies in handing them could be taken up.
3. Similar study could be conducted with a larger sample and on students of classes IX and X.
4. The sample considered for the present study is urban sample. The experiment can be tried on rural sample and also on students of schools following CBSE and ICSE syllabus.
5. Similar studies could be taken up to investigate the effectiveness of Social Constructivist strategies in schools adopting kannada as medium of instruction.