INTERACTION OF INSTRUCTIONAL STRATEGIES AND ACHIEVEMENT MOTIVATION ON ACHIEVEMENT IN SOCIAL SCIENCE OF STANDARD VII PUPILS

HAMEED A.

Thesis
Submitted to the University of Calicut
for the Degree of
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DECLARATION

I, Hameed, A., do hereby declare that this thesis ***Interaction of Instructional Strategies and Achievement Motivation on Achievement in Social Science of Standard VII Pupils*** has not been submitted by me for the award of a Degree, Diploma, Title or Recognition before.

C.U. Campus,
09-09-2002.

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CERTIFICATE

I, Dr. P.K. Sudheesh Kumar, do hereby certify that this thesis ***Interaction of Instructional Strategies and Achievement Motivation on Achievement in Social Science of Standard VII Pupils,*** submitted to the University of Calicut, is a record of bonafide study and research carried out by **Mr. Hameed A.**, under my supervision and guidance. The report has not been submitted by him for the award of a Degree, Diploma, Title or Recognition before.

C.U. Campus,
09-09-2002.

Dr. P.K. Sudheesh Kumar
(Supervising Teacher)

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C.U. Campus,

Hameed A.

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Chapter One

INTRODUCTION

1

Instruction is the heart of every educational programme. Modern concept of instruction is nothing but an attempt to modify pupils' behaviour in terms of ***greater cognition, improved skills, developed attitudes and enhanced performance.*** The development attained by India in the field of elementary education is overwhelming, but exaggerated. Amidst of vast knowledge gained through experience, many of today's classrooms continued to function in the ***dark ages*** with respect to learning and instruction and has failed to take off and perform to the expected level. Although the system of education achieved much in terms of expansion, by way of quality, it terribly lag behind. This type of education is not capable of fulfilling the various instructional goals envisaged to realise the long cherished tenets of the Universalisation of Elementary Education (UEE) and Equalisation of Educational Opportunities (EEO).

All that is going on in classrooms in the name of instruction is not something the schools could be proud of. Educationists will soon realise that instruction as it is practiced in the classroom today ***does not go beyond a few routines*** in most cases. Instruction at it's one extreme, to use Gerlach and Ely's (1980) phrase, is ***transmission of the material from instructor's notebook to a student's notebook by passing the minds of both.*** It is an approved reality that the instruction going on in the classroom is ***not keeps changing in tune with***

the changing needs of the time. This is a challenge that needs to be taken upon war footing. So, to enable the pupils to face the problems in the educational process, ***ways of instruction need to undergo substantial changes.*** In such a situation the existing system of education ***requires some improvements*** in the teaching-learning process, curriculum, attitude of the learner, personality of the teacher, the materials to be studied, size of the classroom group, classroom arrangements, interaction between the pupils and the like.

Effective communication and ***collaboration*** are essential to become a successful learner. Moreover, involving students in real world tasks and linking new information to prior knowledge requires effective communication and collaboration among teachers, students and others. Indeed, it is through dialogue and interaction, the curriculum objectives come alive. Significantly a groundswell of interest exists among practitioners of education ***to involve students in collaboration in classrooms*** at all grade levels.

Recent studies in the area of education coupled by observation in schools show a ***collaboration between*** traditional classroom and innovative instructional strategies. In the whole class methods, the children with good family background and structured study habits may outperform their peers in the academic performance. But in the ***collaborative class room,*** the entire educational system is envisaged not to make an elitist education, but to maximise the educational performance of the low, average and high achievers form different ethnicities and to tap different things for different students in the same classroom.

It is high time, therefore, for teachers to realise that expository method is ***not the only method of instruction,*** that pupils learn in different ways and

that all are not amenable to a uniform approach. Here comes the ***relevance of innovative instructional strategies*** developed by several farsighted researchers (Johnson & Johnson, 1975; Sharan & Sharan, 1976; Aronson, 1978; Slavin, 1980; Joyce & Weil, 1985). Cooperative Learning is one of the important strategy among them.

Instructional Strategies are ***not the only factor*** which facilitate classroom learning, but one among a number of psychological correlates. Since, the present system of education gives ***more importance to the learner characteristics,*** due consideration should be given to ***learner readiness.*** In other words, until a child is prepared to learn, no learning can take place, because the educand is the ***autonomous entity*** within the educational process. The above concept is in keeping with the universally accepted view that human beings are ***not empty vessels*** that can be merely filled in with knowledge. The ***need for achievement (n-ach.)*** is the best researched Psychological motive and the research findings revealed that motivation is needed for enhancing Academic Achievement. (McLean, 1997; McInerney, 1998; Taylor, 1999). Properly motivated students have shown high performance in their Academic Achievement (Waxman, 1997; Simons, *et al.*, 1999). Many of the earlier research findings throw light towards the conclusion that ***Instructional Strategies and Achievement Motivation have significant effect on the Academic Achievement*** of the pupils.

1.1. NEED AND SIGNIFICANCE

The effectiveness of small group over the whole class methods is extensively researched and found that ***Cooperative Learning Strategies are the prominent focus of research and practice,*** concentrating on changing the traditional classroom practices to improve instruction, learning and social

relations among teachers, pupils and classmates. Studies on Cooperative Learning revealed that changing from a traditional classroom to Cooperative one does not diminish student's achievement, most often it ***significantly improves Academic performance*** (Christine, 1997; Johnson, *et al.*, 2000). Cooperative Learning can be widely used to ***increase motivation, retention*** and ***transfer of factual information, concepts*** and ***principles*** (Johnson & Johnson, 1975).

Intense dissatisfaction with the traditional system of instruction made it a necessity to reorganise the instructional system in the classrooms. In the traditional classroom, only a few children ever become good at learning in the way teachers try to make them learn and it is unlikely that ***all the students get*** the quality of instruction. In the traditional classes of mainstreaming, students, who have not done well in schools, were humiliated, frightened and discouraged and there the purpose of educational evaluation is to rank the students from ***best to worst.*** This will not be helpful to realize the desired aims and objectives of education.

An elementary course in Social Science is capable of moulding in every child, sound foundations of good and enlightened democratic citizenship. That is why, the Secondary Education Commission (1952-53) and the Education Commission (1964-66) have stressed the influence of Social Science in the school curriculum. But the present system of Social Science teaching is ***incapable of*** bringing out the ***cognitive*** and ***affective outcomes*** of Social Science education. Thus, it is the duty of the teacher to select the suitable Instructional Strategies and to provide appropriate teaching-learning experiences in the classroom to attain the same. As a pre-requisite to provide appropriate instructional learning experiences in the classroom, the teacher

should ***keep in touch with*** those factors which affect the Academic performance of pupils.

In recent years there has been a marked increase of interest in the ***small group instruction,*** rather than large group. Smaller groups are advocated because they seem to allow for ***greater participation*** and ***involvement*** by the student and make teacher's job less complex. Class size also have its effect on the quality of classroom environment. In a smaller class, there are ***more opportunities*** to adopt learning programmes to suit the needs of every individual. Here students are more ***directly*** and ***personally*** involved in learning (Smith & Glass, 1990).

Research on Cooperative Learning methods conducted in Western countries, suggest that Cooperative Learning is one of the most effective method to ***enhance Academic performance of students*** (Felder, 1995; Robyn & Adrian, 1996; Sasidharan, 1997, Bindhu, 1999; Sullivan & King, 1999). Intense studies conducted by Elimore and Beverly (1995), Xin (1996) and Ginsburg-Block and Funtuzzo (1998) reported that there is a ***positive relationship*** exists between Cooperative Learning and pupils' Academic Achievement. Review of related literature revealed that Cooperative Learning also ***promotes*** self esteem, inter-ethnic relations, collaborative work, inter-group relations etc. (Slavin, 1985).

Although much of the research on Cooperative Learning methods have been done with older students, they are also effective with younger children ***in pre-school and primary classrooms*** (Lyman & Foyle, 1988). Where as, the investigator could spot some studies which show a negative relationship between Cooperative Learning Strategy and pupils' scholastic Achievement. (Feldhusen, 1992; Anderman, 1996). So an intensive survey of literature

related on Cooperative Learning and Academic Achievement gives inconclusive results. Most of the studies on Cooperative Learning were conducted in Western countries under highly artificial experiments in which teachers did not present lessons to the students and most of them were laboratory studies of a few hours' duration. In India, the research on Cooperative Learning is terribly lag behind. The intention behind the present study is the experimentation of the Cooperative Learning Strategy in the Indian context.

Instructional Strategies are not the only factor which affect the Academic performance of students and ***without motivation*** from the part of the learner, a person may not be successful in his Academic performance. Success of an individual depends upon several ***learner characteristics*** like cognitive abilities, personal traits including needs, interests and Achievement Motivation (Plucker, 1996; Leondari, *et al.*, 1998). Research on Achievement Motivation revealed considerable ***positive results*** (Cain & Dweck, 1995; Preetha, 1996; McInerney, 1998; Taylor,1999). But a few studies suggested negative relationship between Achievement Motivation and Academic Achievement (Niebuhr, 1995; Prasad, 1995).

The problem is that, relatively few studies on Cooperative Learning methods had been reported in Indian situation and essentially all of them were one-shot trials. The investigator could not find out adequate number of studies which examined the ***interaction of Instructional Strategies and Achievement Motivation on pupils' Academic Achievement.*** Lack of such studies in India is evident from the survey of related literature. This inspired the investigator to study the interaction of Instructional Strategies and

Achievement Motivation on Achievement in Social Science of standard VII pupils.

1.2. STATEMENT OF THE PROBLEM

The present study is entitled as INTERACTION OF INSTRUCTIONAL STRATEGIES AND ACHIEVEMENT MOTIVATION ON ACHIEVEMENT IN SOCIAL SCIENCE OF STANDARD VII PUPILS.

1.3. DEFINITION OF KEY TERMS

The definition of the key terms, used in the statement of the problem are given as follows.

1.3.1. INTERACTION

Interaction is an effect attributable to the combination of variables above and beyond which can be predicted from the variables considered singly (Winer, 1977).

1.3.2. INSTRUCTIONAL STRATEGIES

Instructional Strategies refers to a generalised plan for a lesson which includes structure, desired learning behaviour in terms of goals of instruction and an outline of planned tactics necessary to implement the strategy (Stones & Morris, 1977). In the present study it consists of ***Cooperative Learning Strategy*** and ***Conventional lecture Method of Teaching***.

Cooperative Learning refers to Instructional methods in which students work together on academic tasks in ***small groups*** (usually four to five members) to help themselves and their teammates learn together and are rewarded in some way for performance as a group.

For the present study, the particular Cooperative Learning Method selected is the ***Learning Together Model*** (Johnson & Johnson, 1975). This model involves students working in four or five member heterogeneous groups for the completion of learning tasks.

Conventional lecture Method of Teaching refers to the lecture method adopted by most of the teachers in the schools of Kerala state for years. In this method, teacher's presentation is the main activity.

1.3.3. ACHIEVEMENT MOTIVATION

Achievement motivation is defined as a combination of psychological forces which initiates, direct and sustain behaviour toward successful attainment of some goals which provides a sense of significance (Good, 1973).

1.3.4. ACHIEVEMENT IN SOCIAL SCIENCE

Achievement in Social Science is the level of performance of a pupil in Social Science as measured in terms of a standardised Achievement test.

1.3.5. STANDARD VII PUPILS

The term standard VII pupils is used in the study to denote pupils attending standard VII in any of the recognised schools of Kerala state.

1.4. VARIABLES OF THE STUDY

Since the study is designed in the form of an experiment, it includes the Independent, Dependent and Control Variables which are described in the following.

1.4.1. INDEPENDENT VARIABLES

Two Independent Variables were selected for the study. They include: **Instructional Strategies** (Cooperative Learning Strategy - Learning Together Model and Conventional lecture Method of Teaching) and **Achievement Motivation.**

1.4.2. DEPENDENT VARIABLES

The present study encompasses two sets of Dependent Variables because the study is designed to complete in two different phases. In phase I, the effect of Instructional Strategies on ***Achievement*** is examined. Whereas in the phase II, the effect of Instructional Strategies on ***Retention*** is investigated. Hence **Achievement and Retention in Social Science** (Objectivewise scores in Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation and a Total score) is considered as two sets of Dependent Variables.

1.4.3. CONTROL VARIABLES

As an experimental study the following variables are controlled.

1.4.3.1. Previous Knowledge of the Subject Matter Measured by a Pretest

1.4.3.2. Verbal Intelligence, and

1.4.3.3. Non- verbal Intelligence

1.5. OBJECTIVES

The following are the objectives of the present study.

1.5.1. To study whether there exists ***any difference in the mean Achievement score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

1.5.2. To study whether there exists ***any difference in the mean Gain score*** of the Experimental and Control groups for the Total sample, Boys and Girls.

1.5.3. To study whether there exists ***any difference in the mean Retention score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

1.5.4. To study the ***effectiveness of Cooperative Learning Strategy*** over Conventional lecture Method of Teaching, if any, in terms of Achievement in Social Science of standard VII pupils.

1.5.5. To study the ***effectiveness of Cooperative Learning Strategy*** over Conventional lecture Method of Teaching, if any, in terms of Retention in Social Science of standard VII pupils.

1.5.6. To study the ***main effects*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls).

1.5.7. To study the ***interaction effect*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls).

1.5.8. To study the ***main effects*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

1.5.9. To study the ***interaction effect*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

1.6. HYPOTHESES

The following hypotheses were tested for the present Experimental study.

1.6.1. There will be no significant difference in the ***mean Achievement score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

1.6.2. There will be no significant difference in the ***mean Gain score*** of the Experimental and Control groups for the Total sample, Boys and Girls.

1.6.3. There will be no significant difference in the ***mean Retention score*** (Objective wise and Total Score) of the Experimental and Control groups for the Total sample, Boys and Girls.

1.6.4. Pupils taught through ***Cooperative Learning Strategy*** will not differ significantly from pupils taught through ***Conventional lecture Method of Teaching*** in terms of ***Achievement in Social Science*** of standard VII pupils.

1.6.5. Pupils taught through ***Cooperative Learning Strategy*** will not differ significantly from pupils taught through ***Conventional lecture Method of Teaching*** in terms of ***Retention in Social Science*** of standard VII pupils.

1.6.6. There will be no significant main effects of the Independent Variables (***Instructional Strategies*** and ***Achievement Motivation***) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

1.6.7. There will be no significant interaction effect of the Independent Variables (***Instructional Strategies*** and ***Achievement Motivation***) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

1.6.8. There will be no significant main effects of the Independent Variables (***Instructional Strategies*** and ***Achievement Motivation***) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

1.6.9. There will be no significant interaction effect of the Independent Variables (***Instructional Strategies*** and ***Achievement Motivation***) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

1.7. PROCEDURE

The procedure followed for the experimental study is outlined in the following sections.

1.7.1. DESIGN OF THE STUDY

The present study was conducted by employing the True-Experimental Design. The research design used in the study was the ***Pretest - Post test Equivalent Groups Design***. The Experimental group was taught through the Cooperative Learning Strategy (CLS) and Control group, through the Conventional lecture Method of Teaching (CMT).

1.7.2. SAMPLE FOR THE STUDY

The sample for the study consisted of two intact class groups of 40 students each (Total 80 pupils) in the ***Experimental*** and ***Control*** groups. The Experimental and Control schools were selected at random by giving equal representation to efficiency level and Socio Economic Status of the pupils.

1.7.3. TOOLS USED FOR TREATMENT

The following tools were used for treatment in the Experimental and Control groups respectively.

1.7.3.1. Lesson Transcripts for Cooperative Learning Strategy (Kumar & Hameed, 2001)

The investigator prepared Lesson Transcripts for Cooperative Learning Strategy following the ***four phases*** designed by Johnson and Johnson (1975) for their ***Learning Together*** model of Cooperative Learning. The Transcripts were used for the treatment in the Experimental group. The investigator prepared Lesson Transcripts in four consecutive phases, on the basis of the Cooperative goal structure proposed by Johnson and Johnson (1975).

Phase I **Present the goal as a group goal**

Phase II **Facilitate and encourage the sharing of ideas and materials**

Phase III **Facilitate and encourage a division of labour wherever appropriate.**

Phase IV **Reward the group for successful completion of the task.**

1.7.3.2. Lesson Transcripts for Conventional lecture Method of Teaching (Kumar & Hameed, 2001)

The Lesson Transcripts for Conventional lecture Method of Teaching were prepared by the investigator, for the Control group, on the basis of the Instructional Objectives of cognitive domain. The teaching strategy used in the Control group was in the traditional lecture mode. The following steps (Herbartian steps) were used in the preparation of the Lesson Transcripts.

i) Introduction **ii)** Presentation **iii)** Association,
iv) Generalisation **v)** Application and **vi)** Recapitulation

1.7.4. OTHER TOOLS USED

Other tools used for the present study are the following:

1.7.4.1. Scale of Achievement Motivation - SAM (Pillai & Kumar, 1993)

The Scale of Achievement Motivation, developed by Pillai and Kumar (1993) was employed to measure the Achievement Motivation of the pupils. This multi-factorial scale was prepared in Malayalam language and consists of fifty items both positive and negative, belongs to seven components namely, ***Work Ethic, Pursuit of Excellence, Status Aspiration, Mastery, Competitiveness, Acquisitiveness*** and ***Dominance***.

1.7.4.2. Verbal Group Test of Intelligence - VGTI (Kumar, et al., 1997)

For the present experimental study, the Confounding Variable, Verbal Intelligence was measured using the ***Verbal Group Test of Intelligence*** (VGTI) developed and standardised by Kumar, *et al.* (1997). The test consists of five sub tests, namely **Test I** - Verbal Analogy; **Test II** - Verbal Classification; **Test III** - Numerical Reasoning; **Test IV** - Verbal Reasoning; and **Test V** - Comprehension.

1.7.4.3. Standard Progressive Matrices Test - SPMT (Raven, 1958)

In the present experimental study, the Confounding Variable, Non-verbal Intelligence was measured using the Standard Progressive Matrices Test, developed by Raven (1958). The test consists of five subtests of twelve items each.

1.7.4.4. Achievement Test in Social Science - ATSS (Kumar & Hameed, 2001)

The Achievement Test in Social Science (ATSS), developed and standardized by Kumar and Hameed (2001), was used as a ***Pretest*** and ***Post test*** on the topics selected for treatment and as a ***Retention test*** conducted one month after the treatment.

1.7.4.5. General Data Sheet for Assessing Socio-Economic Status (SES)

To assess the Socio-Economic Status of the pupils of Experimental and Control groups, this General Data Sheet was used. To collect the informations regarding ***Income, Education*** and ***Occupation*** of parents, nine columns each for father and mother, are included in the General Data Sheet.

1.7.4.6. Classroom Interaction Rating Scale- CIRC (Kumar & Hameed, 2001)

A Classroom Interaction Rating Scale was developed and used to investigate the nature of classroom interaction under the Cooperative situation and the Conventional situation, using teachers as raters.

1.7.5. STATISTICAL TECHNIQUES USED FOR ANALYSIS

The following statistical techniques were used in the study for the analysis of the data.

1.7.5.1. Mean Difference Analysis

Test of significance of Difference Between Means was used to compare the relevant variables between the Experimental and Control groups. This statistical technique was mainly employed to examine whether the Experimental and Control groups differ in Achievement, Gain and Retention scores without controlling the effect of the Covariates. Mean Difference Analysis was also employed to equate the Experimental and Control groups with respect to Previous Knowledge, Verbal Intelligence, Non-verbal Intelligence and Socio-Economic Status of the pupils. This technique was again resorted to compare the nature of interaction in the Cooperative and Conventional classrooms.

1.7.5.2. Analysis of Covariance (ANCOVA)

In the study Two-way Analysis of Covariance (ANCOVA) was employed to remove statistically the effect of three Confounding Variables or Covariates namely Previous Knowledge of the Subject Matter, Verbal Intelligence and Non-verbal Intelligence singly and in combination of three at a time. This statistical technique was employed to confirm the effectiveness of

Cooperative Learning Strategy (Learning Together Model) over the Conventional lecture Method of Teaching.

1.7.5.3. Two-way Analysis of Variance (ANOVA) with 2x2 Factorial Design

Two-way ANOVA was employed to examine the main and interaction effects of Independent Variables (Instructional Strategies and Achievement Motivation) on Dependent Variables (Achievement and Retention in Social Science - Objectivewise and Total score). In the study, 2x2 factorial ANOVA consists of two levels of Instructional Strategies (Cooperative Learning Strategy - CLS and Conventional lecture Method of Teaching - CMT) and two levels of Achievement Motivation (Above Average Achievement Motivation - AAAM and Below Average Achievement Motivation - BAAM).

1.7.5.4. Scheffe' Test of Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison was used to compare the adjusted criterion means of the Experimental and Control groups to determine the advantageous groups (Scheffé, 1959) in Covariance Analysis. In ANOVA, Scheffe' Test was also used to study the group difference.

1.8. SCOPE AND LIMITATIONS OF THE STUDY

The present experimental study was designed to find out the relative effectiveness of Cooperative Learning Strategy of teaching some select topics in Social Science of standard VII pupils over Conventional lecture Method of Teaching. The study also examined the main and interaction effects of Cooperative Learning Strategy and Achievement Motivation on Achievement and Retention in Social Science (Objectivewise and Total score) of standard VII pupils. The study made use of Pretest-Post test Equivalent Groups

Design. Appropriate tools were used for collecting the data from the Experimental and Control groups.

The investigator is confident that the results obtained from the study will be helpful to teachers, educationists and the entire school as a system, to modify the Instructional Strategies in the regular classrooms. It is expected that the study will make it easy to reach at valid generalisations and assumptions.

The investigator believe that, even though precautions were taken to make the study objective, certain limitations are crept into the study. The limitations of the study are as follows.

1.8.1. The study was limited to Social Science only, since the investigator is being a student of History.

1.8.2. The study was confined to a small sample of two intact class divisions of standard VII, as the representative sample of the standard VII pupils of Kerala State.

1.8.3. The study was limited to two Independent Variables only, namely Instructional Strategies and Achievement Motivation.

1.8.4. Among the different Cooperative Learning Methods, the study was made use of the Learning Together model only.

1.8.5. In the study, the relative effectiveness of Cooperative Learning Strategy on Achievement and Retention in Social Science only was considered rather than the effectiveness of Cooperative Learning on such diverse outcomes like the quality of learning environment, interpersonal attraction, mainstreaming, level of reasoning etc.

1.8.6. The duration of the Experimental and Control treatments was limited to 15 hours only.

1.8.7. Among the affective variables, the present study made use of Achievement Motivation only.

1.8.8. Although several sophisticated experimental designs are available like the Posttest-only Equivalent Groups Design, The Solomon Four-Group Design, Rotation group, Nested group etc., the investigator made use of the Pretest-Posttest Equivalent Groups Design only.

1.8.9. The statistical technique, ANCOVA was employed only for the data from Total sample. Data from the sub samples such as Boys and Girls were not considered in ANCOVA procedure.

1.8.10. The whole ANCOVA procedure was done by controlling the effects of three Covariates separately and in combination of the three at a time. The combined effect of two Covariates in turn were not considered in the ANCOVA procedure.

1.9. ORGANISATION OF THE REPORT

The present research report is organised in the following order. Each chapter is explained in relevant sub units.

Chapter I INTRODUCTION

Need and Significance
Statement of the Problem
Definition of Key Terms
Variables of the Study
Objectives
Hypothesis
Procedure
Scope and Limitations of the Study
Organisation of the Report

Chapter V SUMMARY FINDINGS AND SUGGSTIONS

Study in a Nutshell
Major Findings of the Study
Tenability of Hypotheses
Educational Implications Derived
Suggestions for Further Research

REVIEW OF RELATED LITERATURE AND META ANALYSIS

Hameed A."Interaction of instructional strategies and achievement motivation on achievement in social science of standard VII pupils" Thesis. Department of Education, University of Calicut, 2002

Chapter TWO

REVIEW OF RELATED LITERATURE AND META ANALYSIS

REVIEW OF RELATED LITERATURE AND META ANALYSIS 2

The present experiment is an investigation of the ***Interaction of Instructional Strategies and Achievement Motivation on Achievement in Social Science of Standard VII Pupils*** and to ascertain the effectiveness of Instructional Strategies on Achievement and Retention of the sample. To get an overview with regard to the present status of Instructional Strategies and Achievement Motivation on Achievement and Retention, the investigator tried his level best to review almost all the available literature in this area up to the year 2002. The reviewed literature has been classified and presented under the following headings.

2.1. THEORETICAL FRAMEWORK OF THE VARIABLES

2.1.1. INSTRUCTIONAL STRATEGIES

2.1.2. ACHIEVEMENT MOTIVATION

2.2. REVIEW OF RELATED STUDIES

2.2.1. STUDIES ON COOPERATIVE LEARNING STRATEGY AND ACHIEVEMENT

2.2.2. STUDIES ON COOPERATIVE LEARNING STRATEGY AND RETENTION

2.2.3. STUDIES ON ACHIEVEMENT MOTIVATION AND ACHIEVEMENT

2.3. META ANALYSIS

2.1. THEORETICAL FRAMEWORK OF THE VARIABLES

In this section, the most important ***theoretical view points*** regarding the Independent Variables namely Instructional Strategies and Achievement Motivation, in detail, are dealt by the investigator.

2.1.1. INSTRUCTIONAL STRATEGIES

For an effective presentation of the theoretical view points regarding the term ***Instructional Strategies,*** the investigator felt it necessary to differentiate it with certain related terms such as ***Teaching*** and ***Instruction; Methods, Models and Strategies of Teaching.*** In the particular context of education, educators, researchers and teachers are using these terms with interchangeable meaning. But a keen analysis of the meanings of these terms reveal a narrow line of demarcation in the context of it's application. In the following subsections, an attempt is made by the investigator to differentiate these terms.

2.1.1.1. Teaching

Learning is a continuous never ending process that extends from ***cradle*** to ***grave.*** For every human being, learning seems as natural and familiar as breathing or eating. It is an active reorganisation of an existing pattern of meaning. It makes a change on behaviour and most of what he/she do or do not do is influenced by what he/she learn and how he/she learn it. Therefore, it can be said that, the structure of human personality and behaviour is shaped in the mould of learning. As it is, for some times, learning becomes problematic for the individual. In such situations the

individual should be aided to over come these problems. These help can be termed as ***Teaching.***

In the context of education, teaching is a ***social event*** in which human beings come to share meaning of experience. In the traditional context of education, teacher is an ***authority*** and education, a process by which the mind of the teacher descends into the mind of the learner. But new knowledge given by the teacher alone will not change the meaning of experience or behaviour. For this, some work should be done to link the new body of knowledge with the existing experience. Hence, knowledge given out in the form of bodies of knowledge is not the highly selected knowledge needed for teaching (Koushik & Sharma, 1997).

Teaching is a system of actions which induce learning. Teaching is ***an arrangement and manipulation of situation in which there are gaps or obstructions which an individual will seek to overcome and from which he will learn in the course of doing so,*** as defined by John Brubacher.

The etymological root of the term teaching is ***Taikjon,*** a Latin word which means ***to show how***? This is what the teacher does in the classroom. He/She has to show the students what the curricular materials are and how they are organised, how facts becomes concepts, laws and principles, how these are associated and disassociated. The teacher has to resort many materials, tactics and methods to fulfil this purpose. As a whole, this activity is the Teaching which ultimately aimed to create some kind of ***Change in behaviour*** of the target group - the students. This activity can be initiated and developed towards the end products in a ***formal*** or ***informal*** set up. If it is in a formal setup, it is termed as ***Classroom Teaching***. In such a setup, all the

formal infrastructures like the classroom, the teacher, the taught, curriculum, syllabus, blackboard , timetable, administrators etc., is there.

During the process of teaching, either in a formal or informal set up, the end results are viewed as the modification of behaviour of the target group (possibly students) in the positive ***appreciable direction***. As a result of teaching the target group may or may not learn; may or may not think; may do or may not do certain activities. However, knowledge (curricular materials in case of class room) is transmitted through the teacher to the target group (students in case of classrooms), whatever it may be the quality and quantity of this end result. This explanation of Teaching is more explicit and all inclusive. It permits the necessary explanation as those who transact knowledge to a target group (to a single person also) becomes a teacher and his/her activity to ***transact*** the knowledge is teaching. If this activity is looked through a pedagogic sense, the meaning will be true. The meaning and activity of the term teaching thus elevated to a noble position, as in an educational context the whole classroom process are generally delimited to a single term teaching.

The teacher, whether in the formal or informal set up, has the ***unlimited freedom*** to change his/her tactics to make the behaviour of the target group to change (Kumar & Bindhu, 2002). He can adopt any particular, mixture or an amalgam of tactics. The ways and means are not bound up with some hard and fast rules. According to the time and ***need of the situation*** the teacher can alter his/her methods. The importance is given to the end results.

2.1.1.2. Instruction

Instruction is often used synonymously with Teaching. But like Teaching, Instruction is ***not having*** a wider, all inclusive meaning. It reflects

its meaning in a ***limited way*** characterised by very specific behavioural patterns of the instructor.

All the activities of Teaching are included in Instruction and it is carried out on a ***very formal*** set up. In that sense Instruction has its own formal infrastructure. In the present context of discussion, it is performed in a classroom. The Instructor - the person who instruct the target group ***directs*** what to do or what not to do. This element of ***direction*** or ***command*** predominates in the act of Instruction, delineate it from Teaching. Instruction includes Teaching. The instructor organises the curricular materials and show the target group (students) how the materials are associated and how facts become concepts, laws and principles. But this ***'show how'*** is carried out by an Instructor through a very sequential and pre-determined behavioural expressions, predominated by the tint of command and direction. Thus the instructor is able to elevate the target group to the position of predetermined behavioural acquisition in a very strict sense. All teaching is not instruction; but instruction includes teaching.

In Instruction, the sequential and systematic activities adopted by the instructor is characterised by their ***definiteness*** and ***patterns***. A definite ***plan of action,*** other than in teaching, is used by the instructor to instruct the target group. Thus the instructor has limited freedom to switch over to a new technique. The end result aimed by both instruction and teaching are ***the same***. But a slight difference is noticed in the ***ways*** and ***means***. They are more ***structured*** and ***definite*** in Instruction than teaching. In Instruction, both the end result and the ways and means are equally important. This dual importance makes the act of Instruction more structured and definite (Kumar & Bindhu, 2002).

Like the terms Teaching and Instruction; educators, educational planners, policy makers and educational administrators synonymously use ***Teaching methods*** and ***Teaching Strategies***. But recently the term ***Strategy*** is also used to denote the very same ways and means for student attainment in the classroom. So, a very clear demarcation is inevitable to understand the concept of Teaching Methods and Teaching Strategies.

2.1.1.3. Teaching Methods

In the teaching - learning process, teacher's knowledge about teaching is very important and it is as important as teacher's knowledge in the subject matter. A rational ordering and balancing between the teaching materials and classroom activities in the light of the purpose of learning would help the teacher to make the presentation of material effective. Such rational ordering can be called a ***method***.

A method cannot exists as a discrete entity, rather, it is a direct function of some factors such as educational purpose, subject matter, the nature of the pupils, school policy, home background, past educational experience, teacher's beliefs about learning etc. Considering all these factors, a teacher can pre-plan his/her work in the classroom. ***Teaching Method*** is a standard procedure in the presentation of Instructional material and the content of activities as defined by Good (1973).

The concept of ***Instructional Method*** has a history of thousands of years (especially in India and Greece). Several kinds of teaching methods were developed so far. Some of the prominent among them are Lecture method, Lecture-demonstration method, Question - answer method, Play way method, Project method, Discussion method etc. The purpose of adopting

each and every method is very clear to educators and educational researchers. It is aimed at nothing but to create certain desirable change of behaviour in the pupils through transaction of curricular materials. This transaction is made in the classroom between the teacher and the taught through a series of ***planned activities*** performed by the teacher in the classroom. Those planned activities performed by the teacher serve him in the form of ***tactics*** to communicate the curriculum is the ***method of teaching***. Method of teaching creates only a kind of direct effect on the target group. A direct effect is the effect of transacting the curricular materials (Teaching). It is the direct ***out come*** of teaching, pedagogically called, by teachers, as the learning achievement. This learning achievement is more broadly explained by Psychologists as the ***change of behaviour***. In teaching methods, the main aspect is ***the way*** of transacting the content.

All methods of teaching are flexible. At any point in the development of a curricular material, the teacher has the freedom to switch over to any other methods according to the need of the context of teaching (Kumar & Bindhu, 2002). Teaching methods are built upon sound theoretical foundations. In recent years, research on teaching has shown more effective variations from the age old teaching methods as revealed in the case of Models of Teaching and Strategies of Teaching.

2.1.1.4. Models of Teaching

Learning is purely individualistic. No teacher can teach his/her students. But, the students can learn. Teacher's role in the classroom is minimised to ***direct*** and ***stimulate*** student learning and show the student how the materials are organised. What the student learn mainly depends on what they ***themselves do***. In student learning, individualised ***tactics,***

techniques and ***strategies*** of learning are performed. A model of teaching imparts those tactics, techniques and strategies to the students unlike the Method of Teaching. A model help the students to learn ***how to learn*** and thereby paving the way for ***developing*** themselves. A model of teaching is a plan or pattern of teaching that teachers use to design ***face to face*** teaching in the class or tutorial settings and to ***shape*** instructional materials like books, films, tapes, programmes and the like (Joyce & Weil, 1992). To them teaching models are just instructional designs. They describe the process of specifying and producing particular environmental situations which cause the students to interact in such a way that specific changes occurs in his behaviour. The chief postulate of a teaching model is that learning outcomes can be classified into distinctive categories and each objective can be achieved by generating specific situations. A single model of teaching normally includes a ***number of teaching strategies*** based upon different theoretical aspects of the psychology of learning. In a model only a suggested pattern is to be tried out. A model tells the teacher ***how to teach*** a curricular material using different strategies of instruction. The teacher will also get a ***feedback*** of how students learn in accordance with the strategies employed by the teacher. The end result of a model of teaching is ***not only*** to create the ***direct effect*** in the form of student achievement but also produce some kind of ***nurturant effects*** – indirect effects upon the students mainly taken place in the affective domain (Kumar & Bindhu, 2002).

A number of ***characteristics*** are seen to associate with a teaching model. These include the ***basic assumptions*** upon which the model is built up such as creation of a learning environment, strong interaction between the teacher and the students and the planned use of appropriate strategies. It presents

appropriate ***experiences*** to the teacher and the taught. A model gives answers to fundamental questions like how does the teacher behave? how the strategy is organised? what is the nature of the teacher pupil interaction? what are the support materials? etc. A model of teaching is designed on the basis of individual difference in the process of learning. Generally a model of teaching encompasses the following fundamental characteristics.

Syntax: It is the sequentially arranged teacher - student activities completed in different phases.

Social System: It tells us the nature of teacher-pupil relationship.

Principles of reaction: This criterion is the behaviour of the teacher towards the students.

Support system: These consists of the materials and resources (human or non-human) used by the teacher to develop a model of teaching.

Models of teaching aim at the complete development of learners' individuality. For this purpose, different types of models have been developed so far. Joyce and Weil (1992) have categorised these models into four families such as the ***Social Family, the Information Processing Family, The Personal Family*** and the ***Behavioural System Family.***

2.1.1.5. Strategies of Teaching

Strategy is relatively a new concept in the terminology of education. This term is actually used in the ***warfront*** with an intention to take control over the target group, the enemies. In it, each and every action is pre-determined, practiced and implemented effectively. Each and every step is ***strategic*** to win over the enemies and very crucial in the forward movement

of the troops. Educationists and researchers, skillfully borrowed the term from the war personnels, due to the peculiar characteristics of the term, and used in the classroom transactions. Hence a fundamental change occurred with regard to Teaching Methods.

To create desirable changes in the behaviour of the students in the classroom, the entire activities of the educator are to be strategically designed with utmost ***precision*** and ***effectiveness***. In this regard, Methods of Teaching is merely a general plan of action of the teacher. Whereas, the strategies of teaching are more ***clear cut, specific, pre-planned*** activities which have very definite point of starting, progress and ending (Kumar & Bindhu, 2002).

Each teaching strategy is developed on a strong ***theoretical footing*** and it is on the basis of this theoretical background developed out of endless experiments, the teachers' activities in the classroom are designed. A teacher can make use of one or more than one strategy at a time to produce desired, pre determined outcomes. In meaning as well as in practice, Instructional Strategies hold an additional dimension rather than Strategy of Teaching. It includes Instructional Strategies followed by the teacher as well as learning strategies adopted by the students.

Stones and Morris (1977) defined Instructional Strategies as a ***generalised plan for a lesson which includes structure, desired learning behaviour in terms of goals of instruction and an outline of planned tactics necessary to implement the strategy.*** Lesson strategy is a part of a large developmental scheme in the curriculum.

Implementing Instructional strategies in the classroom make the teachers to view and understand the classroom process from two dimensions;

from their own point of view of ***how to teach;*** and from the angle of vision of students to learn ***how to learn.*** That is, the students are instructed to learn how to learn. For this purpose, preplanned situations are created in the classroom intentionally through which the learners are led to pre-planned goals.

Instructional strategies can be generally divided into two streams viz., Autocratic Strategies and Democratic Strategies.

a) Autocratic Strategies

Autocratic strategies are the traditional ***content oriented*** and ***teacher centered*** instructional strategies. In such a set up teacher is the soul authority in the class and he/she is bestowed with the freedom to take decisions against any issue and to implement it. At the same time students are treated as ***empty pails*** to be filled in with knowledge and discipline. In autocratic strategies , knowledge is imposed by the teacher forcefully from a '***higher***' plane to the '***lower***'. In the very outset, this strategy itself ***suppresses*** the learner's interests, attitudes, temperaments and needs. The strategies mainly aimed at the ***cognitive and psychomotor*** development of the learners without giving due consideration on the development of affective characteristics. ***Lecture, Demonstration, Tutorials, Programmed Instruction*** and the like are some of the autocratic strategies. The Conventional lecture Method of Teaching was opted as one of the Instructional Strategies for the present experiment.

b. Democratic Strategies

As the name indicates, the strategies come under this category is having democratic characteristics. This type of Instructional Strategies are not teacher

dominated. In Democratic strategies teacher is an ***equal among equals*** – the students and education is ***learner centered.*** These strategies are designed exclusively for the ***cognitive, affective*** and ***psychomotor development*** of the learner. The role of the teacher and the learner is more specified and highlighted in most of the democratic strategies. Development of the constructive ***social capacity*** is the added quality of these types of strategies. They include ***Discussion, Discovery, Heurism, Project, Group tutorials, Brain storming, Role playing, Independent study, Sensitivity training, Cooperative procedures, Peer tutoring*** and the like.

Instructional strategies can be studied for ***Individual learning, Small group learning*** and large group or ***whole class learning,*** each make a different assumption about the nature of the learners. For individualised learning, strategies such as Programmed Instruction are advocated. For small group learning, Cooperative Learning Strategies are made use of, and for large group learning, Conventional teaching strategies such as Lecture method and Lecture – Demonstration method are used.

2.1.1.6. Cooperative Learning – A New Initiative

During the last two or three decades, ***great changes*** had been taken place in the educational arena with ***leaps*** and ***bounds***. As a result, a shift from the large group learning and individual learning to small group learning had taken place. Learning, using small groups, was promoted with a view to make use of the strong ***human instinct,*** to cooperate with others in the learning process. In recent years many small group Instructional strategies were developed using this cooperative spirit. They were generally termed as

Cooperative Learning Strategies.

2.1.1.7. The What of Cooperative Learning

Diversified views were put forth by each and every educational theorists who studied the concept and practice of Cooperative Learning Strategy from wider perspectives. Cooperative Learning is working together to accomplish shared goals (Johnson & Johnson, 1989). It is an ***Instructional Strategy*** which increases the Academic Achievement of an individual (Johnson & Johnson, 1975; Slavin, 1983). The Cooperative (or collaborative) Learning is used to refer to a ***broad range*** of teaching strategies that share the provision of opportunities for students to ***work together*** in small face to face groups. (Slavin, 1995). Within this definition, there is an enormous ***diversity*** of Cooperative approaches. It can also be characterised as a strategy for the class room, widely used to increase ***motivation*** and ***retention,*** to help students develop collective image of self and others, provide a vehicle for critical thinking and problem solving and to encourage ***collaborative social skills*** (Calderon, 1987).

Cooperative Learning is an instructional method of promoting ***learning*** and ***Social relations*** among classmates. It is a successful teaching (Instructional) strategy in which small teams, each with students of ***different levels of ability,*** use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught, but also for ***helping teammates*** learn, thus creates an atmosphere of achievement (Luebbe, 1992).

Cooperative Learning is a generic term for various ***small group*** interactive instructional procedures. The term ***Cooperative Learning*** refers to

instructional methods in which students work together on Academic tasks in ***small groups*** (usually four to five members) to help themselves and their teammates learn together and are ***rewarded*** in some way for performance in a group (Slavin, 1985;Millis, 1996). The groups are usually rewarded according to how much ***all group members learned.*** The idea behind Cooperative Learning Method is that when groups, rather than individuals, are rewarded, students will be ***motivated to*** help one another to master academic materials.

Cooperative efforts result in participants striving for ***mutual benefits,*** so that all group members gain from each other's efforts; recognizing that all group members share a common fate, knowing that one's performance is ***mutually caused*** by oneself and one's colleagues, and feeling proud and jointly celebrating when a group member is recognized for Achievement. In Cooperative Learning situation there is ***positive interdependence*** among students' goals attainments, students perceive that they can reach their learning goals if and only if the other students in the learning group also reach their goals (Deutch, 1962; Johnson & Johnson, 1989). Cooperative methods are most often compared with competitive procedures in which students compete for awards or work individually to better their previous performance.

2.1.1.8. Cooperative Learning : A Historical Perspective

The use of Cooperative Learning so pervades education that it is difficult to find out text books, instructional methods, teachers, journals or instructional materials that do not mention and utilize it. The rationale behind the origin of this new method of learning may be attributed to the profound dissatisfaction with the traditional ***grading system*** in Conventional Method of Teaching in which the ***teacher dominated*** the classroom. The theory on which Cooperative Learning Methods are based is quite old and

well established in Social Psychology. The kernel of the Cooperative Learning theory is that, while individuals work together toward a ***Common goal,*** they are ***dependent on one another's efforts*** to achieve that goal. This interdependence motivates the individuals to encourage one another to do whatever helps the group to succeed; help one another to do whatever helps the group to succeed; and like one another.

The concept that Cooperation among peers can be important to learning has a long tradition in European formal education. In the seventeenth century ***Comenius*** described a system of Cooperative Learning noting that,

> ***Very true is the phase, he who teaches others, educates himself, not only because he consolidates the knowledge by repetition, but because he finds opportunities to advance deeper into the things*** (Huber, 1992).

Principles of Cooperation have been applied in education for a long time, but ***occasionally*** and ***informally.*** Later educational theorists also emphasised Cooperation among students. Cooperative Learning was central to the teachings of ***Rousseau*** in the eighteenth century, ***Pestalozzi*** in the nineteenth century and ***Dewey*** in the early twentieth century. The developmental theories of both ***Piaget*** and ***Vygotsky*** have been influential in supporting the use of Cooperative Learning Strategies today (Slavin, 1995).

A major change in the use of Cooperative Learning took place in U.S. in the early 1970's. This was the development and evaluation of specific relatively structured methods of Cooperative Learning. Before this, Thorndike (1938) and Stendler, *et al.,* (1951) had studied the effectiveness of Cooperative groups. Although Cooperative Learning has many ancestors and

can be traced back to at least 2000 years, it is only in this century that there has been development of a theoretical base, systematic research and systematic teaching procedures for Cooperative Learning (Optow & Deutsch, 1999). While Cooperative Learning had been studied for many years in the laboratory, the new form of Cooperative Learning was for the first time compared to traditionally taught control groups in terms of ***student Achievement,*** inter-group relations, self-esteem, higher level reasoning, retention, transfer of learning, ***Achievement Motivation,*** social and cognitive development, moral reasoning, perspective taking, inter personal attraction, social support, psychological health, social competencies, internalisation of values, the quality of the learning environment and other outcomes over significant time periods in real classrooms (Slavin 1995; Johnson & Johnson, 1995). There may not be any other Instructional Strategy that simultaneously achieves such ***divers outcomes.***

In recent years there have been marked increase of ***interest in the small group instruction*** rather than large group. Sociologists are studying it with renewed interest. (Hare, 1962). Smaller groups are advocated because they are seem to allow for ***greater participation*** and ***involvement*** by the student, make the teacher's job less complex and enabling less time to be spent on management of classroom and more on instruction.

The recent explosion of interest in Cooperative Learning has been accompanied by the publication of a number of volumes on Cooperative Learning research by Aronson and his colleagues (1978), Johnson and Johnson (1987), Sharan and Sharan (1989-1990) and Slavin (1995). Additional methods of this type were developed and disseminated by Cohen (1986, 1998) Andrini, (1994), Farnish, (1998) and others. While the method used in each of

these groups of activity varied considerably, each evaluated Cooperative Learning in rigorous field experiments.

2.1.1.9. Why Try Cooperative Learning Strategy?

Learning in the classrooms may be structured in different ways and using different Instructional Strategies. The teachers and school administrators are now in a ***dilemma*** of how to make the teaching-learning process more effective? How to group students for instruction? What type of Instructional Strategy should be used? Whether the role of the teacher should be authoritative or in a learning facilitating style? What type of relation should be there, whether Cooperative, or Competitive or some mixture of the two? and the like.

Learning can be structured ***competitively*** so that students work against each other; ***Individually,*** so that students work alone or ***Cooperatively,*** so that students work together to accomplish shared learning goals. But in most of the educational institutions of India, the Conventional Method of Teaching in which students are placed in groups called ***classes*** and the burden of communicating course materials resides primarily with the ***instructor.*** In the field of learning and instruction, now and then, the existing system is in that age of ***bullock cart.*** Under the typical ***large group based*** or ***whole class*** instructional situation, it is unlikely that all the students get the quality of instruction, because inappropriate and unwanted competition prevails in the classrooms.

In competition, those who do not reach the top are often ***frustrated*** to the point of withdrawing from the competition. In such classrooms, those who do succeed are not always winners, they may become anxious as to how their competitive status affects their peer relationship (Bany & Johnson, 1975).

It is a fact that, there is widespread dissatisfaction with the use of competition in classrooms, because there is a number of undesirable outcomes of competition. Johnson and Johnson (1975) compared the different goal structures and listed a number of ***disadvantages*** for competition. In traditional competitive classrooms:

i) ***The purpose of evaluation is to rank students from 'best' to 'worst'.***

ii) ***Individuals will try to obstruct each other's goals accomplishments, and they will dislike behaviour that facilitate another person's goal accomplishment.***

iii) ***Individuals dislike each other and make a hostile relationship with others.***

iv) ***Competition has been found to increase anxiety in students performing a skill.***

Much too often, curriculum in schools, is taught in a ***competitive manner*** rather than in Cooperative one. The competitive model of instruction often conveys that ***'quick'*** and right answers are valued. When the competitive group situation is employed it cannot create a ***non-threatening*** environment in which pupils can more readily take academic risks.

The investigator think that it is appropriate to quote the words of Holt (1964) in this context.

> ***"Only a few children in school ever become good at learning in the way teachers try to make them learn. Most of them got humiliated, frightened and discouraged. They use their minds, not to learn, but to get out of doing the things teachers tell them to do make them learn. In the long run, these strategies***

are self limiting and self defeating, and destroy both character and intelligence. This is the real failure that taken place in school; hardly any children escape.

It is in this juncture the relevance of Cooperative Learning Strategy becomes fruitful. In order to ***avoid the inherent problems of competition*** in the traditional classrooms, a variety of new Instructional Learning Strategies have been developed, tried out and disseminated in Western countries. Cooperative Learning Strategy is more important among them. The concept of Cooperative Learning is revolutionary because it ***upsets*** the traditional ways of thinking about instruction. In recent years, Cooperative Learning Strategy has been suggested as a solution to a wide array of problems faced by the teachers and school administrators. Cooperative Learning methods also have been offered as an ***alternative*** to ability grouping in the Conventional system of education and as a component of instructional programmes to improve relationships among students of different ***racial or ethnic backgrounds.***

2.1.1.10. Special Features

Cooperative Learning is an intellectual milestone in the entire history of Instructional Strategies. It is of with innumerable ***features*** and ***advantages.*** Cooperative Learning is one of the most widespread and fruitful areas of theory, research and practice in Education. In the past three decades, Cooperative Learning has become a widely used instructional procedure in ***pre-school*** through ***graduate school levels,*** in all subject areas, in all aspects of instruction and learning in non-traditional as well traditional learning situation, and even in after school and non-school educational programmes (Johnson, *et al.*, 2000).

Studies conducted on Cooperative Learning Strategy revealed a number of advantages and features ***unique*** to Cooperative Learning Strategy. The features listed out by Johnson and Johnson (1975) are: **i)** Cooperative goal-structures are ***easier*** to set up, monitor and ***evaluate*** in terms of teaching time and effort, than Individualistic or Competitive goal structures. **ii)** Cooperative goal structures promote ***helping*** and ***sharing*** among students. **iii)** Cooperation promotes the type of ***learning climate*** and the ***cognitive*** and ***affective*** outcomes that make teaching more effective and more fun and **iv)** students with poorer academic histories are ***benefited*** so quickly.

The important advantages of Cooperative Learning Strategy discussed by Morrison and Ridely (1988) are as: **i)** Help children to work Cooperatively and enables them to ***learn from one another.*** **ii)** Remove the stigma of ***failure*** from the students. **iii)** Enables the teacher to circulate the materials more easily ***around the class.*** **iv)** Enables children to work at their ***own pace*** and ***respect others'*** strength and weaknesses. **v)** Encourages joint ***decision making*** and affords the children, the opportunity to exercise leadership. **vi)** Stimulates the development of ***autonomy, resourcefulness*** and ***self esteem.*** **vii)** Improves ***discussions*** and ***classroom talk.*** **vii)** Promotes ***higher order thinking*** and **ix)** promotes ***mental integration*** of children from all ethnic backgrounds.

To Millis (1996) Cooperative Learning Strategy enhances student learning by: **i)** Providing students to ***learn*** the material. **ii)** Ensuring that students construct ***their own knowledge.*** **iii)** ***Motivating*** students to learn the materials. **iv)** Providing formative ***feedback.*** **v)** Developing ***group*** and ***social skills necessary*** for success outside the classroom and **vi)** Promoting

positive interaction between members of different cultural and socio-economic groups.

Cooperative Learning is relatively easy to implement and is inexpensive. Children's improved behaviour and attendance and increased liking of schools are some of the other benefits of Cooperative Learning (Slavin, 1987; Luebbe, 1992). In addition to the positive outcomes just noted, Cooperative Learning in early child hood can promote ***positive feelings*** toward school, teachers and peers (Lyman & Foyle, 1988). Cooperative Learning is the most widely used Instructional Strategy, and it is due to multiple factors. It is clearly based on a variety of theories, extensively validated by research and operationalised into clear procedures educators can use (Johnson, *et al.*, 2000).

2.1.1.11.Purposes and Assumptions

The following conditions under which Cooperative goal structure is effective and desirable (Johnson & Johnson, 1975). Whenever, **i)** Problem solving is desired, **ii)** divergent thinking or creativity is desired, **iii)** quality of performance is expected, **iv)** the task is complex, **v)** the learning goals are highly important, **vi)** the social development of students is one of the major instructional goals, **vii)** a teacher wishes to promote positive interaction among students and between himself and the students.

Joyce, *et al.* (1992) lists the assumptions for the Cooperative Learning Strategy as: **i)** The synergy developed in Cooperative settings generates more ***motivation*** than Competitive and Individualistic environment. **ii)** Members of the Cooperative groups learn from ***one another***. **iii)** Interacting with one another produces cognitive complexities, treating more intellectual activity

that ***increases learning***. **iv)** Cooperative Learning increases ***positive feelings*** towards one another and reducing alienation and loneliness. **v)** Cooperation increases self esteem not only through increased learning but through the feeling of ***being respected by others.*** **vi)** The more children are given the opportunity to work together, the better they get at with benefit to their general ***social skills.***

2.1.1.12. Elements of Cooperative Learning Strategy

Effective Cooperation requires the five basic elements be carefully structured into the learning situation (Johnson & Johnson, 1989; Johnson, *et al.*, 1993). The ***first*** and most important element of structuring Cooperative Learning is ***positive interdependence.*** Positive interdependence is successfully structured when group members perceive that they are linked with each other in a way that one cannot succeed unless every one succeeds. Group goals and tasks, therefore, must be designed and communicated to students in ways that make them believe they sink or swim together. The ***second*** basic element of Cooperative Learning is ***promotive interaction*** preferably face to face. Students need to do real work together in which they promote each other's success by sharing resources and helping, supporting, encouraging and applauding each others' efforts to achieve. The ***third*** basic element is ***individual and group accountability.*** Two levels of accountability must be structured into Cooperative classes. The group must be accountable for achieving its goals and each member must be accountable for contributing his or her share of the work. ***Fourthly,*** there must be training students the required ***interpersonal and small-group skills*** like leadership, decision making, trust building, communication and conflict management skills to empower students to manage both teamwork and task work successfully. The

fifth basic element of Cooperative Learning is that group must engage in ***group processing,*** which exists when group members discuss how well they are achieving their goals and maintaining effective working relationships.

2.1.1.13. Cooperative Learning Methods : A Meta Analysis

Research on Cooperative Learning is one of the greatest success stories in the history of educational research (Slavin, 1992). Cooperative Learning Methods may be quite ***informal,*** as when students are simply allowed to do their individual work together or they might be structured, with specific ways of forming teams, team structures and team assessment. There are different Cooperative Learning methods which used different learning strategies. But the only feature in common to all of the Cooperative Learning methods is the division of the class into ***Learning groups*** of four to five members, who are of all levels of ability. This includes a mix of boys and girls and students of different racial and ethnic backgrounds.

I. Learning Together (LT)

The Learning Together model of Cooperative Learning was developed by David Johnson and Roger Johnson (1975) at the University of Minnesota. This is the most widely used and evaluated of all Cooperative Learning methods. The Cooperative methods they have researched involves students working in four or five member heterogeneous groups on assignment sheets. The groups hand in single sheet, and receive praise as a group based on how well they do the group task.

In one study of Learning Together, students received grades based on their groups average on Individual achievement tests. It should be noted that the methods described by Johnson and Johnson (1975) include the appropriate

use of competitive and individualistic methods, as well as many alternative means of using Cooperation. However, the programme referred to here as ***Learning Together*** is the Cooperative Method, described above, that was used in the research.

The main feature of the Learning Together model is that the groups works for a ***common goal*** and receive praise as a group based on how well they are working together. Another important feature of the Learning Together model is that more than the Instructional effect it creates indirect or nurturant effect, namely ***cooperation***.

II. Group Investigation (GI)

Group Investigation developed by Shlomo Sharan and Yael Sharan (1976) at the University of Tel Aviv, is a general class room organisation plan in which students work in small groups using Cooperative inquiry, group discussion and Cooperative planning and project. In this method, students form their own ***two-to-six member groups***. The groups choose sub topics from a unit being studied by the entire class, further break their sub topics into individual tasks. The group then makes a ***presentation or display*** to communicate it's finding to the entire class.

III. Student Team Learning (STL)

The most extensively researched and widely used Cooperative Learning techniques are the Student Team Learning Methods developed by Robert Slavin, David De Vries and Keith Edwards at Johns Hopkins University (Slavin, 1980). Important Student Team Learning methods, now in widespread use are ***Jigsaw I, Student Teams-Achievement Divisions (STAD),***

Teams-Games-Tournaments (TGT), Team-Assisted Individualisation (TAI) and Jigsaw II. The methods are described as follows:

a) Jigsaw I

The Jigsaw method (Aronson, 1978) is a Cooperative Learning Technique in which students work in six member teams to study texts, usually Social Studies or science. Academic material is broken down into five sections. Each team member reads his or her unique section. Then, members of the different teams, who have studied the same sections meet in ***expert groups*** to discuss their section. Then the students return to their teams and take turns teaching their team mates about their sections. Jigsaw does not actually use a Cooperative incentive structure. Following the teams' reports students take individual quizzes covering all of the topics and they receive individual grades on their quizzes.

b) Student Teams - Achievement Divisions (STAD)

In Student Teams - Achievement Divisions or STAD (Slavin, 1980), each week the teacher introduces new materials, in a lecture or discussion. The team members then study work sheets on the materials. They take turn quizzing each other, or discuss problems as a group or use whatever means they wish to master the material. The students are given work sheet answer sheets, so their task to learn is clear to them. Team members are told that they are not finished studying until they and their team-mates are sure that they understand the material. Following team practice students take quizzes on the materials they have been studying. Team mates may not help one another on the quizzes. The scores on the quizzes are formed into team scores by the teacher.

The amount each student contributes to his or her team is determined by the amount the students' quiz score exceeds the students' own past quiz average. A base score is set five points below each students' average and students earn points, up to a maximum of Ten, for each point by which they exceed their base scores. This Improvement Point System in STAD has been shown to increase students' ***Academic performance***. The team with the highest scores are recognised in a weekly one page class news letter.

c) Teams - Games - Tournaments (TGT)

Teams - Games - Tournaments or TGT (DeVries, *et al.*, 1980) uses the same teams, instructional format and worksheets as STAD. However, in TGT, students play academic games to show their individual mastery of the ***subject matter***. The games are played in weekly tournaments, with members of other teams. The competition take place at tournament tables of three students. The tournament table assignments are changed every week. After the tournament team's scores are figured and a news letter recognizes the highest scoring teams and tournament table winners.

d) Team - Assisted Individualisation (TAI)

Team-Assisted Individualisation (TAI) is the most recent development of Student Team Learning Methods (Slavin, *et al.*, 1984). It is a combination of team learning and individualized instruction applied to the teaching of Mathematics. In TAI also, students are assigned to four or five-member heterogeneous teams. Students follow a regular sequence of activities, involving reading and instruction sheets. Team mates works in pairs, exchanging answer sheets and checking each other's skill sheets and checkouts. Students' test scores and the number of tests they can complete in

a week go into a team score and team members receive certificates for exceeding pre-set team standards. Team Assisted Individualisation is unique among all Cooperative Learning Methods in its use of individualized instead of class-paced instruction (Slavin, 1985).

e) Jigsaw II

A modification of Jigsaw I was developed by Slavin (1988) at Johns Hopkins University and thus incorporated in the Student Team Learning Program. In this method called, Jigsaw II, students work in four-or-five member teams. Instead of each student having a unique section, all students read a common narrative, such as a book chapter, or a short story. However, each student is given a topic on which to become an expert. The students who had the same topics meet in ***expert groups*** to discuss them and then return to their teams. The students take individual quizzes, which are formed into team scores and the highest scoring teams and individuals are recognized in a class news letter.

IV. Cooperative Integrated Reading and Composition (CIRC) and Bilingual Cooperative Integrated Reading and Composition (BRICK)

Cooperative Integrated Reading and Composition (CIRC) is developed by Madden, *et al.*, 1986. Cooperative Integrated Reading and Composition, used in grades two to eight, utilizes activities based on research on reading comprehension and writing strategies. Students work in four member heterogeneous learning teams in which the students work together to plan, draft, revise edit and publish composition in a variety of types. Bilingual Cooperative Integrated Reading and Composition (BRICK) developed by

Farnish (1998) adds to the CIRC structure several adaptations to make it appropriate to Bilingual settings.

V. Numbered Heads Together (NHT)

More recently, a Cooperative Learning Technique namely, ***Numbered Heads Together*** have been developed by Olsen and Kagan (1992). It is a way of reviewing information that has been previously presented through direct instruction or test. This model works well with unambiguous questions that allow students to easily come to consensus. Divide the students into groups of four and have them number off ***from one to four.*** There are four steps in Numbered Heads Together; **(i)** Each student in a group of four gets a number of 1,2,3 or 4. **(ii)** The teacher or a student ask a question based on the text, the class is reading. **(iii)** All members in the group put their heads together to come up with an answer or answers. **(iv)** The person with that number answers for the group.

VI. Think Pair Share (TPS)

Think Pair Share (TPS) is a recent mode of Cooperative Learning developed by Andrini (1994). In this model, students pair with a partner to share their responses to a question. Students are then invited to share their responses with the whole class. There are a variety of ways to share, including stand up and share - every one stands up and as each student responds he or she sits down. Any one with a similar response also sits down. It will continue until everyone is seated or do a 'quick whip' through the class in which students respond quickly one right after another.

VII. Complex Instruction (CI)

The Cooperative Learning method of Complex Instruction was developed by Cohen (1998). The programme is a set of Cooperative Learning approaches focused on Spanish bilingual students. It provides students with a series of activity cards on English and Spanish, which direct them to do experiments, take measurements, solve problems, and so on. Students work in small, heterogeneous groups to do experiments and answer questions intended to evoke high level thinking and build language fluency in first Spanish then English. Complex Instruction adds to a group structure, in which students take on specified roles and learn group process skills. It emphasises positive expectations for all students.

VIII. Turn to Your Neighbour (TYN)

In the Cooperative Learning method, Turn to Your Neighbour, students pair up with another student to discuss an idea, to write or to draw as instructed by the teacher. They may be asked to share their work with the class.

IX. Pairs of Pairs (PP)

In this method, students write out a list of responses to a question statement such as all the states and their capitals, I know. They first work in pairs and make one list. Two pairs get together and make a single combined list. All the members of the group are responsible to know what is in the list.

X. Inside - Outside Circle (IOC)

Inside-Outside Circle is a Cooperative Learning method in which students stand in pairs in two concentric circles. The inside circle faces out; the

out side circle faces in. Students respond to teacher's question as they rotate to each new partner.

XI. Other Cooperative Learning Methods

Most of the Cooperative Learning techniques described so far are most extensively researched and widely used but there have been a few interesting studies of other methods.

Starr and Schuerman (1974) used a relatively simple method in which groups of as many as eight students considered science questions and thus reported back to the entire class. Wheeler (1977) investigated a Cooperative Learning technique in which students were assigned ***specific roles*** (such as coordinator, recorder etc.) within Cooperative groups and worked on Social Studies inquiry activities to produce a single work book. The group making the best work received a prize.

Peterson, *et al.* (1980) used a simple method in which students worked in four members groups. Group members completed their own work sheets with help from their group mates. No group rewards were given.

Thus, the Cooperative Learning Methods share the idea that students work in groups to accomplish a group goal. STAD, TGT and TAI are highly structured, with well specified group tasks and group rewards, while Group Investigation and Learning Together give more autonomy to students. Among the Cooperative Learning techniques discussed above, when the impact of Cooperative Learning was compared with Competitive learning, Learning Together model promoted the greatest effect. (Johnson, *et al.*, 2000). The consistency of the results and the diversity of the Cooperative Learning methods provide strong validation for its effectiveness.

2.1.2. ACHIEVEMENT MOTIVATION

The investigator have given a detailed theoretical overview of the Independent Variable, Achievement Motivation in the following sections.

2.1.2.1. The Concept of Achievement Motivation

There are a number of Psycho-social correlates which affect ***directly*** or ***indirectly*** in enhancing the Academic performance of pupils. While hunger and thirst may represent two of the most potent drives in our day-to-day lives, we are also motivated by powerful secondary drives, that have no clear biological basis (Geen, 1984; McClelland, 1985). Among the most prominent of these is the need for achievement ***(n-ach)***. Achievement Motivation is the best researched Psychological motive, which have an effect on enhancing Academic Achievement. The most important motivational factor, the Achievement motivation, is a generalized tendency to strive for success and to choose goal oriented, success or failure activities (Mc Clelland & Atkinson, 1948). The need for achievement is a stable, learned characteristic in which satisfaction is obtained by striving for and attaining a level of excellence (Mc Clelland, *et al.*, 1953).

McClelland (1961) refers Achievement Motivation as the desire to see ***success*** in competition with some standard of excellence. Ferguson (1976) have the opinion that Achievement Motivation is a ***learned disposition*** to achieve and to seek success in achievement situation. Johnson (1979) defined Achievement Motivation as an impetus to do well in relation to some standard of excellence. Achievement Motivation or need for Achievement ***(n-ach)*** is a pattern of planning action and of feeling connected with striving to achieve some internalised standard of excellence as contrasted for example with power of friendship (Husen & Postlethwaite, 1985).

Some people work hard, striving for success, and others take it easy. There are difference in the forces, or drives, that motivate people. Students with low Achievement Motivation tend to be under achievers. They do not perform upto their level of ability. Students with high Achievement Motivation try harder and strive for success. (Holland, 1981). People with a high need for achievement seek out situations in which they can compete against some standard and prove themselves successful. They tend to avoid the most easy and most difficult tasks, instead they are apt to choose tasks that are of intermediate difficulty (Feldman, 1990).

2.1.2.2 Achievement Motivation : A Historical Outline

Educational Psychologists have studied and researched the motivational factor of achievement in utmost depth and wider perspectives. It was Murray (1938) who listed the need to achieve (***n-ach***) as one among the ***twenty human needs*** postulated by him. He gave a theoretical framework for the concept of Achievement Motivation. Murray described that human motives were arousers and directors of behaviour.

Need for achievement (***n-ach)*** was one of the first social motives studied in details (Murray, 1938; McClelland, *et al.*, 1953) and research into this motive continues today (Spence, 1983). People, in whom the need for achievement is strong, seek to become accomplished and to improve their task performance (Morgan, *et al.*, 1993). They are task oriented and prefers to work on tasks that are challenging.

It was on the basis of Murray's (1938) work, McClelland (1961, 1972) started research on human motivation. McClelland, greatly influenced by Murray (1938), developed the ***need for achievement*** (n-ach. ***Fear of failure***)

and initiated research for the development of techniques for the measurement of human motivation. Through his work, he made clear that Achievement Motivation develops in some people ***more than in others***, because in some people, Achievement Motivation outcomes have a positive effect and for others these outcomes are of great discrepancy and then have negative avoidance effects on individual.

Atkinson, extending McClelland's (1961) work on Achievement Motivation noted that individuals may be motivated to achieve in either of two ways: to seek success or to avoid failure (Atkinson, 1964,1965; Atkinson & Feather, 1966). Much important recent research by Birney, *et al.* (1969) points that an advancement towards achievement is also a retreat from the fear of failure. According to Kestenbaum (1970), students high in Achievement Motivation tend to ***succeed on school tasks***. Weiner (1980) have the opinion that Achievement motivated students want to ***succeed*** and when they fail they ***redouble*** their efforts until they succeed. For the last three decades researchers were giving much importance to the effect of Academic Motivation in predicting the educational improvement of the pupils (Mclnerney, 1998; Mc Ewan & Golden berg, 1999).

2.1.2.3. Factors Related to Achievement Motivation

All individuals posses a limited degree of Achievement Motivation that induces them to achieve more and more in life. Achievement Motivation develops in an individual from ***early childhood***. Need to achieve (***n-ach***) in an individual is affected by several factors like ***home environment, child rearing practices, social, economic*** and ***cultural backgrounds***. Kahl (1953) by his work made clear that home environment is influencing Achievement Motivation of an individual. Another motive, fear of failure, which is said to

inhibit the expression of achievement behaviour (Atkinson, 1964, Atkinson & Birch, 1978).

Achievement Motivation can be seen in many areas of human endeavour on the job, in school, in home making or in athletic competition, for example. It is a fact that, some people are high in Achievement Motivation. The reason must be that difference in ***early life experiences*** lead to variation in the amount of Achievement Motivation. More specifically, children learn by copying the behaviour of their parents and other important people who serve as models (Bandura & Walters, 1963). The ***expectations parents have*** for their children are also said to be important in the development of Achievement Motivation (Ecceles, 1983). Parents who expect their children to work hard and to strive for success will encourage them to do so. Studies have shown that children with high Achievement Motivation typically have parents who rewarded them for their success (Singer & Singer, 1969). Ojah (1973) found that mother's love, father's permissiveness and love were ***positively related*** to Achievement Motivation and mother's rejection and protection, and parental restrictions were negatively related.

Most of the early studies were conducted on the assumption that Achievement Motivation is a unitary concept, but it is multi-factorial. A multi-factorial Scale of Achievement Motivation was developed by Cassidy and Lynn (1989) which includes seven components for Achievement Motivation such as Work Ethic, Pursuit of Excellence, Status Aspiration, Mastery, Competitiveness, Acquisitiveness and Dominance.

2.1.2.4. Measurement of Achievement Motivation

Theory and research pertaining to Achievement Motivation had gained much attention in the last decades. Achievement Motivation is an important

determinant of ***aspiration*** and efforts, when an individual expected that these performance will be evaluated in relation to some standard of excellence. This inspired researchers to develop adequate tools and techniques for the measurement of Achievement Motivation. Originally from the work of Murray (1938), Mc Clelland (1961) initiated investigation on the development of techniques for the ***measurement*** of Achievement Motivation. To measure the Achievement Motivation, the technique used more frequently is to administer a ***Thematic Apperception Test (TAT)***. In the TAT, people are shown a series of ambiguous pictures. Then they are told to write a story that describe what happening to the frames. Recently a multi-factorial scale was developed by Cassidy and Lynn (1989). More recently, another multifactorial Scale of Achievement Motivation was developed by Pillai & Kumar (1993).

2.2. REVIEW OF RELATED STUDIES

A review of studies related to the Independent and Dependent Variables of the study are presented in this section. An extensive survey of related studies (from the year 1980 to 2002) exposed a number of investigations pertaining to the influence of ***Cooperative Learning Strategy and Achievement Motivation on Academic Achievement of the pupils.*** The reviewed related studies are mainly categorised into three sections and presented under the following headings.

2.2.1. STUDIES ON COOPERATIVE LEARNING STRATEGY AND ACHIEVEMENT

Survey of related literature exposed a number of studies on ***Cooperative Learning and it's effects on Academic Achievement.*** The relevant

aspects of the studies relating with Cooperative Learning and Academic Achievement are presented in the following sections.

2.2.1.1. Studies Showing Achievement Gains

Enhanced Achievement is expected by the use of Cooperative Learning Strategy because in Cooperative set up, students are likely to encourage and help one another to learn. A wide series of outcomes on Academic performance have been studying in the Cooperative Learning research programmes.

Sharan (1980) extensively reviewed the major researches on Cooperative Learning and reported that, of the 27 studies done investigating the effect of Cooperative Learning Programmes on student learning; 19 studies showed a ***significant positive effect on student learning***. Most studies showed that ***high, average and low achievers gain equally*** from Cooperative experience.

Sharan (1980a) investigated the recent methods in Cooperative Learning and its effect on achievement, attitude and ethnic relations and obtained ***positive relationship between Cooperative Learning*** and ***students' Academic Achievement. Sharan (1990)*** also obtained similar results.

Slavin (1980) reported that the ***Improvement Point System*** in the Cooperative Learning method, ***Student Teams Achievement Division*** (STAD) has been shown to ***increase students' Academic performance.***

Sharan and ***Hertz - Lazarowitz (1980)*** studied the ***effect of group Investigation*** (GI) on Academic Achievement and social relations on a sample of elementary school children. The investigators reported that the

more pervasive the Cooperative climate, the more positive the students toward both the ***learning tasks*** and toward each other.

Johnson and ***Johnson (1981)*** investigated, whether Cooperative tasks and reward structures affect learning outcomes positively. The study obtained ***positive relationship*** between Cooperative Learning and Achievement of children.

Johnson and ***Johnson (1981a)*** examined the effects of Cooperative and Individualistic learning experiences on inter - ethnic relations and found that ***higher performance on individual problem solving*** in Cooperative than individualistic situation.

A large scale analysis by ***Johnson, et al., (1981)*** has indicated that ***interpersonal competition,*** while facilitating subject learning for college age students, ***is less effective*** at primary and secondary level than ***goal structures utilizing Cooperative methods***.

Glass, et al. (1982) investigated the effect of class size on learning and found that ***class size has a significant effect on student learning,*** not only in skill based subject like language learning but also in other subjects.

Studies on the effect of Cooperative Learning on pupils Academic Achievement were summarised by ***Slavin (1983)*** and concluded that the ***positive effects*** of Cooperative Learning methods on student ***Achievement appear equally and frequently in elementary and secondary schools*** in Urban, Sub urban and Rural schools and in subjects as diverse as Mathematics, Social Science and Reading.

Some studies on Cooperative Learning experiences in the regular classroom conducted by ***Slavin (1983a)*** show that Cooperative Learning methods ***foster more Achievement*** and stronger positive relationships between typically developing children and those with special learning needs than competitive method.

Fraser and ***Walberg (1984)*** give clear evidence from their studies that ***Cooperative Learning was more Successful*** than either competitive or Individualistic goal structure.

Studies analysed by ***Slavin (1985)*** reported that ***changing from a traditional classroom to a Cooperative one*** does not diminish student achievement, most often it ***significantly improves Achievement.*** In some studies, methods are used in which groups are rewarded based on their group member's learning, positive effects on Achievement were consistently found.

Findings of the studies conducted by ***McDonald, et al., (1987)*** found that Cooperative Learning Strategy was ***more effective*** than individualistic learning.

Newmann and ***Thompson (1987)*** investigated the effects of Cooperative Learning on Achievement in Secondary Schools has established that the Cooperative Learning Methods can be very ***effective in increasing student Achievement*** in many subjects and grade levels, ***when*** student ***groups are rewarded.*** Studies by ***Slavin (1990)*** also found out the same result.

Kutnick (1988) examined the effect of Cooperative Learning on student's Academic performance, self esteem and racial school friendship and found that there was ***corresponding increase in student's Academic performance,*** self esteem and inter-racial friendship.

Sharan and ***Schachar (1988)*** conducted a study on the effect of Cooperative Learning Method on Achievement in Social Science on Secondary school pupils. They compared the classroom interaction and Academic Achievement with traditional classes. The study revealed that the ***normally disadvantageous students learned at rates above those of the socially advantaged.***

Christison (1990) studied the effects of Cooperative Learning on Academic Achievement and self-esteem and found that Cooperative Learning have a ***significant and positive effect on pupils' Academic Achievement*** and Self-esteem.

Griffith (1990) investigated the effects of Cooperative Learning on students' Academic Achievement, attitude toward each other, social and affective development and found that Cooperative Learning techniques had broader utility and ***adaptability on pupils' Academic performance*** and the like.

Jackson (1990) designed a comprehensive approach to restructuring a school, as a frame work for improving the Academic Achievement and reducing the dropout rate of poor African American students. The approach effectively made use of one-to-one tutoring, small groups, Peer tutoring and Cooperative Learning. The study outlined that the aforesaid techniques are very ***successful in enhancing pupils' Academic Achievement.***

To study the effect of Collaborative Learning on pupils' Academic performance, ***Lawman (1990)*** divided his students into two groups, asking one group of students to prepare and teach a body of material to the class and the other to master the information for test performance only. When tested,

the former group, ***who used Collaborative techniques demonstrated much greater mastery of the materials*** than did the students who had learned the materials by more traditional techniques.

Seaman (1990) investigated the effect of the study skill strategies of Concept Mapping and Cooperative Learning on students' Academic Achievement. Fourty, fifth grade students were placed in three groups ie., (1) a ***Cooperative Concept Mapping group*** (2) a standard Concept Mapping group (3) and a control group. The students studied a science text and were later tested on their learning. The findings revealed that students in both Concept Mapping groups ***received higher scores on*** weekly vocabulary tests and the final test ***than*** did the students in the ***control group.***

Four extensive literature reviews on Cooperative Learning conducted by ***Slavin (1990a)*** found that Cooperative Learning Methods using group rewards and individual accountability ***consistently increase student Achievement*** more than control methods ***in elementary and secondary classrooms.***

Swischer (1990) reviewed the literature, as it relates to American Indian/Alaskan native students, on Cooperative Learning, Competition, Learning styles, Teacher - Student Interactional styles, Peer influence and the effects of Cooperative versus Competitive Learning on Academic Achievement and reported that ***Student Team Learning Techniques of Cooperative Learning*** had ***contributed more to pupils' Academic performance.***

In a study conducted by ***Fielder-Brand, et al., (1992)*** it was found that providing ***heterogeneously grouped Cooperative Learning experience is most effective*** for serving all students, including the gifted.

Olsen and ***Kagan (1992)*** investigated the effect created by the Cooperative Learning on second/foreign language and proposed several advantages for Cooperative Learning: increased student talk, more released atmosphere, greater motivation and ***increased amount of comprehensible output.***

The effect of a form of Cooperative Group Instruction (Team Assisted Individualisation) on students in a high school Algebra II class was investigated by ***Nicholas*** and ***Miller (1993)*** on a representative sample of 62 eleventh grade students, randomly assigned either to a Cooperative Learning group or a Traditional Lecture group. Findings of the study revealed that the Cooperative classroom ***exhibited significantly higher gain than*** did the Control group ***in Algebra Achievement.*** Surprisingly, the Achievement and Motivational gains were completely ***reversed when the Cooperative class was switched off to traditional instruction.***

Achievement Motivation shown by students of Cooperative and Individualistic Learning groups were compared and studied by ***Daniels (1994)*** and reported that students in Cooperative Learning groups were ***more Achievement Motivated*** than those of Individualistic learning groups ***and*** they ***showed Academic excellence.***

Ellette (1994) employed a project to improve Achievement among 24 grade eleventh basic U.S. History students in a growing middle class, suburban community in Northern Illinois. Analysis of probable course data

revealed that students entered the course with poor attitudes towards school, poor self images and lack of motivation. Solution Strategies for intervention were occurred in the areas of Cooperative Learning lessons, designed to improve ***Academic Achievement*** and specific strategies developed to improve classroom climate.

Kumar and ***Rai (1994)*** studied different Cooperative Learning Methods and the problems of its dissemination among teachers. They reported that Cooperative Learning is a method which ***improves learning and Social relations among classmates.***

Elinore and ***Beverly (1995)*** conducted a study on the effect of Instructional techniques and content used ***in a college course on program evaluation.*** They have made use of Cooperative Learning Methods and fieldwork as Instructional Strategies. The findings of the study maintains that student evaluation indicate the ***course achieved its objectives.***

As a part of an ongoing longitudinal experimental study, ***Felder (1995)*** taught five chemical engineering courses in consecutive semesters to a cohort of students, using Cooperative Learning and other Instructional methods designed to a broad spectrum of learning styles. The results suggest that active and Cooperative Learning Methods ***facilitate both learning*** and a variety of ***interpersonal and thinking skills.***

A project designed to improve the motivation among fourth and fifth graders of Rockford school district, Illinois, U.S. was implemented by ***Philips*** and ***Steinkamp (1995),*** and the problem of low motivation was documented through systematic classroom procedures. The solution strategies used, including the implementation of Cooperative Learning Strategies and

obtained a positive influence on the student Academic Motivation ***evidenced by increase in the number of extra activities completed.***

Pollalis (1995) reports on observation from teaching an undergraduate information based organisation course and builds on past research to explain the findings in student issues, Achievement Motivation and small group effectiveness. The teaching approach in the study was based on small group interaction and involving self-directed learning. Findings show that ***collaborative environment in the class room induce much higher degrees of learning*** than environments based on the traditional teacher - dependent or lecture based models.

Randon (1995) studied the effect of autonomous learning and Cooperative Learning or learner's performance and revealed that the idea of ***group interaction establishes a valuable framework*** in which individuals learning process can develop.

A study on integrated learning system conducted by ***Brush (1996)*** revealed that Cooperative Learning is a ***better strategy for effective learning.***

A sample consisting of 192 sixth graders participated in a study conducted by ***Gillies*** and ***Ashman(1996)*** that compared the effects on behaviour and Achievement of Cooperative Learning with group members trained to facilitate each other's learning and Cooperative Learning in which members did not receive such training. Training resulted in ***positive effects on Achievement and behaviour.***

Robyn and ***Adrian (1996)*** conducted a study that compared the effects on behaviour and Achievement of Cooperative Learning, on a sample of 192 sixth graders, with group members trained to facilitate each other's learning

and Cooperative Learning in which members did not receive such training. The study ***revealed the positive effects on Achievement and behaviour.***

Xin (1996) investigated the effects of Computer Assisted Cooperative Learning in Mathematics instruction within integrated classroom for 118, third graders and 92, fourth graders. Students were grouped into Cooperative Learning, whole class, or individual learning situation to learn Mathematics with the help of computer technology in the class. Results showed that Cooperative Learning group's ***scores on Mathematics Achievement were statistically higher than*** those of ***whole class learning group.***

Chi-mei and ***Choi-man (1997)*** have investigated the effect of Cooperative Learning on student Achievement in an Educational Technology course in an initial Teacher Training Program. A Cooperative Learning Strategy was compared with traditional whole - class direct instruction approach. Results indicated that the ***Cooperative Learning Strategy had a positive effect.***

Christine (1997) extensively reviewed the major research studies on Cooperative Learning and most research studies have found that Cooperative Learning is ***more effective than other modes of Instruction*** for higher level thinking tasks. It is also found that Cooperative Learning can support an environment in which students feel encouraged to take part in ***higher order thinking.***

An experimental study conducted by ***Hameed (1997)*** on the effect of Instructional Learning Strategies and Achievement Motivation on Achievement in Social Science of standard VII pupils revealed that

Cooperative Learning Strategy was ***effective in enhancing Academic Achievement*** of the pupils.

Ross (1997) compared three approaches to in service development for teachers including the Cooperative Action Research, using a multi-method evaluation design with innovation specific and general outcome measures for students and teachers. The findings of the study showed that there were small but ***statistically significant difference favouring*** the ***Cooperative Action Research*** and teacher in the action research condition scored high on outcome expectancy.

Sasidharan (1997) investigated the influence of Instructional Learning strategies and Classroom Environment on student Achievement in Malayalam language and found that ***pupils taught through Cooperative Learning Strategy acquired higher Achievement and Retention*** in Malayalam language than pupils taught through Conventional Method of Teaching.

The effect of problem solving and peer collaboration as two Instructional Methods advocated by the National Council of Teachers of Mathematics (NCTM) had been studied by ***Ginsburg-Block*** and ***Fantuzzo (1998)*** and evaluated for enhancing Mathematics Achievement, Motivation and self-concept of 104 low achieving third and fourth graders. There were ***significant positive effects for*** both approaches.

A program, reported by ***Klein, et al., (1998)*** was implemented to increase class Achievement by raising the motivational level of adolescents. The target population consisted of high school Mathematics students from Central Illinois. The post intervention data indicated that ***Cooperative***

Learning and Multiple intelligence activities enhanced students' motivation for learning Mathematics and thereby Achievement.

Bindhu (1999) conducted a study in order to find out the Interaction Effect of Instructional Learning Strategies and Cognitive Entry Behaviour of standard VI pupils on Achievement in Malayalam Language skills. The results revealed that ***Cooperative Learning Strategy is effective for Achievement in Malayalam Language than Conventional Method of Teaching.***

Golda (1999) conducted a study to find out the effectiveness of Cooperative Learning Strategy over Traditional Method of Teaching English language in Standard VIII pupils. It was found that ***Cooperative Learning Strategy is more effective than Traditional Method of Learning.***

A year long school based study, conducted by ***Lee, et al. (1999)*** in Singapore investigated the effects of Cooperative Learning Strategy in elementary Social Studies classroom on Social Studies Achievement. Results indicated that ***lower ability pupils benefited the most from the use of Cooperative Learning on Social Studies lessons.***

Sullivan and ***King (1999)*** conducted a descriptive study on the effectiveness of Cooperative Social Support groups as a means of empowering students to solve their personal and social problems, using ethnographic techniques. The sample consisted of fifth grade elementary Cooperative Learning classroom context. The result of the study revealed that the base groups involving Cooperative Learning structure ***facilitate student empowerment in Solving*** their personal and social ***problems.***

An action research project conducted by ***Dekeyrel, et al. (2000)*** sought to improve student motivation inorder to increase academic performance among eighth graders in an urban community. A variety of Cooperative Learning and social skill activities were incorporated in the intervention. The post intervention data indicated an ***overall improvement in many areas including Academic Achievement.***

Janes, et al.* (2000)** conducted an action research project which examined the impact of multifaceted intervention on student motivation and Achievement with second and third graders from three schools as the sample. The 12 week intervention was comprised of three elements including Cooperative Learning. The participating teachers concluded that ***Cooperative Learning and engaged learning were used together to successfully increase student motivation and achievement.

Johnson, et al. (2000) extensively reviewed the research report on the effectiveness of Cooperative Learning Methods and found 164 studies investigating eight Cooperative Learning methods. Of the entire studies, all eight Cooperative Learning Methods had a ***significant positive impact on student Achievement.*** When the impact of Cooperative Learning was compared with Competitive Learning and Individualistic Learning, ***Learning Together (LT) promoted the greatest effect followed*** by seven other methods.

Kumar and ***Hameed (2000)*** studied the effectiveness of Cooperative Learning Strategy on pupils' Academic Achievement in Social Science of Standard VII pupils and found that ***Cooperative Learning Strategy is effective than Conventional Methods of Teaching for higher scholastic Achievement.***

Mahenthiran and ***Rouse (2000)*** studied whether the performance and attitude of students could be improved by giving them some control over the group selection process in Cooperative Learning. The results with 110 college students showed that student's attitudes toward the ***Cooperative Learning experience were better and their grades were higher.***

Bartscher, et al. (2001) conducted a study which describes a program for students in the target, fourth, seventh and eighth graders who exhibit low Achievement in writing. The solution strategy involved Cooperative Learning, journalizing and creative writing. The results ***showed an improvement in writing.***

An action research project was conducted by ***Carroll*** and ***Leander (2001)*** inorder to increase motivation in fifth grade social studies students. Two categories of intervention including Cooperative Learning were implemented. The post intervention data indicated an ***improvement in student motivation, attitudes and academic performance.***

Copeland, et al. (2001) created a project for seventh and eighth grade students to improve their academic success. Intervention consisted of instruction in Cooperative Learning activities and the result suggested that ***classroom strategies and combined efforts of teachers helped to improve both students' motivation and Academic Achievement.***

The effectiveness of Partners Advancing the Learning of Maths and Science (PALMS) educational model for teachers was examined by ***Fuller (2001)***. The PALMS model was based on Cooperative Learning and used student research, primary resources, critical thinking, ongoing assessment, student presentation and comprehensive, standards-based state testing. The

data for this study indicate that active training events significantly influenced the willingness of teachers to use PALMS, and ***students enjoyed substantial educational benefits of the model.***

Ghaith (2001) investigated the perceptions of the Cooperative Learning experience of a group of Lebanese middle school learners who studied the rules and mechanics of English as a foreign language, according to dynamic of the Student Teams-Achievement Divisions (STAD) of Cooperative Strategy. The results indicated that ***learners were generally positive about their experience.***

Cooperative Learning Strategies were used by ***Goldberg, et al. (2001)*** to increase high school and middle school students' motivation for doing well in school. The targeted population consisted of middle school students in physical education and science classes and high school students in science, technology and special education classes. The results indicated that ***Cooperative Learning improved student motivation and Academic Achievement.***

Holliday (2001) studied the use of Cooperative Learning Strategy in a middle school computer laboratory. In this study, four heterogeneous groups were formed from 52 students, with male and female partners in each group. The study was found a ***significant positive relationship between Cooperative Learning and students' Academic Achievement.***

Krank and ***Moon (2001)*** applied Instructional Strategies derived from the concept of mastery learning and Cooperative Learning to 104 under-graduate social science students enrolled in three sections of a required course

and found ***significant effects for the combined mastery/Cooperative Learning condition when compared to mastery learning alone.***

Kumar and ***Bindhu (2002)*** reported an experiment in which a sample of 100 standard VI pupils were utilised to study the relative effectiveness of Cooperative Learning Strategy and Conventional Method of Teaching on Achievement in Malayalam language skills. ***Cooperative Learning Strategy was found more effective than the control treatment.***

On the basis of a review of several past studies, ***Kumar*** and ***Bindhu (2002a)*** suggest that ***Cooperative Learning Strategies are more effective than the Conventional Teaching Methods with regard to Academic Achievement and social and psychological development.***

2.2.1.2. Studies showing No Achievement Gains

The investigator could locate a very limited number of studies which showed no Achievement gains/no relationship between ***Cooperative Learning*** and ***Academic Achievement.*** Review of such studies presented in the following are evidences for inconclusive findings in Cooperative Learning research. The studies mentioned earlier suggest Achievement gains when Cooperative Learning strategy was investigated with regard to Academic Achievement. But survey of related literature also exposed a few studies showing ***no achievement gain or no relationship*** between Cooperative Learning and Academic Achievement. Some such studies from the year 1963 to 2001 are reviewed and presented.

Miller and ***Hamblin (1963)*** conducted experimental studies on learning strategies and found ***no Achievement benefits for Cooperation*** when compared with individualistic and competitive learning strategies.

Hains and ***Mc Keachie (1967)*** conducted a series of studies and found that while daily performance is superior under a Cooperative goal structure, ***no significant differences on examination performance among individuals who studied in a competitive or Cooperative group.***

The studies of ***Julian*** and ***Perry (1967)*** and ***Clifford (1971)*** indicate that ***competition may be superior to cooperative or individualistic goal structures*** when the task is a simple drill activity or when sheer quantity of work is desired on mechanical or skill-oriented task that requires little if any help from another person.

Several lengthier studies of 'pure' Cooperation that lasted for two to ten weeks, conducted by ***Wheeler*** and ***Ryan (1973)*** on elementary school students, found ***no achievement benefits for Cooperation*** compared with individualistic or traditionally taught control classes.

Sharan (1980) reviewed 27 major researches on Cooperative Learning programmes on student Achievement and found that there ***were no significant differences*** in seven of the studies and ***one study favoured the control group.***

Slavin (1983) summarised the study findings of 33 studies in regular elementary or secondary school pupils which investigated the effect of Cooperative Learning programmes on student learning, comparing the Cooperative Learning program to Traditional control groups. ***10 of the 33 studies found no experimental-control differences in Achievement*** and in one study there was a significant difference favouring the ***control group.***

The results obtained by ***Hythecker, et al. (1984)*** indicated that students who were taught a learning strategy (net working) by interacting with both a

micro computer and a ***Cooperative partner performed significantly worse than students who received the same training individually.***

Despite most of the other research works indicating the superiority of Cooperative Learning over competitive methods, ***Okebukola (1984)*** found in a Nigerian study that ***students did equally as well under Cooperative and Competitive conditions*** so long as students were placed in a learning setting which matched their performances.

Slavin (1985) summarised the studies and found that Learning Together model of Cooperative Learning was found in one study to be ***equal to the control group in achievement effects and lower than the control group in others.***

David (1990) conducted two studies in which, 36 junior high school students and intermediate level students with mild disabilities worked together to complete Computerised Instructional activities on capitalisation and punctuation. The intervention produced ***significant increase in behaviour*** that were positively related with learning ***but did not produce significant increase in learning.***

Peterson (1991) in a study examined the achievement difference between sixth grade boys and girls in individualistic and Cooperative Learning situations. The study found ***no difference in Achievement between individualistic and Cooperative Learning situations.***

Urion and ***Davidson (1992)*** studied the effectiveness of small group Cooperative Learning and a more teacher-centred instructional style on student performance in Mathematics with junior high school and college

students as the sample. The results indicated ***no significant difference in performance between the small group-class and the teacher-centred class.***

The effects of Cooperative Learning environment on Academic Achievement and persistence was studied by ***Pisani (1984),*** by examining the precursory measure of student Achievement. A sample of 68 freshman from 1992 entering class at the University of Illinois were used. The results suggests that the positive influence of ***Cooperative Learning environment is carried into student involvement and not into other areas.***

Fourts (1995) reports a study which was conducted in two schools, one focusing on the area of Health Science Studies (HSS) the second focusing on the International Business and Global Studies (IBGS). Both schools feature an integrated curriculum, Cooperative Learning, the direct application of learning to life situations flexible scheduling, cohort learning and alternative assessment strategies. The result revealed that ***first year participation in both schools did not translate into higher grades.***

Anderman (1996) examined changes in student valuing of reading during middle childhood and early adolescence. The study evaluated reading teacher's instructional practices as well as students' Achievement Motivation. The sample consisted of 530 school pupils and 54 teachers. Findings of the study revealed that Performance oriented Instructional Strategies and Cooperative Learning techniques are ***negatively related to gains in valuing of reading overtime.***

Laney (1996) in a study compared four instruction conditions with 121 first and second graders. The four conditions were Cooperative Learning, mastery learning, Cooperative-mastery learning and a control treatment. The

results of a post-test revealed the ***effectiveness of cooperative mastery method in promoting student learning than the Cooperative Learning alone*** and other methods.

High school home economic students were taught by a nutrition unit (91 using Cooperative Learning and 106 Controls) in a study, as reported by ***Abu*** and ***Flowers (1997)***. The results showed ***no difference in Achievement and attitudes.***

Preferences for Competitive and Cooperative Learning were explored by ***Feldhusen, et al. (2000)*** in 176 gifted students (ages 9-17). They found ***competition as an energising factor for better learning.***

Krank and ***Moon (2001)*** conducted a study in which, 104 undergraduate social science students enrolled in three learning conditions such as mastery learning condition, Cooperative Learning condition and combined mastery/Cooperative Learning condition. The results obtained indicated that ***combined mastery/Cooperative Learning condition was found more effective than mastery learning alone or Cooperative Learning alone.***

2.2.1.3. Summary of Studies on Cooperative Learning and Achievement

The entire studies reviewed on Cooperative Learning and Achievement showing Achievement gains (during the period from 1980 to 2002) and no Achievement gains (during the period from 1963 to 2001) are summarised as follows, to get a holistic view in this regard.

Studies Showing Achievement Gains	
Author and Year	**Result**
Sharan (1980)	High, average and low achievers gains equally from Cooperative experiences
Sharan (1980a)	Positively related to Achievement
Slavin (1980)	Improvement Point System in STAD increase academic performance
Sharan and Hertz-Lazarowitz (1980)	The more pervasive the Cooperative climate the more positive the students
Johnson and Johnson (1981)	Cooperative Learning Strategy influenced Academic Achievement
Johnson and Johnson (1981a)	Higher performance on individual problem solving in Cooperative Learning
Johnson, *et al.* (1981)	Interpersonal Cooperation is more effective at primary and secondary level
Glass, *et al.* (1982)	Class size have a significant effect on student learning in all subjects
Slavin (1983)	Effect of Cooperative Learning on Student Achievement appear in different levels of schools, localities and subjects
Slavin (1983a)	Cooperative Learning methods foster more Achievement
Fraser and Walberg (1984)	Cooperative Learning was more successful than competitive or individualistic goal structures
Slavin (1985)	Changing from a traditional classroom to a Cooperative one improves Achievement
McDonald, *et al.* (1987)	Cooperative Learning was more effective than individualistic learning
Newmann and Thompson (1988)	Cooperative Learning was very effective in increasing student Achievement when groups were rewarded

Kutnick (1988)	Corresponding increase in students' Academic Performance
Sharan and Schachar (1988)	Normally disadvantageous students learned at rates above those of the socially advantaged
Christison (1990)	Significant and positive effect on Academic Achievement
Griffith (1990)	Broader utility and adaptability on pupils Academic Performance
Jackson (1990)	Very successful in enhancing pupils' Academic Achievement
Lawman (1990)	The group who used Collaborative techniques demonstrated greater mastery of the material
Seaman (1990)	Cooperative concept mapping groups received higher scores than the control group
Slavin (1990a)	Consistently increase student Achievement in elementary and secondary classrooms
Swisher (1990)	Students Team Learning Techniques of Cooperative Learning contributed to pupils' Academic Performance
Fielder-Brand, *et al.* (1992)	Heterogeneously grouped Cooperative Learning experience was most effective
Olsen and Kagan (1992)	Several advantages for Cooperative Learning and increased amount of output
Nicholas and Miller (1993)	Significantly higher gain from Team Assisted Individualisation in Algebra Achievement
Daniels (1994)	Cooperative Learning showed high Academic Excellence
Ellette (1994)	Improved Academic Achievement while designed as solution strategies for intervention
Kumar and Rai (1994)	Improves learning and social relations among classmates

Elinore and Beverly (1995)	Effective in achieving the objectives of a college course on program evaluation
Felder (1995)	Facilitate both learning and a variety of interpersonal and thinking skills
Philips and Steinkamp (1995)	Obtained positive influence evidenced by increase in the number of extra activities completed
Pollalis (1995)	Collaborative environment in the classroom induce much higher degrees of learning
Randon (1995)	Group Interaction establishes a valuable framework of increased learning
Brush (1996)	Cooperative Learning is a better strategy for effective learning
Gillies and Ashman (1996)	Positive effects on Achievement and behaviour
Robyn and Adrian (1996)	Revealed positive effects on Achievement and behaviour
Xin (1996)	Scores on Mathematics Achievement were statistically higher than whole class learning group
Chi-mei and Choi-man (1997)	Positive effect on student Achievement in Educational Technology course
Christine (1997)	Found more effective than other modes of instruction in higher order thinking
Hameed (1997)	Cooperative Learning Strategy was more effective in enhancing Academic Achievement
Ross (1997)	Statistically significant difference favouring the Cooperative Action Research
Sasidharan (1997)	Pupils taught through Cooperative Learning Strategy acquired higher Achievement and Retention
Ginsburg-Block and Fantuzzo (1998)	Significant positive effects for problem solving and peer collaboration on instructional methods
Klein *et al.* (1998)	Enhanced student motivation and thereby Achievement

Bindhu (1999)	Cooperative Learning was effective for Achievement in Malayalam Language
Golda (1999)	Cooperative Learning Strategy was more effective than traditional method
Lee, *et al.* (1999)	Lower ability pupils benefitted the most from the use of Cooperative Learning
Sullivan and King (1999)	Cooperative Learning base groups facilitate student improvement in solving problems
De Keyrel, *et al.* (2000)	An overall improvement in many areas including Achievement
Janes, *et al.* (2000)	Successful and increased student Achievement
Johnson, *et al.* (2000)	Learning Together (LT) promoted the greatest positive effect
Kumar and Hameed (2000)	Cooperative Learning Strategy is effective for higher scholastic achievement
Mahenthiran and Rouse (2000)	Student's grades were higher
Bartscher, *et al.* (2001)	The sample showed an improvement in writing
Carroll and Leander (2001)	An improvement in student motivation, attitudes and academic performance
Copeland, *et al.* (2001)	Improvement in both students' motivation and Academic Achievement
Fuller (2001)	Students enjoyed substantial educational benefits
Ghaith (2001)	Learners were generally positive about their experience
Goldberg, *et al.* (2001)	Cooperative Learning improved students' motivation and Academic Achievement
Holliday (2001)	Significant positive relationship between Cooperative Learning and Academic Achievement
Krank and Moon (2001)	Significant positive effect on Achievement

Kumar and Bindhu (2002)	Cooperative Learning Strategy was found more effective than control treatment
Kumar and Bindhu (2002a)	Cooperative Learning Strategies are more effective than the Conventional Teaching Methods.
Studies showing No Achievement Gains	
Miller and Hamblin (1963)	No Achievement benefits for Cooperation
Hains and McKeachie (1967)	No significant difference in Examination performances compared to the Control group
Julian and Perry (1967), Clifford (1971)	Competition may be superior to Cooperative or individualistic goal structures
Wheeler and Ryan (1973)	No Achievement benefits for Cooperation when compared with the control treatment
Sharan (1980)	No significant difference in Achievement
Slavin (1983)	No experimental-control group difference in Achievement
Hythecker, *et al.* (1984)	Performance in Cooperative partnership was worse
Okebukola (1984)	Students performed equally in Cooperative and competitive conditions
Slavin (1985)	Learning Together model was found to be equal to the control group
David (1990)	Not produced significant increase in learning
Peterson (1991)	No difference in Achievement between Individualistic and Cooperative Learning situations
Feldhusen (1992)	Grouping gifted students heterogeneously lowered Achievement and Motivation
Urion and Davidson (1992)	No significant difference in performance between the small group and teacher-centred classes
Pisani (1994)	Cooperative Learning Environment was carried into student and not into other areas
Fourts (1995)	Did not translate into higher grades

Anderman (1996)	Negatively related to gain in valuing of reading over time
Lancy (1996)	No Achievement benefits
Abu and Flowers (1997)	No difference in Achievement and attitudes
Feldhusen, *et al.* (2000)	Competition was an energising factor for better learning
Krank and Moon (2001)	Combined mastery / Cooperative Learning condition was found more effective than Cooperative Learning alone

2.2.2. STUDIES ON COOPERATIVE LEARNING STRATEGY AND RETENTION

Relevant aspects of the studies relating with Cooperative Learning Strategy and it's effect on Retention (from the year 1990 to 2002) are presented in the following subsections.

2.2.2.1. Studies Showing Retention Gains

Research findings showing Retention benefits for Cooperative Learning Strategy are presented as follows.

O'Donnell (1990) examined Cooperative Learning, effects of learning about equipment in advance, and Retention of information over six weeks using two experiments. ***Positive effects of Cooperative Learning*** was supported by the results obtained from 114 undergraduates.

Petersen (1991) conducted a study concerning achievement difference between sixth grade boys and girls in individualistic and Cooperative

Learning situations. The study found that ***Cooperative Learning produced greater Retention.***

The individualistic and Cooperative Learning results in two seventh grade classrooms were compared by ***Miller (1992)*** using an action research experiment. It was found that ***Retention scores slightly favoured the Cooperative Learning method.***

The results of five contrasts between small-group Cooperative Learning and a more teacher-centered instructional style employed in junior high school and college mathematics classes was reported by ***Urion*** and ***Davidson (1992)***. The result indicates that ***the small-group class performed better in long-term Retention.***

Effect of audiotape construction on pre-service teachers' mastery and Retention was investigated by ***Sudzina (1993)***. Experimental students cooperatively created audiotape scripts for learning terms. Control students received lectures and text. Experimental students expressed confidence and competence in learning and ***retained more than the control students.***

A classroom research conducted by ***Billington (1994)*** examined the effects of collaborative test-taking on mathematics Retention of third grade students. The findings indicated that ***collaborative testing promoted Retention.***

Formal use of ***Cooperative Learning techniques was found effective in improving students' performance and Retention*** in a freshman level statistics course as reported by ***Keeler (1994)***.

The effect of Cooperative Learning and enhanced communication on student performance, Retention and attitudes in general chemistry was examined by Dougherly (1995). The result indicated that ***cooperative home work and cooperative quizzes were associated with significantly higher student performance and Retention.***

Keeler and ***Anson (1995)*** report a study on Cooperative Learning Strategies used in a college computer skills lab course, in which they compared the learning performance and Retention of students taught via Cooperative teams and traditional individual learning. The results showed that ***both performance and Retention were significantly improved with the use of Cooperative Learning.***

An adult education project SHELCOM, that investigated the effect of using computer on participant's writing and communication skills in homeless shelters in Philadelphia and Pennsylvania was reported by ***Scheffer (1995).*** . The project consisted of two-hour workshops, twice weekly, complemented by online support and Cooperative Learning. By this ***Retention of the learners was found to increase.***

A three-year project was conducted by ***Hill (1996)***, in which the sample was taught through Cooperative Learning Strategy. The results ***showed significant gain in Retention as well as Achievement.***

The relationship between economic concept learning and Retention in 121 first and second graders, who were randomly assigned to four instructional conditions was examined by ***Laney (1996)***. It was found that ***Cooperative-mastery method was superior to other methods in promoting learning and Retention.***

Dougherty (1997) experimented the effectiveness of a teaching strategy designed to increase student Retention while maintaining academic performance levels in undergraduate organic chemistry, that used grade/ study-performance contracts, enhanced communication using electronic mail and Cooperative Learning. The results indicated that ***a series of interventions could substantially increase Retention without degradation of standards for performance.***

An experimental study was conducted by ***Hameed (1997)*** to study the relative effectiveness of Cooperative Learning Strategy and Conventional Method of Teaching with respect to Achievement and Retention in Social Science. The results indicated that, pupils taught through ***Cooperative Learning Strategy were superior to the control group in retaining the material taught.***

Millen-Penn (1997) recommends the adoption of Cooperative Learning techniques in history courses, in the light of many surveys conducted in Europe, U.S.A. and Africa and argues ***that Cooperative Learning facilitates critical thinking, democratic values and improved Retention.***

A study conducted by ***Petty (1997)*** to find out the effectiveness of Cooperative groups and authentic assessment on student engagement and Retention reports that ***construction of Cooperative groups was very helpful to increase student engagement and Retention.***

The relative effectiveness of Cooperative Learning Strategy and Conventional Method of Teaching on Retention of Standard VII Malayalam pupils was studied by ***Sasidharan (1997)***. The results indicated that ***pupils taught through Cooperative Learning Strategy showed higher Retention power than the other group.***

Effectiveness of Cooperative Learning Strategy and Conventional Method of Teaching on Retention in Malayalam Language skills of standard VI pupils was studied by ***Bindhu (1999)***. The results indicated that ***pupils taught through Cooperative Learning Strategy retained more than pupils taught through Conventional Method of Teaching.***

Golda (1999) studied the retention power of standard VIII pupils in English Language using Cooperative Learning Strategy and Traditional Method of Teaching as Instructional Strategies in the intervention. ***Cooperative Learning Strategy was found accountable for higher Retention.***

In an experimental study conducted by ***Joyce (1999)*** students worked cooperatively on home work, problem solving and test preparation. ***When interdependence was rewarded, cooperative group study was found helpful for higher Retention.***

A sample of 100 standard VI pupils was selected for a study reported by ***Kumar*** and ***Bindhu (2002)***. Half of the total sample (50 pupils) was taught through Cooperative Learning Strategy and the other half (50 pupils) was utilized for the control treatment. The Retention power of both the groups was compared. ***The Experimental treatment was found more effective than the control treatment*** with regard to the Retention in Malayalam Language.

2.2.2.2. Studies Showing No Retention Gains

Studies showing no Retention gains with Cooperative Learning Strategy are presented in this subsection.

Two studies were conducted by ***Billington (1994)*** to find out the effects of Cooperative test-taking on student mathematics Retention. In which one

study yielded ***a negative relationship between the collaborative effort and Retention.***

A study conducted by ***Laney (1996)*** made use of 121 first and second graders, randomly assigned to one of four instruction condition. The instruction conditions were, Cooperative Learning, mastery learning, cooperative mastery learning and a control treatment. It was found in the Post test that ***cooperative-mastery method was superior to other methods including Cooperative Learning alone in promoting student Retention.***

Abu and ***Flowers (1997)*** reported a study in which a nutrition unit taught the high school home economics students (91 using Cooperative Learning and 106 controls). A test conducted three weeks after the instruction showed ***no difference in Retention.***

2.2.2.3. Summary of Studies on Cooperative Learning and Retention

The studies reviewed on Cooperative Learning and Retention are summarised and presented as follows.

Studies Showing Retention Gains	
Author and Year	**Result**
O'Donnell (1990)	Supports the positive effects of Cooperative Learning
Petersen (1991)	Cooperative Learning produced greater Retention
Miller (1992)	Retention scores slightly favoured the Cooperative Learning method
Urion and Davidson (1992)	The small-group class performed better in long-term Retention
Sudzina (1993)	Cooperative Learning group retained more than the control group
Billington (1994)	Cooperative Learning promoted Retention

Keeler (1994)	Effective in improving student Retention
Dougherty (1995)	Produced higher Retention
Keeler and Anson (1995)	Both performance and Retention were significantly improved
Scheffer (1995)	Retention of the learners was found to increase
Hill (1996)	Significant gain in Retention
Laney (1996)	Cooperative-mastery method was superior to other methods in promoting Retention
Dougherty (1997)	Retention was increased.
Hameed (1997)	Positive relationship between the variables
Millen-Penn (1997)	Cooperative Learning improved Retention
Petty (1997)	Construction of Cooperative groups was very helpful to increase Retention
Sasidharan (1997)	Variables were positively correlated
Bindhu (1999)	Cooperative Learning group retained more than the control group
Golda (1999)	Cooperative Learning Strategy was found accountable for higher Retention
Joyce (1999)	Cooperative group study was found helpful for higher Retention
Kumar and Bindhu (2002)	Cooperative Learning Strategy was found more effective than the control treatment with regard to Retention
Studies Showing No Retention Gains	
Billington (1994)	A negative relationship between the variables
Laney (1996)	Cooperative-mastery method was superior to other methods including Cooperative Learning alone in promoting student Retention
Abu and Flowers (1997)	No Retention benefits

2.2.3. STUDIES ON ACHIEVEMENT MOTIVATION AND ACHIEVEMENT

Review of related literature exposed many studies on Achievement Motivation and it's effect on Academic Achievement. The results of the studies, Positive and negative, related with Achievement Motivation and Academic Achievement are presented as follows.

2.2.3.1. Studies Showing Positive Results

A positive relationship between Achievement motivation and Academic Achievement is shown because, those who are having high Achievement Motivation is expected to enhance their Academic Performance.

Zargar (1980) in a study to find out the relation between intelligence, Creativity and Scholastic Achievement with n-achievement found out ***positive correlation between Achievement Motivation and Achievement.*** Similar results were obtained by ***Reddy (1983).***

Deshpande (1984) conducted a study to find out the determinants of Achievement of students at the SSC Examinations. The sample consists of 779 students studying at standard IX. The study showed that Achievement Motivation is ***positively related to Achievement.***

Ahluwalia (1985) in order to determine the factors affecting Achievement Motivation, conducted a study on a sample of 200 children of 8-12 years of age and found that Academic performance was ***positively and significantly related to Achievement motivation.***

Gandhi (1985) studied the Academic Achievement and it's relation to Achievement Motivation, affiliation motive and power motive. The sample consisted of 500 boys and 500 girls. The study showed that Achievement

Motive is ***significantly and positively related to Academic Achievement*** of high school students of both the sexes.

Geetha (1985) while studying the influence of anxiety and Achievement Motivation of Secondary School pupils found a ***significant and positive correlation between Achievement in Biology and Achievement Motivation.***

Academic intrinsic Motivation and children's school Achievement was studied by ***Gottfried (1985)*** and found that Academic intrinsic Motivation was ***positively correlated with children's school Achievement.***

Fatmi (1986) in a study of Achievement related motivation among tribal and non-tribal high school students found that sex, racial background, caste, area and socio-economic status are ***important determinants*** of Achievement related Motivation.

Narayanan (1987) studied the relationship of Achievement Motivation and Achievement in Hindi of socially advantaged and disadvantaged secondary school pupils and found ***positive relationship*** between Achievement Motivation and Achievement in Hindi for the Total Sample and ***for the socially advantaged and socially disadvantaged groups.***

Mehta (1987) investigated the effect of some psychological factors on school Achievement of scheduled caste and scheduled tribe students and found a ***positive relationship*** between Achievement Motivation and Achievement.

Haynes, et al. (1988) assessed study behaviour, cognitive skills and motivation of 148 high, average and low achieving high school students and indicated that low achieving students ***differed significantly*** from their

average and high achieving peers on cognitive skills, study habits and motivation and ***motivation was the powerful discriminating factor between the groups.***

Sherril (1988) in a study of Achievement, Attitudes and Achievement Motivation of grade three and six pupils found a ***significant positive relationship between Achievement in Science*** and Achievement Motivation.

Higbee (1989) in his study on college students found that students having self motivation ***have potential to be successful*** in college level Mathematics course.

Andrews (1991) conducted a study which made use of data from a three year longitudinal study of adolescent substance use to clarify the direction of influence between the adolescent's Academic Achievement and Motivation and Substance use Adolescents (N=464), ages 12-16, from grades six through eleven and their parent(s) completed parallel questionnaire measuring cigarette and alcohol use; Achievement Motivation and Academic Achievement. The results suggest that the ***relation between substance use and Achievement with motivation is bidirectional.***

Cassidy and ***Lynn (1991)*** conducted a study on Achievement Motivation and Educational Attainment and found that ***Educational Attainment was influenced by Achievement Motivation.***

Validity evidence for a new instrument, the Situation-Response Measure of Achievement Motivation was brought out by ***Grote*** and ***James (1991)*** for analysing cross-situational consistency of Achievement related behaviour in a sample of 246 college students. Results of exploratory factor

analysis indicated the presence of ***striving for Achievement and apprehensiveness as the base of consistent Achievement.***

Lewis (1991) in a study of 400 Carribbean immigrant students studied the relationship between Achievement Motivation and Academic performance and found that ***Motivation influence Academic Achievement.***

Rajani (1991) in her study to find out the relationship of attitude towards Education and Achievement Motivation with Achievement in Social Science of high school pupils found that there is a ***marked relationship between Achievement Motivation and Achievement in Social Science*** for the Total sample and for the rural and urban students.

In search of better understanding of the learning difficulties in basic electricity, learning results, interest, Achievement Motivation, IQ and cognitive development were investigated by ***Rhoneck*** and ***Grob (1991)*** in students from both urban and rural schools. An analysis of the findings reveals that, for ***urban classes learning is related primarily to interest and motivation*** and for rural classes primarily cognitive abilities.

Jayaseelan (1992) conducted a study to know the influence of Achievement Motivation and Science Studying Approach on Achievement in Science of Secondary School pupils found ***significant combined effect of Achievement Motivation and Science Studying Approach*** on Achievement in Science.

Das (1993) conducted a study on the relationship of Achievement in Social Studies with Achievement Motivation and Socio-Economic Status on Secondary School pupils revealed that there was a ***significant relation between Achievement Motivation and Students' Academic Achievement.***

Leung (1993) conducted a study to determine, if students gender was related to their own and their perceived parental motivational orientation in School Achievement. A total of 107; eighth 107 Tenth and 119 Twelveth grade Roman Catholic school students (170 males, 163 females) anonymously completed a questionnaire to facilitate data collection. Results show a number of ***gender differences including those in Achievement goal orientations. Females tend to perceive success as more controllable and internal relative to boys.***

Schultz (1993) examined relationships among socio-economic advantage, Achievement Motivation and Academic performance in an urban elementary school population of 130 African-American and Hispanic fourth through sixth grade students. Results indicated that socio-economic advantage and ***Achievement Motivation are significant mediators of Academic performance*** among minority children independent of intellectual ability.

Fontaine (1994) reports on a study of the relationship between Achievement Motivation at school and child rearing practices. Findings of the study suggests that ***Academically superior children are more motivated*** and they live in more rigidly structured families. Author suggests more research on the differential influence of social context and gender.

Jegede (1994) reports on a study of 160 Nigerian secondary students to determine the influence of Achievement Motivation and gender difference on performance in English language learning and that, if adequately motivated, the students are ***capable of mastering English*** .

The effects of individual differences, attitudes, past performance and teaching behaviours on 286 undergraduate college students' Achievement was examined by ***Schonwetter (1994)***. The study was conducted using Weiner's theory of Achievement Motivation. A questionnaire, a video tape and an Achievement test were administered in the course of the study. Results indicated that student differences and teaching behaviours differentially influenced student learning and learning related outcomes. ***Student's need for success also significantly affect student learning experiences***.

Abouserie (1995) investigated the influence of self esteem and Achievement Motivation as determinants of students Approaches to Studying with 135 undergraduate students. Results suggest that students personality traits in general and their self esteem and Achievement Motivation in particular ***have a substantial influence on their Approaches to Studying and levels of knowledge processing***.

Cain and ***Dweck (1995)*** through their study assessed the beliefs of first, third and fifth graders about their ability and Achievement and their motivational responses to challenging puzzles. The study suggest that ***individual differences in children's cognition about ability and Achievement are positively related to their motivational responses*** through out the school years.

The factors influencing the Academic success of fifty Mexican-Americans from low income families who received Ph.D., J.D. or M.D. degrees from prestigious Universities were studied by ***Gandara (1995)***. The study found that, inspite of serious economic disadvantages, most of the subjects' parents were doing precisely the right things with regard to instilling in their

children ***Achievement Motivation and the belief in education as the key to advancement.***

An exploratory study conducted by ***Hokoda*** and ***Fincham (1995)*** examined the origin of children's motivational patterns in the family by observing ten helpless and eleven mastery oriented third graders. Findings are consistent with the hypothesis that ***mother's of mastery children may socialize their children's Achievement Motivation.***

Isaacs and ***Duffus (1995)*** described a pilot programme designed to create a peer network and cultural environment that ***promotes Academic Achievement and attainment among minority students***. The programme was based on the relationship between self-esteem, self efficacy and Achievement Motivation.

Singh and ***Singh*** (1995) reported that Achievement Motivation was effective in ***producing students' Academic performance*** from a study conducted on 120, four to ten year old children.

Unnikrishnan (1995) investigated the effect of Social Adjustment and Achievement Motivation on Achievement in Biology of standard IX pupils and the study revealed that there was ***significant and positive relation between*** Achievement Motivation and Academic Achievement in Biology.

Huang and ***Waxman (1996)*** conducted a study to explore the enhancement of education for at-risk minority students by considering educationally resilient students and the classroom learning environment. Motivation and learning environment were compared for 180 resilient and 180 non-resilient students. Multivariate analysis and post-hoc tests of students responses showed that ***high achieving students had significantly higher***

perceptions of involvement, satisfaction, academic self concept and Achievement Motivation than did low achieving students.

A survey conducted by ***Plucker (1996)*** examined educational aspirations and perceptions of school climate among gifted students of the Maine school, a rural magnet school serving grades eleventh and twelveth. Findings suggest that ***high ability secondary students of magnet school having higher levels of aspiration and Achievement Motivation*** appear to perceive a school climate that is conducive and ***foster Academic Achievement*** to a greater extent than do general ability students attending traditional high schools.

Preetha (1996) investigated the influence of Learning Style and Achievement Motivation on Achievement in Biology. The sample consisted of 700 students of standard IX. The study found that Achievement Motivation has ***significant positive effect on Achievement in Biology.***

McLean (1997) conducted a study involving 69 High-Achieving and 55 Low-Achieving high school students in North Western Alberta found that ***High Achievers had significantly more positive scores than low Achievers on motivation for schooling,*** Academic Self-Concept, Internal locus of control, reference based Academic Self-Concept and Instructional mastery.

Waxman (1997) have used the Mathematics Achievement to distinguish between resilient and non-resilient Latino middle school students, speaking English as a second language. ***Resilient students had greater*** involvement and satisfaction in Mathematics class, Academic self-concept and ***Achievement Motivation*** than non-resilient students ***and were less likely to have been left back.***

Leondari, et al. *(1998)* have investigated the relationship between possible selves, Academic Achievement, Motivation and Self-esteem with 289 high school students of 14-15 years old. Results showed that ***those who imagined themselves Achieving*** as a result of hardwork and referred to specific elaborated positive selves ***outperformed the other groups in Academic Achievement*** and persistence on tasks.

McInerney *(1998)* reports on a series of studies conducted over 15 years that examined the multi dimensional nature of Achievement Motivation and the relationship of Achievement Motivation to criteria of school success such as Achievement, Retention and Occupational choice. Sample of the study consisted high school students of different ethnic backgrounds. Overall findings suggest that the motivational profiles are not more similar and that only a ***narrow range of Academic goals and sense of self variables is important in explaining school Achievement.***

Belcher and ***Macari*** *(1999)* conducted a project which evaluated a program for enhancing student motivation as evidenced by improved academic growth and increased work completion with a target people of fifth graders in a small school in the midwest. Post intervention data indicated ***increased student Achievement Motivation as evidenced by improved Academic Achievement and a reduction in incomplete assignments.***

To examine the relationship between Academic Performance, student ability and motivation among community college students, three studies were used by ***Berry*** and ***Michelle*** *(1999)*. The result revealed that ***students who report feeling enthusiastic and motivated before a test performance better in the examination than students who express feeling of anxiety or worry.***

Duane (1999) report in a digest designed to outline a number of strategies and techniques including Achievement Motivation groups, that school counselors can use to meet the challenge of improving student Academic Achievement. In the report ***Achievement Motivation of the students was considered as the factor which help students to increase their Academic Achievement.***

Grant, et al. (1999) investigated the influence of Achievement Motivation with nine rural black female high school honour graduates. Participants ***exhibited adaptive achievement motivation pattern that were mastery oriented.***

Mc Ewan and ***Goldenberg (1999)*** conducted a study of 41 graduate nursing students found that they had ***high Achievement Motivation and Academic Ability.*** Here trait anxiety was the only valid predictor of Academic success. Academic Ability and inherent anxiety ***had greater potential for predicting students, who would succeed.***

Achievement Motivation of 361 University student athletes were examined by ***Simon, et al. (1999).*** The relationship of motivational orientation to Academic performance and identification was investigated based on self-worth theory. The study revealed that ***fear of failure plays an important role in Academic Motivation.***

The study conducted by ***Taylor (1999)*** examines two ideas that have emerged from research involving African American adolescents with respect to Academic Achievement. The study examines the relation of Peer support to Academic Achievement and Academic performance in a normative sample of African-American adolescents (n=515). Structural Equation modelling

analysis revealed ***positive relation among social competence, peer support, school belonging, Achievement Motivation and grade point average*** for African American adolescents.

Acordino, et al. (2000) examined the relationship of perfectionism with measures of Achievement and Achievement Motivation and Mental health aspects of depression and self esteem on High School students (N = 123). Results indicated that ***students personal standards in terms of Achievement Motivation were significant predictors of Academic Achievement.***

From the review of more than 90 action research projects ***Kember (2000)*** reports that the common assertion that Asian students prefer passive rather than active learning and resists teaching innovations are not correct. Instead, the study argues that ***these students have high levels of Achievement Motivation,*** collective in nature.

Factors enhancing students' social and psychological development were studied by ***Bartz*** and ***Mathews (2001)*** and found that Achievement Motivation is one among the five factors critical to this development. The study also found that ***students with higher academic aspirations develop challenging and realistic ideas and plans for future career.***

Hinkley, et al. (2001) examined the effect of school Achievement Motivation similarities and difference between non-traditional and near-traditional Navajo high school students in grades 9-12 (N = 829). The study concluded that ***Navajo High School students' Achievement goals play an important role in their academic excellence.***

Portes and ***Zady (2001)*** examined the effect of demographic and psychological predictors on immigrant adolescents' reading Achievement.

Data came from over 5,000 second generation students from 77 nationalities and 42 schools. Results of the study indicated that ***Achievement Motivation was the most significant predictor of reading Achievement for Asian-origin students.***

In a study, 23 disadvantaged and aboriginal post secondary students in Canada were interviewed by ***Sloane-Seale, et al. (2001)*** on academic motivation; study barriers and supports; knowledge, skills and abilities and definitions of success. The result pointed that the ***students who encountered situational barriers were goal oriented and had a high need for Achievement.***

The above mentioned studies showing a positive relationship between Achievement Motivation and Academic Achievement. But survey of related literature pointed out some studies which show ***negative results*** between Achievement Motivation and Academic Achievement. Some such studies are reviewed and presented in the following part.

2.2.3.2. Studies showing Negative Results

Review of related literature revealed a number of studies showing a favourable influence of Achievement Motivation on Academic Achievement. Whereas only very few of them are ***with negative results.***

Ayishabi (1987) investigated the kind of relationship between Achievement Motivation and Achievement in Biology of 800 nineth grade children and found that Achievement Motivation may be acting as a predictor of ***Achievement*** in Biology ***only to a less extent.***

Cavallo (1992) conducted a one-week study which explored the extent to which high school students acquired meaningful understanding of selected

biological topics and the relationship between these topics. The results of correlation and multiple regression indicated that ***meaningful learning orientation generally contributed to students attainment of meaningful understanding independent of aptitude and Achievement Motivation.***

Kumar (1994) studied the relationship of Achievement Motivation and Approaches to Studying on Achievement in Biology of nineth grade children and found that Achievement Motivation was affecting the Achievement in Biology to a ***less extent only***.

Niebuhr (1995) in a study examined the relationship between several antecedent variables and student Academic Achievement. The research also examined the role of motivation as a moderator between ability and Academic Achievement and as a mediating variable between family environment and Academic Achievement and between School Climate and Academic Achievement. A survey questionnaire was administered to 241 high school fresh men of whom 76 were white and seven were classified as others. Findings indicated that ***Motivation showed no significant effect on the relationship between ability and Academic Achievement.***

Prasad (1995) studied the interaction of Approaches to studying and Achievement Motivation on process outcomes in Physics of 480 standard IX students and reported that there was ***no significant positive effect of Approaches to Studying and Achievement Motivation*** on process outcomes in Physics.

Stipek (1995) compared the attitudes of children in child centered preschools and kindergartens with those of children in didactic, ***highly Academic program in terms of Achievement and Motivation.*** The findings

revealed that compared to children in child-centered program, children in didactic program rated their abilities significantly lower, ***had lower expectation for success on Academic tasks,*** and showed more dependency on adults for permission and approval.

Dai (2000) studied the relevance and significance of goal-orientation theories to 158 high ability, high achieving adolescents in summer programs for the gifted. Result show that these ***adolescents were not free of ego concerns, including fear of failure and of not living upto expectations of peers and teachers.***

Rohs and ***Anderson (2001)*** investigated the motivational needs of middle grade students enrolled in agricultural education using Georgia seventh and eighth graders (n = 445) in Agricultural education and found that they displayed a higher need for Achievement. But ***no difference was obtained between Future Farmers of America members and non-members.***

Shui-fong, et al. (2001) conducted a study to investigate the effects of competition and learning among Chinese students in a classroom setting with seventh grade students (N = 52) from two Hong-Kong secondary schools in the middle class neighbourhood. The result indicated that there were ***no statistically significant difference between the competitive and non-competitive groups in task enjoyment, achievement attribution and the test anxiety.***

2.2.3.3. Summary of Studies on Achievement Motivation and Achievement

Summary of the reviewed studies on Achievement Motivation and Achievement is presented as follows:

Studies Showing Positive Results	
Author and Year	**Result**
Zargar (1980)	Positive correlation between Achievement Motivation and Achievement
Deshpande (1984)	Achievement Motivation is a determinant of student Achievement
Ahluwalia (1985)	Positive and significant relationship between Achievement Motivation and Achievement
Gandhi (1985)	Achievement Motivation influence Academic Achievement
Geetha (1985)	Achievement Motivation and Academic Performance are positively related
Gottfried (1985)	Academic intrinsic motivation and School Achievement has positive correlation
Fatmi (1986)	Achievement Motivation is a powerful determinant of Achievement
Narayanan (1987)	Achievement Motivation is positively correlated with Academic Performance
Mehta (1987)	Positive effect of Achievement Motivation on Academic Achievement
Haynes, *et al.* (1988)	Achievement Motivation was a powerful discriminating factor of Achievement
Sherril (1988)	Significant positive relationship between Achievement Motivation and scholastic performance
Higbee (1989)	Self Motivation influences Academic success
Andrews, *et al.* (1991)	Relation between substance use and Achievement Motivation is bidirectional
Cassidy and Lynn (1991)	Educational Attainment were influenced by Achievement Motivation
Grote and James (1991)	Presence of striving for Achievement and apprehensiveness as the base of consistent Achievement

Lewis (1991)	Motivation influence Academic Achievement
Rajani (1991)	Marked relationship between Achievement Motivation and Achievement
Rhoneck and Grob (1991)	For urban classes learning is primarily related to interest and motivation
Jayaseelan (1992)	Significant influence of Achievement Motivation on scholastic Achievement
Das (1993)	Achievement Motivation influences Achievement in Social Studies
Leung (1993)	Females tend to perceive success as more controllable and internal relative to boys
Schultz (1993)	Achievement Motivation is a significant mediator of Academic Performance
Fontaine (1994)	Academically superior children are more motivated
Jageda (1994)	Students' performance could not be inferred from their level of Achievement Motivation
Schonwetter, *et al.* (1994)	Students' need for success significantly affected student learning experiences
Abouserie (1995)	Students' Achievement Motivation have a substantial influence on their levels of knowledge processing
Cain and Dweck (1995)	Individual differences in Achievement are positively related to their motivational responses
Gandara (1995)	Achievement Motivation and belief in education as the key to educational advancement
Hokoda and Fincham (1995)	Mothers of mastery children socialize their children's Achievement Motivation
Isaacs and Duffus (1995)	Achievement Motivation promoted Academic Achievement and Attainment among minority students
Singh and Singh (1995)	Achievement Motivation can predict Academic performance

Unnikrishnan (1995)	Achievement Motivation and performance level were positively related
Huang and Waxman (1996)	High achieving students had significantly higher academic self concept and Achievement Motivation
Plucker, *et al.* (1996)	Higher levels of aspirations and Achievement Motivation in high ability secondary students foster Academic Achievement
Preetha (1996)	Achievement Motivation has significant positive effect on Achievement in Biology
McLean (1997)	High Achievers had significantly more positive scores than low achievers on motivation for schooling
Waxman, *et al.* (1997)	Resilient students had greater Achievement Motivation and were less likely to have been left back
Leondari, *et al.* (1998)	Those who imagined themselves achieving outperformed the other groups in Academic Achievement
McInerney (1998)	A narrow range of Academic goals and sense of self is important in explaining school Achievement
Belcher and Macari (1999)	Increased student Achievement Motivation evidenced by improved Academic Achievement
Berry and Michelle (1999)	Students, motivated before a test performance better in the examination than who express anxiety and worry
Duane (1999)	Achievement Motivation of students was considered as the factor which help them to increase their Academic Achievement
Grant, *et al.* (1999)	Exhibited adaptive Achievement Motivation pattern that were mastery oriented
McEwan and Goldenberg (1999)	High Achievement Motivation and Academic ability had greater potential for predicting academic success
Simons, *et al.* (1999)	Fear of failure plays an important role in Academic performance

Taylor (1999)	Positive relations among peer support, Achievement Motivation and grade point average
Acordino, *et al.* (2000)	Student's personal standards in terms of Achievement Motivation were significant predictors of Academic Achievement
Kember (2000)	Asian students prefer active learning as they have high levels of Achievement Motivation
Barts and Mathews (2001)	Students with higher Academic aspirations develop challenging and realistic ideas
Hinkley, *et al.* (2001)	Navojo High School students' Achievement goals play an important role in their Academic excellence
Portes and Zady (2001)	Achievement Motivation was the most significant predictor of reading Achievement for Asian-origin students
Sloane-Seale, *et al.* (2001)	Students who encountered situational barriers were goal oriented and had a high need for Achievement
Studies Showing Negative Results	
Ayishabi (1987)	Achievement Motivation may be act as a predictor of Achievement to a less extent
Cavallo (1992)	Meaningful learning orientation contributed to students' attainment independent of aptitude and Achievement Motivation
Kumar (1994)	Achievement Motivation influence Academic Achievement to a less extent
Neibuhr (1995)	Motivation showed no significant effect on the relationship between ability and Academic Achievement
Prasad (1995)	No significant positive effect on process outcomes
Stipek (1995)	Children in highly Academic programs in terms of Achievement Motivation had lower expectation for Academic success.
Dai (2000)	Adolescents were not living upto expectations of peers and teachers

Rohs and Anderson (2001)	No difference was obtained between Future Farmers of America members and non-members
Shui-Fong, *et al.* (2001)	No statistically significant difference between competitive and non-competitive groups

2.3. META ANALYSIS

Meta analysis is the statistical summary of the results of all the studies on a topic (Glass, *et al.*, 1981). In this part of the chapter, the investigator made an attempt to present the meta analysis of the studies reviewed in respect of Cooperative Learning and Achievement, Cooperative Learning and Retention and Achievement Motivation and Achievement. Meta analysis is done with a view to statistically examine the underlying trend of the variables, Cooperative Learning and Achievement Motivation in relation to student Achievement. For this, studies pertaining to Cooperative Learning and Achievement, Cooperative Learning and Retention and Achievement Motivation and Achievement were analysed based on the positive and negative nature of the results. Percentage of studies on Cooperative Learning and Achievement, Cooperative Learning and Retention and Achievement Motivation and Achievement both in negative and positive nature were computed. They are presented in Table 2.1.

TABLE 2.1

Percentage of Studies Having Positive and Negative Results with Cooperative Learning and Achievement, Cooperative Learning and Retention and Achievement Motivation and Achievement

Variables	Number of Positive Studies	Percentage	Number of Negative Studies	Percentage	Number of Total Studies
Cooperative Learning and Achievement	64	76.19	20	23.80	84
Cooperative Learning and Retention	21	87.50	3	12.50	24
Achievement Motivation and Achievement	52	85.24	9	14.75	61

From the meta analysis, it is evident that Cooperative Learning and Achievement Motivation have strong positive influence on Achievement. 76.19% of the studies on Cooperative Learning and Achievement, out of 84 studies reviewed, yielded Achievement benefits. Where as 23.80% of the studies yield no Achievement benefits. Out of 24 studies reviewed, 87.5% of the studies on Cooperative Learning and Retention yielded Retention benefits. At the same time 12.5% of the studies yielded no Retention gains. 85.24% out of 61 studies yielded a strong positive influence on Achievement, in case of Achievement Motivation. But 14.75% of the reviewed studies show negative/ no relation with student Achievement. In short, the overall research findings with regard to Cooperative Learning on Achievement and Retention and Achievement Motivation on Achievement given inconclusive results. But the percentage analysis indicated the growing trend in the findings of research on

Cooperative Learning and Achievement, Cooperative Learning and Retention and Achievement Motivation and Achievement in the positive direction.

Whereas, the investigator could not locate any study in India showing the cross over effects of Cooperative Learning Strategy and Achievement Motivation on scholastic performance and Retention.

METHODOLOGY

Hameed A."Interaction of instructional strategies and achievement motivation on achievement in social science of standard VII pupils" Thesis. Department of Education, University of Calicut, 2002

Chapter Three

METHODOLOGY

METHODOLOGY 3

The present experimental study was conducted in ***two major phases***. In the first phase, the study was focused to find out the ***effectiveness of Cooperative Learning Strategy (Learning Together Model)*** over ***Conventional lecture Method of Teaching,*** if any, with regard to ***Achievement*** and ***Retention in Social Science*** of standard VII pupils. In the second phase, it was aimed to find out the ***main*** and ***interaction effects*** of ***Instructional Strategies*** (Cooperative Learning Strategy and Conventional lecture Method of Teaching) and ***Achievement Motivation*** on ***Achievement*** and ***Retention in Social Science*** of standard VII pupils.

The methodology of the study is presented as follows:

3.1. VARIABLES OF THE STUDY

The rationale behind the selection of the Independent, Dependent and Control Variables of the study is explained in the following sections.

The investigator made a careful review of literature to identify the Instructional Strategies developed on the basis of research on human learning and communication. To bring about desirable changes in the school children, these strategies also employ a combination of human and non-human resources. These were categorized under broad classifications as varied ***Methods of Teaching, Models of Teaching*** and ***Strategies of Instruction*** and ***Learning***. It is worthwhile to note that efficiency in learning depends on student characteristics both ***cognitive*** and ***non-cognitive***. ***Socio-Economic background*** of parents and other environmental variables having varied influence on teaching. These variables influencing students' performance in Social Science were specifically selected for the experiment. The following Independent, Dependent and Control Variables related to Achievement in school subjects have been considered.

3.1.1. INDEPENDENT VARIABLES

The Independent Variables selected for the study were two ***Instructional Strategies*** and ***Achievement Motivation***.

3.1.1.1. Instructional Strategies

Stones and Morris (1977) define Instructional Strategy as a ***generalised plan for a lesson which includes structure, desired learning behaviour in terms of goals of instruction and an outline of planned tactics necessary to implement the strategy***. In the present study it includes ***Cooperative Learning Strategy (Learning Together Model)*** and ***Conventional lecture Method of Teaching***.

3.1.1.1.a. Cooperative Learning Strategy

Cooperative Learning refers to ***instructional methods*** in which students work together on academic tasks in ***small groups*** (usually four to five members) to help themselves and their teammates ***learn together*** and are rewarded in some way for performance in a group. Cooperative Learning results in improved Academic Achievement, increased Motivation and Retention, collective image of self and others and it is a vehicle for critical thinking and problem solving as revealed from in-depth studies conducted abroad. A meta analysis of the Cooperative Learning methods revealed various kinds of Cooperative Learning Strategies developed so far. Some of them are Learning Together (Johnson & Johnson, 1975), Group Investigation (Sharan & Sharan, 1976), Jigsaw I (Aronson, 1978), Student Teams-Achievement Divisions (Slavin, 1980) and Numbered Heads Together (Olsen & Kagan, 1992) etc. Among these, the investigator selected the ***Learning Together Model*** of Cooperative Learning for treatment, because whenever problem solving, divergent thinking, quality performance and performance of learning tasks are desired, this model may be the effective one as exemplified in previous researches.

In Learning Together Model, learning will be proceeded through four consecutive phases.

Phase I Present the goal as a group goal.

Phase II Facilitate the sharing of ideas and materials.

Phase III Facilitate and encourage a division of labour wherever appropriate

Phase IV Reward the group for successful completion of the task.

3.1.1.1.b. Conventional lecture Method of Teaching

Conventional Method refers to the method adopted by most of the teachers conventionally. In Kerala state, Lecture Method can be considered as the Conventional Method, as most of the teachers have been following it for years. It may be due to the convenience of this method. Thus, ***Conventional lecture Method of Teaching*** was selected as one of the Instructional Strategies.

3.1.1.2. Achievement Motivation

As ***Achievement Motivation*** is the best researched ***Psychological Motive,*** which have an effect on learning outcomes especially in enhancing Academic Achievement, it was also selected as one of the Independent Variables.

3.1.2. DEPENDENT VARIABLES

The study concentrated on the effectiveness of Instructional Strategies and interaction of Instructional Strategies and Achievement Motivation on the cognitive outcomes of the learners. Thus, ***Achievement in Social Science*** (Objectivewise scores viz., Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation and a Total score) and ***Retention in Social Science*** (Objectivewise scores viz., Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation and a Total score) of standard VII pupils were selected as the Dependent Variables.

In the present study, Retention is considered as the amount of the learned material that can be correctly remembered after a fixed interval of time. Retention can be categorised into two, short-term Retention and long-term Retention (Deese & Hulse, 1967). In short-term Retention, the Retention

period will be a few seconds; in long-term Retention, it may be days, months or years. In the present study the long-term Retention is considered. The Retention interval was fixed for one month.

A baseline should be needed from which to measure Retention (Deese & Hulse, 1967). The actual quantity of the learned material existed immediately after the learning is over can be considered as the baseline. In the present study, Achievement Test in Social Science was again administered on the Experimental and Control groups, one month (Retention interval) after the experiment, in which the subjects had to reproduce the learned material by recall, recognition and reconstruction. Thus the amount of learned material forgotten after one month was measured (Amount forgotten = Amount learned - Amount retained - Deese & Hulse, 1967). The amount of Retention was calculated by subtracting the amount forgotten from the amount learned.

3.1.3. CONTROL VARIABLES

The investigator anticipated some attributes of the subjects that might intervene in the experimental situation as the outcomes of the treatment might be affected by these factors. To overcome this problem, these variables were controlled statistically using ANCOVA. Variables controlled for this Experimental study were ***Previous Knowledge of the Subject Matter Measured by a Pretest, Verbal Intelligence*** and ***Non-verbal Intelligence***.

3.2. OBJECTIVES AND HYPOTHESES

The objectives formulated and hypotheses tested for the present Experimental study are described in the following sections.

3.2.1. OBJECTIVES

Two major objectives were formulated for the present study. The first objective was to ***investigate the effectiveness of Instructional Strategies (Cooperative Learning Strategy and Conventional lecture Method of Teaching) on Achievement and Retention in Social Science*** of standard VII pupils.

Examination of the main and interaction effects of Instructional Strategies (Cooperative Learning Strategy - Learning Together ***and Conventional lecture Method of Teaching) and Achievement Motivation on Achievement and Retention*** of standard VII pupils was the second major objective of the study.

The specific objectives formulated are presented to get an idea regarding the nature and scope of the experiment. They are as follows:

3.2.1.1. To study whether there exists ***any difference in the mean Achievement score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

3.2.1.2. To study whether there exists ***any difference in the mean Gain score*** of the Experimental and Control groups for the Total sample, Boys and Girls.

3.2.1.3. To study whether there exists ***any difference in the mean Retention score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

3.2.1.4. To study the ***effectiveness of Cooperative Learning Strategy*** over Conventional lecture Method of Teaching, if any, in terms of Achievement in Social Science of standard VII pupils.

3.2.1.5. To study the ***effectiveness of Cooperative Learning Strategy*** over Conventional lecture Method of Teaching, if any, in terms of Retention in Social Science of standard VII pupils.

3.2.1.6. To study the ***main effects*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls).

3.2.1.7. To study the ***interaction effect*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

3.2.1.8. To study the ***main effects*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

3.2.1.9. To study the ***interaction effect*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

3.2.2. HYPOTHESES

For the experiment it, was necessary to formulate some assumptions or intelligent guesses regarding the expected outcomes of the study. In research methodology these assumptions are called hypotheses. Hypotheses provides a clear path to the investigator and delimit the study into some relevant issues of the problem under consideration. The hypotheses always keep the investigator in touch with the main objectives of the study.

On the basis of the review of literature, the experiment was designed to test the following hypotheses.

3.2.2.1. There will be no significant difference in the ***mean Achievement score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

3.2.2.2. There will be no significant difference in the ***mean Gain score*** of the Experimental and Control groups for the Total sample, Boys and Girls.

3.2.2.3. There will be no significant difference in the ***mean Retention score*** (Objectivewise and Total score) of the Experimental and Control Groups for the Total sample, Boys and Girls.

3.2.2.4. Pupils taught through ***Cooperative Learning Strategy*** will not differ significantly from pupils taught through ***Conventional lecture Method of Teaching*** in terms of ***Achievement in Social Science*** of standard VII pupils.

3.2.2.5. Pupils taught through ***Cooperative Learning Strategy*** will not differ significantly from pupils taught through ***Conventional lecture Method of Teaching*** in terms of ***Retention in Social Science*** of standard VII pupils.

3.2.2.6. There will be no significant main effects of the Independent Variables (***Instructional Strategies*** and ***Achievement Motivation)*** on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

3.2.2.7. There will be no significant interaction effect of the Independent Variables (***Instructional Strategies*** and ***Achievement Motivation***) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

3.2.2.8. There will be no significant main effects of the Independent Variables (***Instructional Strategies*** and ***Achievement Motivation***) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

3.2.2.9. There will be no significant interaction effect of the Independent Variables (***Instructional Strategies*** and ***Achievement Motivation***) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

3.3. DESIGN OF THE STUDY

The present study has been conducted by employing the ***True-Experimental Design***. The experimental design selected is explained as follows.

3.3.1. RESEARCH DESIGN SELECTED

The research design selected for the present experimental study was the ***Pretest-Post test Equivalent Groups Design***. The design of the study is illustrated as follows:

G_1 O_1 X O_2

G_2 O_3 C O_4

O_1 O_3 Pretest

O_2 O_4 Post test

$O_2 - O_1$, $O_4 - O_3$ } Gain score

G_1 – Experimental group

G_2 – Control group

X – Application of the Experimental treatment

C – Application of the Control treatment

3.4. PROCEDURE

The procedure adopted for the study is explained in the following sections.

3.4.1. SAMPLE FOR THE STUDY

Pupils of Upper Primary schools in Kerala state were considered as the population for the study.

Being an experimental study, the investigator felt it difficult to conduct the experiment on large sample, because class size has great role in the acceleration of Academic Achievement (Smith & Glass, 1990) in the classroom.

It is noted that, in recent years, there has been a marked increase of interest in the small groups. Smaller groups are advocated because they are seem to allow for greater participation and involvement by the students (Slavin, 1985). The investigator therefore selected two intact class division of standard VII pupils each from two schools as the Experimental and Control groups respectively. Since random assignment of subjects from the school population was not possible, the Experimental and Control schools were selected randomly for Experimental and Control treatments by tossing the coin. Certain aspects of the two groups were considered in the selection to make sure the equivalence of the groups. These aspects are described as follows:

3.4.1.1. Rural-Urban Locality: The two schools selected were situated in semi urban areas of Kozhikode district.

3.4.1.2. Sex: The two schools were provided with co-education.

3.4.1.3. Instructional Efficiency: It is an important criteria which decides the quality of learning of the pupils. Equality of the instructional efficiency of the subjects of the two groups (classes) were ensured by comparing the results in the terminal examination in the previous year.

In the selection of the sample, the convenience of the schools to conduct the experiment and the physical distance between the two schools (so that the students of the two groups cannot mingle mutually) were also considered. The two classroom groups were equated in their Previous Knowledge of the Subject Matter Measured by a Pretest, Verbal Intelligence, Non-verbal Intelligence and Socio-Economic Status. Appropriate tools were used for this purpose.

3.4.1.4. Allocation of Experimental and Control Groups

One intact class group of standard VII pupils each from two schools in Kozhikode district were selected for the experiment. The schools were allocated as ***Experimental*** and ***Control*** groups by tossing a coin.

Details of the schools selected for the Experiment are given as follows:

Sl. No.	Name of School	Nature of Group
1	Trikkottoor U.P. School, Payyoli	Experimental group
2	Salafi U.P. School, Meppayur	Control group

Actual number of subjects in the Experimental and Control groups at the beginning of the Experiment are shown as follows:

Sample	Experimental Group	Control Group	Total
Boys	28	29	57
Girls	16	18	34
Total	44	47	91

The ***Experimental group*** was taught through the ***Cooperative Learning Strategy (Learning Together Model)*** and the Control group was taught through the ***Conventional lecture Method of Teaching.***

3.4.2. SELECTION OF TOPICS FOR TREATMENT

The topics for treatment in the present experiment were selected from the syllabus of Social Science prescribed for standard VII pupils of Kerala

state for the academic year 2001-2002. Before the selection of the topics; the curriculum, syllabus and text book prescribed for standard VII were studied carefully. In addition, necessary details regarding the topics were sought from experts and teachers concerned. Thus ***five topics*** were selected for treatment and they were again divided into 20 sub units. Each topic and it's sub units are as follows:

3.4.2.1. Big Men and Small World

(a) Growth of Transportation

(b) World - Air Route

(c) The Role of Kerala

(d) Countries and Coins

3.4.2.2. The World in Touch with

(a) The Secret of Advertisement

(b) Advertisement Agencies

3.4.2.3. Controlling Hands

(a) Let us Find out the Predecessors

(b) Games

3.4.2.4. The Unending Relations

(a) Important Oil-Coal Deposits of the World

(b) Agriculture and Industry

(c) Rural and Urban Areas

3.4.2.5. Sources of Wealth

(a) Sources of Income

(b) New Ways of Conquest

(c) One out of Hundred

(d) What shares do?

All lessons were examined with great care and found amenable to Cooperative Learning Strategy (Learning Together Model) and Conventional lecture Method of Teaching. For the Experimental and Control groups, twenty Lesson Transcripts each in Malayalam language (one each for each sub unit) were prepared for 20 class periods, each having a time duration of 45 minutes. Thus the total duration of treatment both in the Experimental and Control groups was fixed at 15 hours each.

3.4.3. TOOLS USED FOR TREATMENT

A description of the tools used for treatment in the Experimental and Control groups is presented in the following subsections.

3.4.3.1. Lesson Transcripts for Cooperative Learning Strategy - Learning Together Model (Kumar & Hameed, 2001)

The investigator prepared Lesson Transcripts for Cooperative Learning Strategy, following the steps proposed by Johnson and Johnson (1975) for their ***Learning Together*** model. The topics selected for treatment as described in section 3.4.2. were divided into 20 sub units. The topics selected and the specific objectives set for each learning unit were the same for the Experimental and Control groups.

For the development of the Lesson Transcripts, the investigator reviewed different Cooperative Learning Procedures like ***Learning Together*** (Johnson & Johnson, 1975); ***Jigsaw I*** (Aronson, 1978); ***Jigsaw II*** (Slavin, 1980); ***Cooperative Integrated Reading and Composition - CIRC*** (Madden, *et al.*, 1986); ***Numbered Heads Together*** (Olsen & Kagan, 1992) and other Cooperative Learning Methods proposed by Starr and Schuerman (1974) and Wheeler (1977). Among these, the investigator selected the ***Learning Together*** model of Cooperative Learning Strategy for treatment because this model is purely based on theory and validated through research (Johnson, *et al.*, 2000). It has been also operationalised into clear procedures, educators can use. The Cooperative Learning procedures implied in Learning Together model involve students work in four or five member heterogeneous groups.

One of the main feature of the Learning Together Model, that made it different from other Cooperative Learning methods, is that the groups work for a ***common goal*** and receive ***praise*** or ***reward*** as a group based on how well they are working together. Another important feature of this model is that, it made use of ***Cooperative, Competitive*** and ***Individualistic*** goal structures appropriately. The components of the Learning Together model, as described by Johnson and Johnson (1975) are complimentary to the goals of early childhood education (Lyman & Foyle, 1988). It is also noted that, more than the direct or instructional effects, it creates ***indirect*** or ***nurturant*** effect on the subjects. The Learning Together model is the closest of the Cooperative Learning models to pure Cooperation (Slavin, 1985). Whenever problem solving, divergent thinking, quality performance and performance of learning tasks are desired, Learning Together model will be the effective Instructional Learning Strategy (Johnson & Johnson, 1975; Johnson, *et al.*, 2000).

Description of the various stages in the development of the Lesson Transcripts is presented as follows.

Planning

After fixing the Learning Together Model of Cooperative learning as the Experimental variable for the present study, the investigator made adequate planning to prepare Lesson Transcripts for this strategy. For the same, the entire topics selected were examined thoroughly and suggestions were sought from the experts concerned. Moreover, the guidelines given by Johnson and Johnson (1975) for their Learning Together Model were studied thoroughly.

Preparation

For the experimental study, the investigator prepared Lesson Transcripts on the basis of the theoretical framework of Cooperative goal structure suggested by Johnson and Johnson (1975). On the basis of the Cooperative goal structure, learning will be proceeded through four consecutive phases.

Phase I - Present the goal as a group goal

In this situation learning will be a group venture, not as an individual task. The teacher presents the objective of teaching as a group goal.

Phase II - Facilitate and encourage the sharing of ideas and materials

In this phase, the students should be encouraged to help each other with the group work and in formulating conclusions.

Phase III - Facilitate and encourage a division of labour wherever appropriate

Complete involvement of each and every student in the learning process is appropriate in this model.

Phase IV - Reward the group for successful completion of the task

Since, low achieving students can make contributions to a group and all students can increase their understanding of ideas by explaining them to others, every individual member will experience success when the groups successfully complete the instructional task (Feather stone, 1986).

In the preparation of the draft Lesson Transcripts in Malayalam language for Cooperative Learning Strategy (Learning Together Model), the investigator followed the four phases explained earlier and studied the model lessons depicted by Johnson and Johnson (1975) for their Learning Together model of Cooperative Learning. The draft Lesson Transcripts were subjected for experts' evaluation. Based on their suggestions, necessary changes were made.

Try out

The draft Lesson Transcripts were tried out by the investigator on 42 standard VII pupils to work out its application. Before the beginning of the try out, through a Jigsaw puzzle game (Brain Storming Session), the investigator created a good rapport with the pupils. The need and purpose of the new mode of learning strategy was made clear to the students. The investigator also explained the main objectives and features of Learning Together model and how instruction is designed in tune with Cooperative Learning Strategy.

a) Formation of Groups

Before the try out was started, the investigator made use of ***Four Step Interview*** as an ice-breaker for members to get grouped and to know one

another. The investigator provided the information needed and some interview questions that should be asked. In this technique, the subject ***A*** interviews ***B*** for a specified number of minutes. At a signal, subjects reverse their roles and ***B*** interviews ***A*** for the same number of minutes. At another signal by the investigator, the pair consisting of ***A*** and ***B*** turns to another pair, forming a group of four. At the next signal, the group consists of ***A, B, C*** and ***D*** turns to another pair ***E*** and ***F*** and form a group of six members. Each member of the group introduces his or her partner highlighting the most interesting points. In this way seven groups consisting of six members were formed and names were given to the groups. As per the instruction of the investigator, specific roles like leader, reporter etc. were assigned to students.

b. The Seating Arrangement

Johnson and Johnson (1975) have suggested a clear out line for the type of seating arrangement to be used in the classroom inorder to facilitate Cooperation among pupils. In a Cooperative Learning situation the seating arrangement has to be organised in accordance with ***students access to students, to other groups, to the teacher and learning materials***. Research on Cooperative Learning in elementary schools has found that it's effectiveness depends on how it is organised (Slavin, 1988). Organise one's classroom, especially in primary classroom, exerts a powerful influence on both teaching and learning (Cohen, *et al.*, 1996).

The diagrammatic representation of the classroom seating arrangement for the Learning Together model of Cooperative Learning Strategy is presented in Figure 3-1.

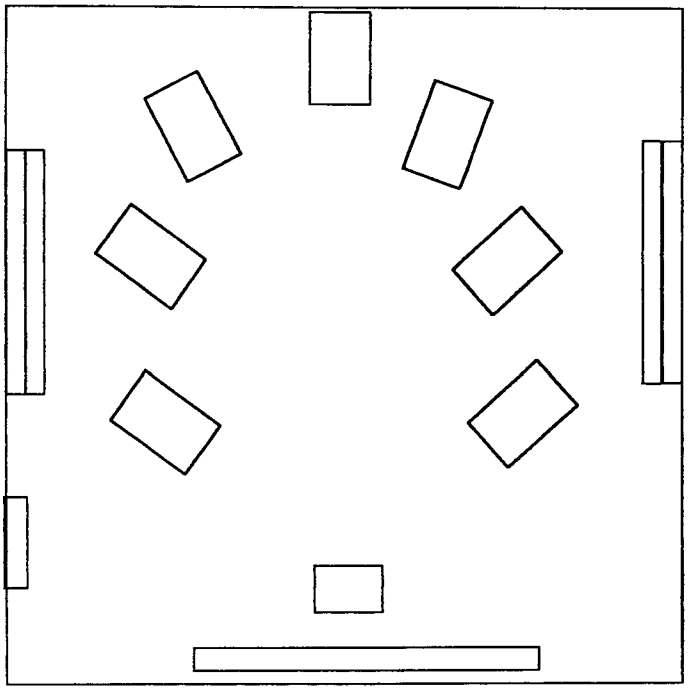


FIGURE 3-1 Seating Arrangement for the Learning Together Model of Cooperative Learning Strategy

Teachers concerned in the school, where try out was done, were invited to attend the try out session and their opinion about the implementation was sought. On the basis of the suggestions given by the teachers and the feed back from students, the draft Lesson Transcript was modified, re-edited and finalised. One model Lesson Transcript in Malayalam language and it's English versions are presented in Appendices I and IA respectively.

3.4.3.2. Lesson Transcripts for Conventional Lecture Method of Teaching (Kumar & Hameed, 2001)

Lesson Transcripts for Conventional lecture Method of Teaching were prepared in Malayalam language on the basis of the instructional objectives of

Cognitive domain, for teaching the Control group. Instructional objectives were formulated on the basis of the nature of the content. The Lesson Transcripts were developed on the basis of the Herbartian steps ie. ***Introduction, Presentation, Association, Generalisation, Application*** **and** ***Recapitulation***. While the method of instruction in the Experimental group varied from unit to unit, depending upon the nature of the subject, the method of instruction followed in the Control group was traditional. No separate teaching aids were developed for the Control group, but available teaching aids in the school were used. Model Lesson Transcript in Malayalam language and it's English version are presented in Appendices II and IIA.

3.4.4. OTHER TOOLS USED

The tools used to measure the second Independent Variable, ***Achievement Motivation*** and Control Variables, ***Verbal Intelligence*** and ***Non-verbal Intelligence*** and other tools like ***Pretest, Post test (Achievement Test in Social Sciene), Retention test, General Data Sheet for assessing the Socio-Economic Status*** and ***Classroom Interaction Rating Scale*** are described in this section.

3.4.4.1. Scale of Achievement Motivation-SAM (Pillai & Kumar, 1993)

Achievement Motivation, one of the Independent Variables of the study, was measured using the Scale of Achievement Motivation developed by Pillai and Kumar (1993). The Scale of Achievement Motivation is a multifactorial one prepared in Malayalam language and is modelled after ***Cassidy*** and ***Lynn*** Achievement Motivation Questionnaire (1989). The scale consists of 50 items, both positive and negative, belongs to seven components namely ***Work Ethic, Pursuit of Excellence, Status Aspiration, Mastery,***

Competitiveness, Acquisitiveness and Dominance. A ***composite score*** attained for seven components is the subject's score of Achievement Motivation.

The scale was prepared in the form of a three-point scale, following a response pattern of ***Yes*** **(Y),** ***Undecided*** **(U)** and ***No*** **(N).** Score for each item will be in a sequence of ***two, one*** and ***zero*** for positive items and ***zero, one*** and ***two*** for negative items. The subject has to respond all the items within a maximum time of 25 minutes.

Validity coefficient of the test is 0.68 as reported by the test constructors. Reliability of the scale was found out using Cronbach's reliability coefficient alpha, which are as the following:

Sl. No.	Factor	Alpha Coefficient
1.	Work Ethic	0.68
2.	Pursuit of Excellence	0.64
3.	Status Aspiration	0.80
4.	Mastery	0.59
5.	Competitiveness	0.62
6.	Acquisitiveness	0.64
7.	Dominance	0.61

An illustrative example from the scale is presented.

I) I have the feeling that I am lazy.

Yes	Undecided	No
O	⊗	O

A copy of the Scale of Achievement Motivation, it's response sheet in Malayalam language and English versions are given in Appendices III, III A, III B and III C.

3.4.4.2. Verbal Group Test of Intelligence - VGTI (Kumar, *et al.*, 1997)

For the study, the Confounding Variable Verbal Intelligence was measured using the Verbal Group Test of Intelligence (VGTI) developed by Kumar, *et al.* (1997). The test consists of five sub tests of twenty multiple choice items (Totally 100 items) belong to five components namely ***Verbal Analogy, Verbal Classification, Numerical Reasoning, Verbal Reasoning*** and ***Comprehension,*** that could be completed by not more than one hour of time for the subjects having the age group of 10-15 years. Maximum score was 100 and minimum, zero. A composite score attained for the five sub tests is treated as the subjects' score of Verbal Intelligence. Each subtests are explained with appropriate examples.

Test I - Verbal Analogy

The test intended to measure the ability of pupils in understanding implied relationships between two sets of words. Questions under this category include three words of which the first two have a relationship. The subjects' task is to find out the missing word to suit the third one from the given relationship.

An illustrative item is presented.

1. Student : Classroom :: Player : .....

A. Stadium B. Competition C. Coach D. Play

A✓	B	C	D

Test II - Verbal Classification

In this section, for each item, four words are given of which three can be grouped together according to some principles or laws. The subject has to find out the ***oddman*** and mark it on the response sheet according to the instruction given. An illustrative item is the following.

1. A. Bus B. Aeroplane C. Cycle D. Lorry

A	B✓	C	D

Test III - Numerical Reasoning

Items in this subtest include ***series*** items, ***Odd man out*** items, and ***analogy*** type items. The mental process involved in answering this type of items require the perception of some sort of relationship holding between the given numbers. Three examples are given.

Series Type

1. 4, 9, 16, 25, 36 _____

A. 39 B. 47 C. 49 D. 59

A	B	C✓	D

Oddman out Type

2. A. 1 B. 5 C. 25 D. 75

A✓	B	C	D

Analogy Type

3. 3:5 :: 11: _____

A. 12 B. 13 C. 14 D. 15

A	B✓	C	D

Test IV - Verbal Reasoning

Items in this type require an exercise of reasoning power. As the stem of the item is long, when the subject proceeds with the item, a part of it may be forgotten and which needs more time for reading and re-reading. Such items considerably slow down the speed of reasoning. If carefully attempted, it can provide the correct answer within a limited time. An illustrative item is given:

1. F is the brother of A. C is the daughter of A. K is the sister of F and G is the brother of C. Then who is the uncle of G?

A. F B. C C. K D. A

A✓	B	C	D

Test V - Comprehension

Items of this subtest are in the form of puzzles involving several relationships and persons. In this subtest, four types of items are included. Under each type of items five questions are given. At first, the subject is required to understand and analyse the relationship given in each type of items. Then the subject has to choose the right answer, for the five questions put at the end of each type of item, from the given alternatives and mark it on the response sheet. An illustrative example is given:

1. P, Q, R, S, T and U are sitting in two rows. In each row three persons are sitting face to face. The position of R is second from the left side of P. Q and T are sitting face to face. R is not the neighbour of Q. S and P are sitting in opposite direction.

1. In the given alternatives, which set of persons are sitting in the same row.

A. PTR B. PQR C. UTS D. PUS

A✓	B	C	D

Validity of the VGTI

The validity of the Verbal Group Test of Intelligence was established using criterion related technique. ***Kerala University Verbal Group Test of Intelligence*** (Nair, *et al.*, 1968) was used as the external criterion. The obtained validity coefficients (Subtestwise and Total test) are presented in Table 3.1.

TABLE 3.1

Validity Coefficients Obtained for Verbal Group Test of Intelligence (Subtestwise and Total test)

Sl. No.	Subtests of VGTI	Obtained 'r'
1.	Verbal Analogy	0.5498**
2.	Verbal Classification	0.5436**
3.	Numerical Reasoning	0.5249**
4.	Verbal Reasoning	0.4041**
5.	Comprehension	0.4606**
6.	Intelligence - Total	0.6557**

**P < 0.01

Since the content was adapted from reputed tests of Verbal Intelligence, the VGTI possesses high level of content validity as reported by the test constructors.

Reliability of the VGTI

Reliability of the VGTI was established using the Split-half method and the reliability coefficient was corrected using Spearman Brown Prophecy formula. The reliability coefficients of the five Subtests and the Total test are given in Table 3.2.

TABLE 3.2

Reliability Coefficients Obtained for Verbal Group Test of Intelligence (Subtestwise and Total test)

Sl. No.	Sub Tests	Obtained 'r'
1.	Verbal Analogy	0.6636**
2.	Verbal Classification	0.5649**
3.	Numerical Reasoning	0.7214**
4.	Verbal Reasoning	0.6328**
5.	Comprehension	0.4700**
6.	Intelligence - Total	0.8283**

**P < 0.01

The validity and reliability coefficients of the test indicated that the test is a valid and reliable one. The internal structure of the VGTI was also examined by correlating the component wise score with Total score on the VGTI. The inter correlation matrix is presented in Table 3.3.

TABLE 3.3

Inter Correlation of the Components of Verbal Group Test of Intelligence with Total Score

Sl. No.	Components	Verbal Analogy	Verbal Classification	Numerical Reasoning	Verbal Reasoning	Comprehension	Intelligence (Total)
1.	Verbal Analogy	(. .)	0.6209**	0.4177**	0.433**	0.3451**	0.7623**
2.	Verbal Classification		(. .)	0.4203**	0.4129**	0.3954**	0.7692**
3.	Numerical Reasoning			(. .)	0.4653**	0.4652**	0.7673**
4.	Verbal Reasoning				(. .)	0.4079**	0.7171**
5.	Comprehension					(. .)	0.6896**

** P < 0.01

The validity and reliability of the test suggest that the test has acceptable psychometric qualities to measure Verbal Intelligence of the sample.

A copy of the Verbal Group Test of Intelligence and Response sheet in Malayalam language and it's English versions are presented in Appendices IV, IV A, IVB and IV C respectively.

3.4.4.3. Standard Progressive Matrices Test -SPMT (Raven, 1958)

Non-Verbal Intelligence of the subjects was measured by administering the standard form of the Raven's Progressive Matrices Test (Raven, 1958). This test of intelligence intended to estimate the subject's ability to discern and utilize a logical relationship presented by Non-Verbal materials. The test consists of five subtests of twelve items each. In each item, a part of geometrical design is missing. Six or eight alternatives are given for each design. All those of fit the missing part, but only one logically belongs to it. The test is a popular measure of the *g* factor of intelligence.

The reliability coefficients as reported by Raven (1958), vary from 0.80 to 0.90. Validity of the test has been estimated in a variety of usual ways. When Stanford Binet Test was used as the criterion, correlation varied from 0.50 to 0.86. In a study by Nair (1967) in Kerala, the reliability coefficient was found vary from 0.70 to 0.86 by Split-half method and 0.84 to 0.91 by Test-retest method.

3.4.4.4. Pretest

The post test, Achievement Test in Social Science (ATSS) for standard VII pupils, constructed and standardised by the investigator was used as the

Pretest also. Before starting the treatment, both the Experimental and Control group subjects were given the Achievement Test as Pretest to measure the Previous Knowledge of the pupils, in terms of Achievement in Social Science. It tests the subjects' basic knowledge regarding the topics studied. The details of the ATSS is discussed in section 3.4.4.5.

3.4.4.5. Achievement Test in Social Science - ATSS (Kumar & Hameed, 2001)

To measure the entry behaviour and terminal behaviour of the pupils, this Achievement Test in Social Science, constructed by the investigator, on the topics selected for treatment, as explained in section 3.4.2 was used. The test is based on the ***Taxonomy of Educational Objectives*** suggested by Bloom (1979). In the present study, this test was used as the Pretest, Post test and Retention test. The procedure followed for the construction of the Achievement Test in Social Science is described in the following sections.

a. Planning of the Test

In this stage, the investigator studied thoroughly the curriculum, syllabus, Hand book for teachers and text book of Social Science for standard VII pupils for the academic year 2001-2002. Apart from Text book, the investigator made use of available source books for framing the items for the test. The following books were referred for the purpose.

1. *Educational Measurement and Evaluation (Nunnally, 1972)*
2. *Taxonomy of Educational Objectives. Book I. Cognitive Domain (Bloom, 1979).*
3. *Essentials of Educational Measurement (Ebel & Frisbie, 1991).*

For guidance, the investigator consulted with subject experts and experienced teachers in Social Science. For the Achievement Test, the investigator planned to prepare a test consists of 40 items for a time duration of one hour.

b. Preparation of the Test

Items for the Achievement Test in Social Science were prepared on the basis of the major objectives of cognitive domain namely ***Knowledge, Comprehension, Application, Analysis, Synthesis*** and ***Evaluation***. When the test was prepared, due weightage was given to objectives, content and difficulty level of items.

c. Weightage to Objectives

The weightage given to different objectives for the Achievement Test in Social Science is given in Table 3.4.

TABLE 3.4

Weightage to Objectives

Sl. No.	Objectives	Marks	Percentage
1.	Knowledge	10	25
2.	Comprehension	15	37.5
3.	Application	5	12.5
4.	Analysis	4	10
5.	Synthesis	3	7.5
6.	Evaluation	3	7.5
	Total	40	100

d. Weightage to Content

The investigator analysed and divided the entire content into twenty sub units and tried to give adequate weightage to each sub units. The weightage given to each sub unit is given in Table 3.5.

TABLE 3.5

Weightage to Content

Sl. No.	Units & Subunits	Marks	Percentage
1.	Big Men and Small World	2	5
2.	Growth of Transportation	5	12.5
3.	World-Air Route	4	10
4.	The Role of Kerala	3	7.5
5.	Countries and Coins	3	7.5
6.	The World in Touch With	4	10
7.	The Secret of Advertisement	1	2.5
8.	Advertisement Agencies	1	2.5
9.	Controlling Hands	2	5
10.	Let us Find Out the Predecessors	1	2.5
11.	Games	1	2.5
12.	The Unending Relations	2	5
13.	Important Oil-Coal Deposits of the World	2	5
14.	Agriculture and Industry	2	5
15.	Rural and Urban Areas	1	2.5
16.	Sources of Wealth	1	2.5
17.	Sources of Income	1	2.5
18.	New Ways of Conquest	2	5
19.	One out of Five Hundred	1	2.5
20.	What, Shares do?	1	2.5
	Total	40	100

e. Weightage to Difficulty Level

Weightage given to the difficulty level is presented in Table 3.6.

TABLE 3.6

Weightage to Difficulty Level

Sl. No.	Difficulty Level	Marks	Percentage
1.	Easy	12	30
2.	Average	19	47.5
3.	Difficult	9	22.5
Total		40	100

f. The Blue Print

The investigator prepared a blue print for the final test on the basis of the weightage given to the Instructional Objectives, Content and Difficulty Level. The blue print for the Achievement Test in Social Science incorporating weightages given to instructional objectives and content area is presented in Table 3.7.

TABLE 3.7

Blue Print for Achievement Test in Social Science

Objectives	Knowledge			Comprehension			Application			Analysis			Synthesis			Evaluation			Total
Form of questions / Sub units	O	S	E	O	S	E	O	S	E	O	S	E	O	S	E	O	S	E	
1				$1^{(1)}$												$1^{(1)}$			2
2	$2^{(2)}$			$2^{(2)}$									$1^{(1)}$						5
3	$1^{(1)}$			$1^{(1)}$			$1^{(1)}$			$1^{(1)}$									4
4				$2^{(2)}$						$1^{(1)}$									3
5				$2^{(2)}$			$1^{(1)}$												3
6	$1^{(1)}$			$2^{(2)}$						$1^{(1)}$									4
7							$1^{(1)}$												1
8				$1^{(1)}$															1
9							$1^{(1)}$						$1^{1)}$						2
10	$1^{(1)}$																		1
11	$1^{(1)}$																		1
12	$1^{(1)}$			$1^{(1)}$															2
13	$1^{(1)}$									$1^{(1)}$									2
14	$1^{(1)}$															$1^{(1)}$			2
15													$1^{(1)}$						1
16	$1^{(1)}$																		1
17				$1^{(1)}$															1
18				$1^{(1)}$												$1^{(1)}$			2
19				$1^{(1)}$															1
20							$1^{(1)}$												1
Total	10			15			5			4			3			3			40

Note: The numbers outside the brackets indicates mark and those inside, number of questions.

Based on the blue print, the investigator prepared 100 multiple choice items in Malayalam language, representing each Objective and subjected to experts' scrutiny and criticism. Among the 100 items, 20 items were deleted and some were re-edited due to ambiguity. Thus 80 items (double items required for final test) were selected for the draft test.

The draft Achievement Test in Social Science(ATSS) and it's response sheet in Malayalam language and their English versions, and Scoring Key are presented in Appendices V, V A, V B, V C and V D respectively.

The Try out

The draft test with 80 multiple choice items was tried out by the investigator on a representative sample of 80 students in two class divisions of standard VII in a school other than the Experimental and Control subjects were selected. Before the administration of the test, the purpose of the test was made clear to the subjects. The draft test material and response sheets in sufficient numbers were provided to the students. The test included all the necessary guidelines about the test and additional informations needed were given by the investigator. All the 80 response sheets were scored with the help of a window screen prepared as per the scoring key. Incomplete response sheets were deleted and 70 response sheets were selected for item analysis.

Item Analysis

The procedure suggested by Ebel and Frisbie (1991) was employed for item analysis. The selected response sheets were arranged in the descending order of the magnitude of scores. The scores obtained by the upper 21 subjects (27%) and lower 21 subjects (27%) were taken as the upper group and

lower group respectively. For the selection of the items in the final test, the difficulty index and discriminating power of each item were found out.

Difficulty Index

The difficulty index of an item was considered as the percentage of the group to which the subjects have given the correct response, that is, ***the larger*** the index, ***the easier*** the item. The following formula suggested by Ebel and Frisbie (1991) was employed to calculate the difficulty index of each item.

$$\text{Difficulty Index} = \frac{U + L}{2N}$$

where

U - The number of correct responses in the upper group

L - The number of correct responses in the lower group

N - The number of subjects in each group.

Discriminating Power

The higher the average discrimination index for items in a test, the more variable the scores are likely to be and the more reliable the scores are expected to be (Ebel & Frisbie, 1991). Formula used for calculating the discriminating power of each item is as follows.

$$\text{Discriminating Power} = \frac{U - L}{N}$$

where,

U - The number of correct responses in the upper group

L - The number of correct responses in the lower group

N - The number of subjects in each group.

The difficulty index and discriminating power of each item are given in Table 3.8.

TABLE 3.8

Difficulty Index and Discriminating Power for 80 items of Achievement Test in Social Science for Standard VII Pupils

Item No.	U	L	DI	DP	Selected Item
1	21	17	0.86	0.18	
2	20	10	0.68	0.45	*
3	20	17	0.84	0.16	
4	15	7	0.50	0.36	*
5	5	4	0.20	0.04	
6	21	10	0.70	0.50	*
7	21	19	0.90	0.09	
8	19	10	0.66	0.40	*
9	18	15	0.75	0.13	
10	18	12	0.68	0.27	*
11	22	14	0.82	0.36	
12	12	5	0.39	0.31	*
13	21	13	0.71	0.36	*
14	5	4	0.20	0.04	
15	14	10	0.54	0.18	
16	16	13	0.65	0.13	
17	21	9	0.68	0.54	*
18	20	14	0.77	0.27	
19	21	3	0.54	0.81	*
20	20	9	0.65	0.50	*
21	22	13	0.79	0.40	
22	16	4	0.45	0.54	*
23	22	12	0.77	0.45	
24	22	18	0.90	0.18	
25	16	10	0.59	0.27	*
26	19	15	0.77	0.18	
27	21	15	0.81	0.27	
28	10	3	0.29	0.31	*
29	21	12	0.75	0.40	
30	22	12	0.77	0.45	
31	21	8	0.65	0.60	*
32	21	16	0.84	0.22	
33	20	9	0.65	0.50	*
34	7	5	0.27	0.09	
35	6	5	0.25	0.04	
36	14	9	0.52	0.22	
37	19	10	0.65	0.40	*
38	7	13	0.45	-0.27	
39	20	7	0.63	0.63	*
40	17	8	0.56	0.40	*
41	20	12	0.72	0.36	*
42	22	12	0.77	-0.45	
43	10	11	0.47	0.04	
44	18	4	0.50	0.63	*
45	14	2	0.36	0.54	*
46	12	3	0.34	0.40	*
47	12	13	0.56	-0.04	
48	15	4	0.43	0.50	*
49	13	3	0.36	0.45	*
50	20	10	0.68	0.45	*
51	20	19	0.32	0.04	
52	21	7	0.63	0.63	*
53	20	10	0.63	0.45	*
54	18	10	0.63	0.36	
55	16	12	0.63	0.18	
56	1	2	0.06	-0.04	
57	11	10	0.47	0.04	
58	15	9	0.54	0.27	*
59	17	8	0.56	0.40	*
60	17	8	0.56	0.40	*
61	22	14	0.81	0.36	
62	11	7	0.40	0.18	
63	1	2	0.06	-0.04	
64	21	8	0.05	0.59	*
65	21	11	0.72	0.45	*
66	15	7	0.50	0.36	*
67	2	5	0.15	-0.16	
68	21	9	0.68	0.54	*
69	21	12	0.75	0.40	
70	22	9	0.70	0.59	
71	12	4	0.36	0.36	*
72	6	10	0.65	0.40	*
73	19	4	0.25	-0.04	
74	5	5	0.43	0.40	*
75	14	12	0.75	0.40	
76	71	9	0.59	0.36	
77	17	7	0.56	0.50	*
78	18	10	0.65	0.40	
79	19	7	0.63	0.63	*
80	21	6	0.61	0.68	*

U - The number of correct responses in the upper group; L - The number of correct responses in the lower group, DI - Difficulty Index, DP - Discriminating

The investigator decided to select from the total items of draft test having discriminating power more than 0.4 and difficulty index between 0.4 and 0.6 initially. When adequate number of items were not available, the investigator decided to make some adjustments in this limit. Some items having the difficulty index in between 0.29 and 0.72 with discriminating power 0.27 and above were selected. Thus the investigator prepared the final test with 40 multiple choice items selected from the draft test. The time duration fixed for the test was one hour and the maximum score of the test was 40.

Validity of the test

For estimating the validity of the Achievement Test in Social Science, ***criterion related technique*** was used. For this purpose, the final test was administered on the students of two class divisions of standard VII from a school other than the Experimental and Control subjects were selected. The obtained response sheets were collected and scored. The marks obtained by the same sample in the second terminal examination in Social Science were also collected. Then, using the Pearson's Product Moment Correlation, coefficient of the two sets of scores was calculated.

The validity coefficient obtained was found to be 0.82. It suggests that this test is a highly valid test to measure the Achievement in Social Science of standard VII pupils.

Content Validity

As the name indicates, this form of validity is estimated by evaluating the relevance of the test item individually and as a whole (Freeman, 1976). Content validity is most appropriately applied only to tests of proficiency and Academic Achievement. This type of test is designed to measure how well the individual has mastered a specific skill or course of study. For establishing the content validity of the Achievement Test, the investigator subjected the test items for ***experts' evaluation***. As per the evaluation of the experts, the test content covers the significant concepts and comprehensive enough in terms of the instructional objectives. Thus the content validity of the Achievement Test in Social Science was established.

Face Validity

To establish the face validity, items of the Achievement Test was subjected to experts' evaluation. The experts confirmed that the items in the Achievement Test were able to measure Achievement in Social Science of standard VII pupils.

Reliability of the Test

Reliability of the Achievement Test was established using Test-Retest Method. The same test was again administered on the same sample, from whom the data obtained for validation, after a period of three weeks. Thus two sets of scores, the original score and the retest scores, were obtained. The correlation coefficient of the two sets of scores was calculated using the Pearson's Product Moment formula. The coefficient of correlation was found to be 0.89. The obtained values for validity and reliability suggests that the

test has ***acceptable psychometric qualities*** to measure the Achievement in Social Science of standard VII pupils.

A copy of the final test and it's response sheet in Malayalam language and their English versions and scoring key are given in Appendices VI, VIA, VIB, VIC and VID respectively.

3.4.4.6. Retention test

Achievement Test in Social Science- ATSS (Kumar & Hameed, 2001), which was already used as Pretest and Post test, was again administered in the Experimental and Control groups, after the retention interval (one month) as Retention Test. The details of Achievement Test is already discussed in section 3.4.4.5.

3.4.4.7. General Data Sheet for Assessing Socio-Economic Status (SES)

To assess the Socio-Economic Status of the subjects of Experimental and Control groups, this General Data Sheet was used. In order to collect the information regarding Income, Education and Occupation of parents, nine columns each for father and mother are included in the General Data Sheet.

The sub divisions and weightage of three category are as follows:

Income Level of Parents	**Weightage**
Up to Rs.1000	5
Between 1001 - 2000	10
Between 2001 - 3000	15
Between 3001 - 4000	20
Between 4001 - 5000	25
Above 5000	30

Parental Education

Not received formal schooling	5
Standard I - IV	10
Standard V - VII	15
Standard VIII - X	20
PDC, TTC	25
BA/B.Sc./B.Com.	30
MBBS/M.Ed./B.Sc.(Engg.) MBA/Ph.D./CA etc.	33

Parental Occupation

Unemployed	5
Unskilled	10
Semi-skilled	15
Skilled	20
Semi-Professional	25
Professional	30
Highly Professional	35

A copy of the General Data sheet in Malayalam Language and its English version are presented in Appendices VII and VII A.

3.4.4.8. Classroom Interaction Rating Scale -CIRS (Kumar & Hameed, 2001)

The investigator prepared a Rating Scale to measure the classroom interaction pattern under Cooperative Learning environment and Conventional learning environment. The Classroom Interaction Rating Scale included three categories of items. They are ***Inter-group Interaction, Intra-group Interaction*** and ***Student-Teacher Interaction***. For each item, the

observers have to select the appropriate alternative among the three ***(Always, Occasionally*** and ***Never).***

The weightage given to each alternative is as follows:

Always	3
Occasionally	2
Never	1

For the negative items, the weightage given are reversed.

A copy of the Classroom Interaction Rating Scale is presented in Appendix VIII.

3.4.5. EXECUTION OF THE EXPERIMENT

As a preliminary step of the experimentation, the investigator contacted with the Heads of the schools, in which the Experimental and Control treatments were done and prepared a detailed schedule for it's effective working. The experiment proceeded according to the pattern as described in the following.

3.4.5.1. Administration of the Pretest

Before starting the experiment, both the Experimental and Control groups were administered the same Achievement Test in Social Science as the ***Pretest*** to measure the initial status of the subjects with regard to Achievement and the response sheets were collected.

3.4.5.2. Experimental Treatment

Before starting the experimental treatment, the seating arrangement of the classroom was changed from Conventional type to ***horse-shoe*** pattern. This arrangement ensured better Inter-group, Intra-group and Student-Teacher interaction.

In the course of the experimental treatment, the entire topics selected (Five topics, divided into 20 sub units) were taught through the Cooperative Learning Strategy (Learning Together Model). Thus 20 subunits were taught using 20 periods, (one period each for one subunit) each for a time duration of 45 minutes. Therefore 15 hours were taken to complete the experimental treatment. The investigator have tried to make it sure that the classroom activities in the Experimental group were developed through the four phases suggested by Johnson and Johnson (1975) as described in the Lesson Transcripts for Cooperative Learning Strategy.

3.4.5.3. Control Treatment

The nature of the classroom seating arrangement (Conventional) was not changed in the Control group. Conventional lecture Method of Teaching was employed to teach the select topics. No teaching aids other than the Conventional one were used. The topics selected for treatment, the time duration of each period (45 minutes) and the total time duration taken for the treatment (15 hours) were the same for the Experimental and Control groups.

3.4.5.4. Administration of the Achievement Test

The next day after the completion of the treatments, the subjects in both the Experimental and Control groups were given the Achievement Test in

Social Science, prepared and standardised by Kumar and Hameed (2001), which was already used as the Pretest. This test was administered to measure the outgoing behaviour or the post-treatment status of the subjects in terms of Achievement in Social Science. Before the administration of the test, it's purpose was made clear to the students and all necessary guidelines were given to the subjects.

3.4.5.5. Data on Other Variables

During the period of treatment (in between the Pretest and Post test) the data on the other Independent Variable; Achievement Motivation, Control Variables, viz., Verbal Intelligence and Non-verbal Intelligence and on the Basal Variable, Socio-Eonomic Status were collected from both the Experimental and Control groups. During the first week of the treatment, the Scale of Achievement Motivation was administered. This scale was followed by the Verbal Group Test of Intelligence in the second week of the treatment, and the Standard Progressive Matrices Test (to measure Non-verbal Intelligence) in the third week. The General Data Sheet was also given to the subjects with a view to quantify the Socio-Economic Status. Besides, the Classroom Interaction Rating Scale (CIRS) was employed to collect data on classroom interaction under both the Cooperative and Conventional classroom situations using teachers as raters.

3.4.5.6. Administration of the Retention Test

The same Achievement Test (which was already used as the Pretest and Post test) was administered again in both the groups one month after the completion of the treatment (as Retention Test). This test was administered to

measure the quantity of Retention in Social Science existing one month after the completion of the treatment.

While administering the standardised tests, the instructions given in the respective test manuals were strictly followed and explained to the subjects before taking the tests. The investigator worked out some examples from each test on the blackboard for better understanding. Uniform procedure was adopted for the Experimental and Control groups. All tests were administered by the investigator personally.

3.4.5.7. Scoring and Consolidation of Data

Specific direction given in the respective test manuals were strictly followed for scoring the response sheets collected. Response sheets of Achievement Test in Social Science were scored according to the scoring key provided. Response sheets for the Scale of Achievement Motivation was scored by giving a sequence of scores, 2, 1, 0 for positive items and 0, 1, 2 for negative items. Punched scoring keys were used for the Verbal and Non-verbal Intelligence Tests. By giving appropriate weightage assigned to each aspect in the General Data Sheet, the Socio-Economic Status of the subjects was quantified. Classroom Interaction Rating Scale (CIRS), used by teachers as raters, was scored giving appropriate weightage to each response. Response sheets, which were correct in all respects were only taken into consideration. Thus 80 standard VII pupils were obtained as the final sample for the study. After scoring the response sheets, the scores obtained in each test were tabulated and consolidated separately for the Experimental and Control groups.

The following break-up shows the actual number of subjects included in the final sample.

Sample	Experimental Group	Control Group	Total
Boys	26	25	51
Girls	14	15	29
Total	40	40	80

3.4.6. STATISTICAL TECHNIQUES USED FOR ANALYSIS

The present experimental study required the use of the following statistical techniques.

3.4.6.1. Mean Difference Analysis

For the study, Test of Significance of Difference Between Means for Large and Small Independent samples was used, wherever appropriate, to compare the relevant variables between the Experimental and Control groups (Garrett, 1981). This statistical technique was mainly used to test whether the Experimental and Control groups differ in Achievement, Gain and Retention scores without controlling the effects of the Covariates. Mean Difference Analysis was also undertaken to equate the Experimental and Control groups with respect to Previous Knowledge of the Subject Matter, Verbal and Non-verbal Intelligence and Socio-Economic Status of the pupils. To compare the nature of interaction in the Cooperative and Conventional classrooms, this technique was resorted. For the large sample, the following formula suggested by Garrett (1981) was used

$$t = \frac{M_1 - M_2}{\sqrt{\frac{\sigma^2_1}{N_1} + \frac{\sigma^2_2}{N_2}}}$$

Here, M_1, M_2 the Mean σ_1, σ_2 the Standard Deviation and N_1, N_2 sample size of the groups. The difference between Means is said to be significant, depending upon whether the t-values exceeds the Table value set for 0.01 level or 0.05 level of significance.

For small sample, the following formula suggested by Garrett (1981) was used.

$$t = \frac{X_1 - X_2}{\sqrt{\frac{N_1\sigma^2_1 + N_2\sigma^2_2}{N_1 + N_2 - 2}\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

In the above formula X_1, X_2 denotes the Mean, σ_1, σ_2 the Standard Deviation and N_1, N_2 sample size of the groups.

The difference between the means is said to be significant depending upon whether the t-values exceeds the Table value of 't' for $N_1 + N_2 - 2$ degrees of freedom at 0.05 level and 0.01 level of significance.

3.4.6.2. Analysis of Covariance (ANCOVA)

For the study, Two Factor Analysis of Covariance was employed to remove statistically, the effects of Confounding Variables; Previous Knowledge of the Subject Matter Measured by a Pretest, Verbal Intelligence

and Non-verbal Intelligence separately and in combination of the three at a time. This statistical technique was utilised to examine the effectiveness of Cooperative Learning Strategy (Learning Together) over the Conventional lecture Method of Teaching Social Science for standard VII pupils. Analysis of Covariance is a statistical technique used to control for the effects of one or more uncontrolled variables and permit thereby a valued evaluation of the outcomes of the experiment (Ferguson, 1971). This technique is applied when there are one or more correlated variables existed with the Dependent Variable. It can control the effects of any of the Covariates on the Dependent Variable using ANCOVA.

An application of simple analysis of covariance requires paired observations on ***k*** groups of experimental subjects. The number of pairs of observation in ***k*** group is denoted by N_1, N_2 .... N_k. The paired observation are assumed to be paired samples drawn from ***k*** population.

The data may be represented as follows in Table 3.9 (Ferguson & Takane, 1989).

TABLE 3.9

Representation of Data for ANCOVA

	Group 1	Group 2	Group k
	Y_{11} X_{11}	Y_{12} X_{12}	Y_{1k} X_{1k}
	Y_{21} X_{21}	Y_{22} X_{22}	Y_{2k} X_{2k}
	Y_{31} X_{31}	Y_{32} X_{32}	Y_{3k} X_{3k}
	....	.....	.....
	$Y_{N1'}$ $X_{N1'}$	Y_{N2^2} X_{N2^2}	Y_{Nk^k} X_{Nk^k}
Mean	Y_1 X_1	Y_2 X_2	Y_k X_k

As per this notation X is the variable under study, the Dependent Variable, where as Y is the uncontrolled variable or Covariate. In the Analysis of Covariance, sum of products for the observations in the j^{th} group is denoted by

$$\sum_{i=1}^{Nj} (Xij - Xj)\ (Yij - Yj)$$

The sum of products for all observations in the 'k' groups, that is the total sum of products is

$$\sum_{j=1}^{k} \sum_{i=1}^{Nj} (Xij - X)\ (Yij - Y)$$

The computation formula for the *total* sum of products is

$$\sum_{j=1}^{k} \sum_{i=1}^{Nj} (Xij - X)(Yij - Y) = T_{XY} - \frac{T_X T_Y}{N}$$

The *within-groups* sums of products may be obtained by

$$\sum_{j=1}^{k} \sum_{i=1}^{Nj} (Xij - X_j)(Yij - Yj) = T_{XY} - \sum_{j=1}^{k} \frac{T_{XJ} T_{YJ}}{Nj}$$

The *between-groups* sums of products is

$$\sum_{j=1}^{k} Nj\,(Xj - X)(Yj - Y) = \sum_{j=1}^{k} \frac{T_{XJ} T_{YJ}}{Nj} - \frac{T_X T_Y}{N}$$

These formulae are applicable to groups of unequal or equal size.

The calculation of the required sums of squares may be simplified by the use of computation formulae. The formula for the *total* sum of squares is

$$\sum_{j=1}^{k} \sum_{i=1}^{Nj} (X_{ij} - X)^2 = \sum_{j=1}^{k} \sum_{i=1}^{Nj} X_{ij}^2 - T^2/N$$

The *within-groups* sum of squares is

$$\sum_{j=1}^{k} \sum_{i=1}^{Nj} (X_{ij} - X_j)^2 = \sum_{j=1}^{k} \sum_{i=1}^{Nj} X_{ij}^2 - \sum_{j=1}^{k} (T_j^2/Nj)$$

The *between-groups* sum of squares is

$$\sum_{j=1}^{k} Nj\ (Xj - X)^2 = \sum_{j=1}^{k} (T^2_j / Nj) - T^2/N$$

The above formulae are generally applicable to groups of unequal or equal size.

To assist in the interpretation of the results, the adjusted group means are calculated. This computation requires the pooled within class regression coefficients.

$$bw = E_{XY} / E_{XX}$$

The adjusted group means are calculated using the following formulae.

The adjusted group mean for the Experimental group is

$$Y_{1(adj)} = Y_1 - b_w\ (X_1 - X)$$

The adjusted group mean for the Control group is

$$Y_{2(adj)} = Y_2 - b_w\ (X_2 - X)$$

In the present experimental study, Two-way Factorial ANCOVA denotes the Analysis of Covariance employing two Independent Variables involving Two-way Classification. The Independent Variables include Instructional Strategies (in two levels - Cooperative Learning Strategy-CLS and Conventional lecture Method of Teaching-CMT and Achievement Motivation (in two levels - Above Average Achievement Motivation -AAAM and Below Average Achievement Motivation -BAAM.

3.4.6.3. Two-way Analysis of Variance (ANOVA) with 2 x 2 Factorial Design

For the study, Two-way Analysis of Variance was employed to study the main and interaction effects of Independent Variables (Instructional Strategies and Achievement Motivation) on Dependent Variables (Achievement and Retention in Social Science).

Analysis of Variance is a method for dividing the variation observed in experimental data into different parts, each part assignable to a known source, cause or factor (Ferguson, 1971).

Analysis of Variance employing two Independent Variables, involving two-way classification is the Two-way ANOVA. For the study 2 x 2 Factorial Design was used consisting of ***two levels of Instructional Strategies*** (Cooperative Learning Strategy - CLS and Conventional lecture Method of Teaching - CMT) and ***two levels of Achievement Motivation*** (Above Average Achievement Motivation - AAAM and Below Average Achievement Motivation - BAAM).

Interaction in the Two-way Analysis of Variance

In Two-way Analysis of Variance, with 'n' observation per cell, the total Sum of Square (SS) is partitioned into three additive components, a between rows, a between column and an interaction Sum of Squares. Each sum of square have an associated degree of freedom, to obtain variance estimates. F-ratios are formed from the variance estimates and used to test the significance of rows, columns and interaction effects.

A Model ANOVA (Ferguson & Takane, 1989) is given in Table 3.10.

TABLE 3.10

Model ANOVA

Source	Sum of Squares	*df*	Variance Esti-mate
Rows	$nC \sum_{r=2}^{R} (X.r. - X...)^2$	R-1	S^2r
Columns	$nR \sum_{c=1}^{C} (X..c - X...)^2$	C-1	S^2c
Interaction	$n \sum_{r=1}^{R} \sum_{c=1}^{C} (X.rc - X.r. - X..c + X...)^2$	$(R\text{-}1)(C\text{-}1)$	S^2rc
Within Cells	$\sum_{r=1}^{R} \sum_{c=1}^{C} \sum_{i=1}^{n} (Xirc - X.rc)^2$	$RC(n\text{-}1)$	S^2rc
Total	$\sum_{r=1}^{R} \sum_{c=1}^{C} \sum_{i=1}^{n} (Xirc - X...)^2$	nRC-1	

R - The number of rows
C - Number of columns
n - Number of measurement in each cell
N - nRC (Total number of measurements)
X - Mean of all nRC observations
df - Degrees of freedom.

In the ANOVA process, the Total sample was classified into four combinations. They are as follows:

1. Experimental Group (in which Cooperative Learning Strategy was employed) with AAAM.

2. Experimental group with BAAM.

3. Control group (in which Conventional lecture Method of Teaching was used) with AAAM.

4. Control group with BAAM.

Each subject would fall into one of these combinations. The same classification was adopted for ANOVA for Achievement and ANOVA for Retention.

3.4.6.4. Scheffe' Test of Post-hoc Comparison

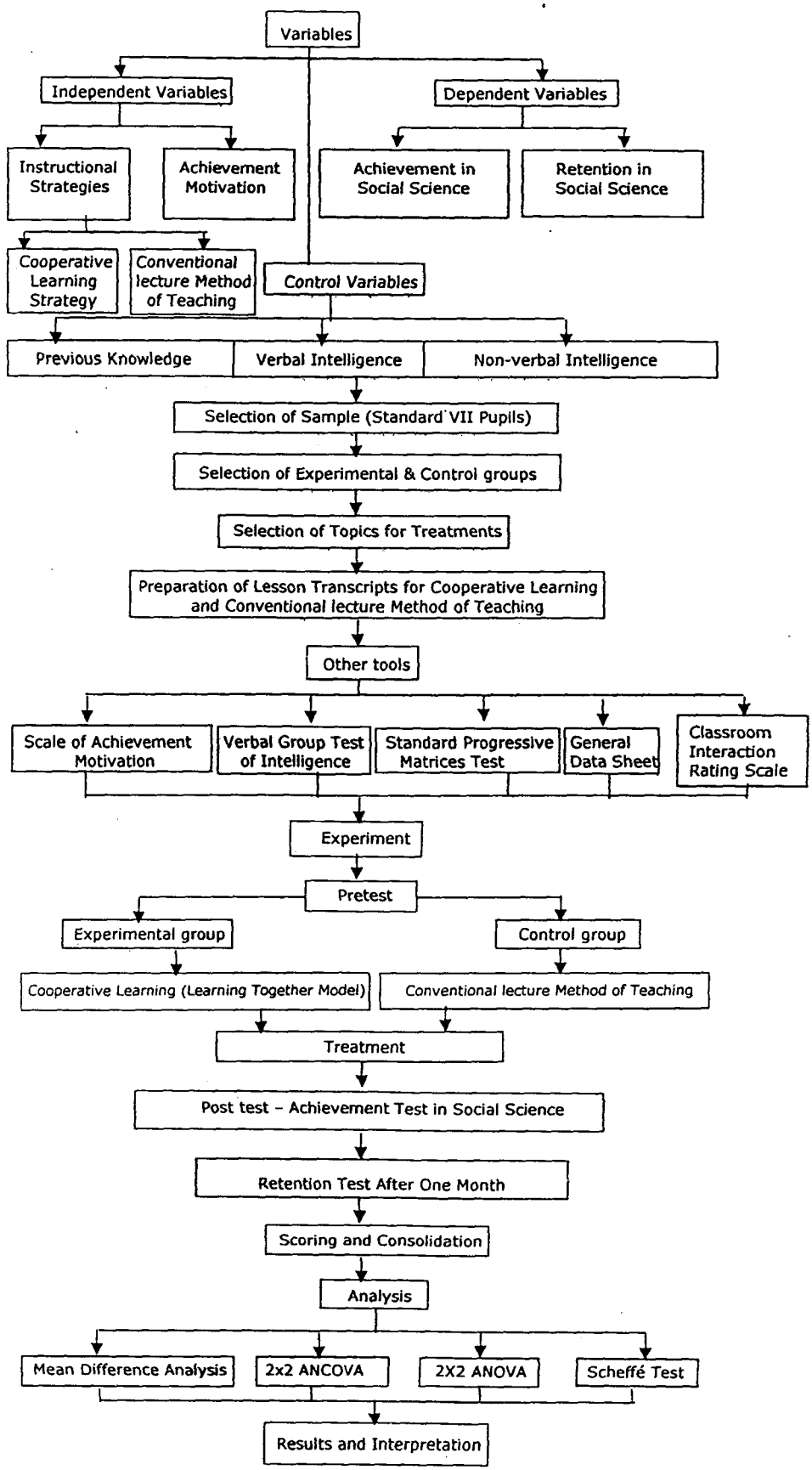
Scheffe' Test of Post-hoc Comparison was used to compare the adjusted criterion means of the Experimental and Control groups after ANCOVA to determine the advantageous group (Scheffe', 1959). In ANOVA also Scheffe' Test was used to compare the criterion means. In Scheffe's method, the critical value (F') is calculated in the following method using the within group variance and the F.

First, consult a table of F and obtain the critical value of F with k-1 degrees of freedom in the numerator and N-k degrees of freedom in the denominator and then multiply this value by k-1. The value of F have to be compared with the value of F' at the 0.05 level and 0.01 level. A significant difference between the groups is judged at the required level, only when the value of F' is equal to (when $k = 2$) or greater (when $k > 2$) than F (Ferguson & Takane, 1989).

3.5. SUMMARY OF PROCEDURE

The whole procedure adopted for the experiment is summarised in the following flow chart.

Flow Chart Showing the Summary of Procedure



ANALYSIS

Hameed A."Interaction of instructional strategies and achievement motivation on achievement in social science of standard VII pupils" Thesis. Department of Education, University of Calicut, 2002

Chapter Four

ANALYSIS

ANALYSIS 4

The present study was completed through two major phases. Hence it has two major purposes. Firstly, the study was used to investigate the ***effectiveness of Cooperative Learning Strategy over the Conventional lecture Method of Teaching*** in terms of Achievement and Retention in Social Science for standard VII pupils. Secondly, the study was concentrated to understand the ***main and interaction effects of Instructional Strategies*** (Cooperative Learning Strategy and Conventional lecture Method of Teaching) ***and Achievement Motivation on Achievement and Retention in Social Science*** of standard VII pupils. The collected and tabulated data were analysed using the statistical techniques like Mean Difference Analysis, Analysis of Covariance (ANOVA), Analysis of Variance (ANCOVA) and Scheffe' Test of Post-hoc Comparison. The statistical analysis of the consolidated data has been done based on the Objectives set for the study using the software SPSS (Statistical Package for Social Sciences-Einspruch, 1998). The entire analysis of data has been done, classified and presented in the following order.

4.1. PRELIMINARY ANALYSIS

4.1.1. IMPORTANT STATISTICAL CONSTANTS

4.1.2. ESTABLISHING THE EQUIVALENCE OF GROUPS

4.1. PRELIMINARY ANALYSIS

The statistical constants of the variables in the study, establishment of the equivalence of the groups and investigation of classroom interaction were done and presented in this section of the report.

4.1.1. IMPORTANT STATISTICAL CONSTANTS

As a part of the preliminary analysis, the important statistical constants like mean, median, mode, standard deviation, skewness and kurtosis for the Pretest, Achievement (Objectivewise and Total score), Gain score, Socio-Economic Status, Achievement Motivation, Non-verbal Intelligence, Verbal Intelligence and Retention score (Objectivewise and Total score) were examined separately (N = 40 each) for the Experimental and Control groups (Total sample, Boys and Girls). These are presented in Table 4.1 and 4.2 respectively.

TABLE 4.1

Statistical Constants for Experimental Group (Total sample, Boys and Girls)

Sl. No.	Variable	Total sample (N = 40)						Boys (N = 26)						Girls (N = 14)					
		Mean	Median	Mode	S.D	Skew-ness	Kur-tosis	Mean	Median	Mode	S.D	Skew-ness	Kur-tosis	Mean	Median	Mode	S.D	Skew-ness	Kur-tosis
1.	Pretest	14.850	15.375	15.000	4.130	-0.136	-0.866	15.577	16.000	17.000	3.972	-0.258	-0.548	13.500	13.500	9.000	4.220	0.143	-1.101
2.	Achievement Knowledge	7.250	7.364	8.000	1.597	-0.194	-0.388	7.731	8.000	8.000	1.485	-0.291	0.216	6.357	7.000	5.000	1.447	-0.201	-1.672
3	Comprehension	9.850	9.636	9.000	2.760	-0.213	-0.362	10.846	10.500	9.000	2.240	0.116	-1.296	8.000	8.000	7.000	2.746	0.156	-0.064
4	Application	3.575	3.621	4.000	1.010	-0.608	0.525	3.731	4.000	3.000	0.827	0.102	-0.699	3.286	3.500	4.000	1.267	-0.627	-0.231
5	Analysis	3.075	3.179	4.000	0.944	-0.540	-0.880	3.269	3.500	4.000	0.827	-0.561	-1.300	2.714	3.000	2.000	1.069	-0.216	-1.098
6	Synthesis	1.850	1.818	2.000	0.700	0.215	-0.871	1.923	2.000	2.000	0.688	0.099	-0.722	1.714	2.000	1.000	0.726	0.516	-0.732
7	Evaluation	2.125	2.214	3.000	0.911	-0.472	-1.138	2.192	2.500	3.000	0.939	-0.728	-0.728	2.000	2.000	1.000	0.877	0.000	-1.773
8	**Achievement (Total)**	27.700	27.500	25.000	5.910	-0.124	-0.463	29.654	29.000	28.000	5.238	-0.072	-0.725	24.071	25.000	21.000	5.498	0.013	-0.267
9	Gain score	12.600	12.500	12.000	4.528	0.050	-0.053	13.808	13.500	17.000	4.481	-0.054	-0.125	10.357	10.500	13.000	3.815	-0.243	-0.599
10	Socio-Economic Status	57.850	53.438	50.000	18.713	0.573	-0.661	61.115	52.000	50.000	21.264	0.012	-1.404	51.786	52.550	50.000	11.026	-0.480	-0.084
11	Achievement Motivation	72.575	71.400	64.000	10.313	0.249	-0.885	76.077	77.000	64.000	10.119	-0.036	-1.305	66.071	65.000	63.000	7.216	0.003	-0.014
12	Non-verbal Intelligence	29.300	32.333	12.000	13.738	-0.165	-1.496	30.577	32.500	12.000	13.647	-0.141	-1.538	26.929	32.000	10.000	14.096	-0.223	-1.797
13	Verbal Intelligence	49.125	48.500	35.000	12.457	0.063	-0.757	48.423	48.000	35.000	11.755	0.370	0.216	50.429	55.500	59.000	14.037	-0.394	-1.592
14	Retention – Knowledge	6.150	6.500	7.000	1.777	-0.874	0.070	6.653	7.000	7.000	1.548	-1.540	2.926	5.214	5.500	6.000	1.847	-0.109	-0.779
15	Comprehension	7.075	6.933	7.000	2.325	0.046	-0.770	7.808	7.500	7.000	2.074	-0.330	-0.073	5.714	5.500	6.000	2.199	1.133	1.532
16	Application	3.100	3.067	2.000	1.482	-0.230	-0.812	3.269	3.000	3.000	1.282	-0.056	-1.066	2.786	2.500	2.000	1.805	-0.086	-1.184
17	Analysis	2.725	2.741	2.000	0.987	-0.417	0.011	2.808	3.000	3.000	0.849	-0.029	-0.793	2.571	2.500	2.000	1.222	-0.487	-0.164
18	Synthesis	1.450	1.462	2.000	0.986	-0.023	-0.972	1.42	1.000	1.000	1.029	0.122	-1.044	1.429	2.000	2.000	0.938	-0.413	-0.763
19	Evaluation	1.725	1.750	2.000	0.905	-0.283	-0.589	1.846	2.000	2.000	0.784	-0.255	-0.163	1.500	1.500	1.000	1.092	0.000	-1.183
20	**Retention (Total)**	22.250	22.667	20.000	5.467	-0.283	-0.491	23.885	24.500	22.000	4.511	-0.196	-0.206	19.214	18.000	11.000	5.938	0.284	-1.004

TABLE 4.2

Statistical Constants for Control Group (Total sample, Boys and Girls)

Sl. No.	Variable	Total sample (N = 40)						Boys (N = 25)						Girls (N = 15)					
		Mean	Median	Mode	S.D	Skew-ness	Kur-tosis	Mean	Median	Mode	S.D	Skew-ness	Kur-tosis	Mean	Median	Mode	S.D	Skew-ness	Kur-tosis
1	Pretest	13.575	14.000	11.000	3.945	0.154	-0.649	13.980	14.000	11.000	3.844	0.161	-0.421	12.267	12.000	8.000	4.003	0.304	-0.639
2	Achievement – Knowledge	6.450	7.000	8.000	2.183	-0.614	-0.581	6.400	7.000	8.000	2.121	-0.603	-0.161	6.533	8.000	8.000	2.356	-0.710	-0.916
3	Comprehension	6.625	6.375	5.000	2.618	0.099	-0.625	7.440	8.000	5.000	2.468	0.150	-0.955	5.267	5.000	2.000	2.344	-0.025	-1.101
4	Application	3.025	3.091	4.000	1.209	-0.142	-0.923	3.040	3.000	2.000	1.172	0.086	-0.799	3.000	3.000	4.000	1.309	-0.441	-1.007
5	Analysis	2.425	2.393	2.000	0.931	0.230	-0.716	2.400	2.000	2.000	0.913	0.143	-0.616	2.467	2.000	2.000	0.990	0.360	-0.753
6	Synthesis	1.375	1.387	1.000	0.838	0.004	-0.515	1.400	1.000	2.000	0.645	0.606	0.480	1.333	1.000	1.000	1.113	0.306	-1.157
7	Evaluation	1.250	1.250	1.000	0.899	0.139	-0.757	1.360	1.000	1.000	0.860	0.046	-0.499	1.067	1.000	0.000	0.961	0.409	-0.746
8	**Achievement (Total)**	21.550	21.200	28.000	6.714	0.194	-0.560	22.080	22.000	28.000	6.429	-0.099	-0.981	20.667	21.000	13.000	7.306	0.669	0.549
9	Gain score	9.000	8.750	5.000	4.766	0.329	-0.577	9.400	8.000	6.000	4.699	0.512	-0.708	8.333	10.000	5.000	4.967	0.138	-0.406
10	Socio-Economic Status	58.825	60.000	45.000	14.810	0.013	-0.296	61.920	65.000	65.000	15.058	-0.041	-0.535	53.667	55.000	66.000	13.292	-0.228	-0.332
11	Achievement Motivation	66.900	66.250	66.000	7.465	-0.031	-0.645	69.160	67.000	66.000	7.028	-0.156	-0.382	63.133	61.000	59.000	6.302	0.134	-0.935
12	Non-verbal Intelligence	33.000	39.500	46.000	12.402	-0.7098	-0.302	33.843	41.00	46.000	12.594	-0.975	-0.020	31.517	34.000	32.000	12.129	-0.22	-0.982
13	Verbal Intelligence	49.650	51.500	54.000	10.053	-0.073	0.188	50.600	54.000	54.000	8.655	-0.514	0.459	48.067	46.000	41.000	12.186	0.429	0.271
14	Retention – Knowledge	5.425	6.105	7.000	2.183	-0.651	-0.872	5.400	6.000	6.000	2.062	-0.682	-0.669	5.467	7.000	7.000	2.446	-0.697	-1.066
15	Comprehension	6.025	6.214	8.000	1.993	-0.609	-0.055	5.960	6.000	8.000	1.881	-0.223	-0.374	6.133	7.000	7.000	2.32	-1.126	1.278
16	Application	2.400	2.524	3.000	1.277	-0.426	-0.810	2.360	3.000	3.000	1.267	-0.491	-0.666	2.467	3.000	3.000	1.302	-0.364	-0.960
17	Analysis	2.150	2.167	1.000	1.331	-0.083	1.140	1.960	2.000	1.000	1.369	0.078	-1.260	2.467	2.000	2.000	1.246	-0.296	-0.629
18	Synthesis	1.350	1.310	1.000	0.893	0.365	-0.468	1.360	1.000	1.000	0.907	0.272	-0.514	1.333	1.000	1.000	0.900	0.578	-0.006
19	Evaluation	1.050	1.000	1.000	0.815	0.504	-0.018	1.240	1.000	1.000	0.331	0.453	0.035	0.733	1.000	1.000	0.704	0.433	-0.669
20	**Retention (Total)**	18.575	19.500	20.000	6.288	-0.212	-1.011	18.320	19.000	23.000	5.699	-0.374	-0.725	19.000	20.000	20.000	1.356	-0.165	-1.429

4.1.2. ESTABLISHING THE EQUIVALENCE OF GROUPS

The present study was made use of the ***Pre test- Post test Equivalent Groups Design***. Using this design, the equivalence of the Experimental and Control groups was provided initially by random assignment of subjects to Experimental and Control treatments. Since the sample of the study consisted of 40 students each in two intact class groups from two schools, as Experimental and Control groups, the investigator made it convenient to establish the equivalence of both groups ***statistically***. Equivalence between the two groups was established for the Total Sample, Boys and Girls in each of the group with regard to ***Previous Knowledge*** of the Subject Matter Measured by a Pre-test, ***Verbal Intelligence, Non-verbal Intelligence*** and ***Socio-Economic Status***.

Test of Significance of Difference between Means was utilised for this purpose. Comparison of the mean scores of Experimental and Control groups (Total sample, Boys and Girls) on these variables were attempted and presented in Table 4.3.

TABLE 4.3

Data and Results of the t-test for the Scores on the Previous Knowledge, Verbal Intelligence, Non-verbal Intelligence and Socio-Economic Status Between the Experimental and Control Groups (Total sample, Boys and Girls)

Variable	Groups Compared	Total Sample					Boys					Girls				
		M	σ	N	t-value	Level of Signi-ficance	M	σ	N	t-value	Level of Signi-ficance	M	σ	N	t-value	Level of Signi-ficance
Previous Knowledge	Experi-mental	14.8500	4.130	40	1.40	NS	15.5769	3.972	26	1.79	NS	13.5000	4.220	14	0.81	NS
	Control	13.575	3.945	40			13.980	3.844	25			12.2667	4.008	15		
Verbal Intelligence	Experi-mental	41.1250	12.457	40	0.21	NS	48.4231	11.755	26	0.75	NS	50.4286	14.037	14	0.48	NS
	Control	49.6500	10.053	40			50.6000	8.665	25			48.0667	12.186	15		
Non-verbal Intelligence	Experi-mental	29.3000	13.738	40	0.302	NS	30.5769	13.647	26	0.862	NS	26.9286	14.096	14	0.953	NS
	Control	33.3000	12.402	40			33.843	12.594	25			31.517	12.129	15		
Socio-Economic Status	Experi-mental	57.8500	18.713	40	0.26	NS	61.1154	21.246	26	0.16	NS	51.7857	11.026	14	0.41	NS
	Control	58.8250	14.810	40			61.9200	15.058	25			53.6667	13.292	15		

NS - Not Significant

The obtained t-values for the comparison of Previous Knowledge, Verbal Intelligence, Non-verbal Intelligence and Socio-Economic Status for Total sample, Boys and Girls are not found significant. Hence, ***no significant difference*** is noticed between the Experimental and Control groups. It can be said that both of the groups are equivalent with respect to the aforesaid variables.

4.1.3. INVESTIGATION OF CLASSROOM INTERACTION

An attempt has been made by the investigator to study the classroom interaction pattern under the Cooperative classroom condition and Conventional classroom condition. Healthy interaction in the class as an effect of the introduction of Cooperative Learning Strategies have been revealed in several studies conducted abroad (Felder, 1995; Xin, 1996; De Keyrel, *et al.*, 2000 and Ghaith, 2001). Interaction with peers leads the learner to social as well as academic development (Jackson, 1990 and Brauer, *et al.*, 1997). The investigator studied the nature of teacher-pupil, pupil-pupil (intra-group) and inter group interaction in the Cooperative and Conventional classroom, drawing the enthusiasm boosted by the findings of these studies.

A Classroom Interaction Rating Scale (CIRS) was prepared specially for this purpose. Five teachers were invited to observe and rate the classroom interaction under Cooperative Learning situation (Learning Together Model) in five separate periods. Another five teachers were requested to observe and rate the interaction pattern in the Conventional classroom situation.

The data obtained were consolidated and the means and standard deviations of each category (***Inter-group, Intra-group*** and ***Student-teacher interaction***) of items were computed separately for the Cooperative classroom and Conventional classroom group. These properties were then subjected to the Mean Difference Analysis. The percentage of score for each category was also calculated. Results of the analysis are presented in Table 4.4.

TABLE 4.4

Results of the Investigation of Interaction in Cooperative Classroom and Conventional Classroom

Category of Interaction	Cooperative Classroom			Conventional Classroom			't' value	Level of Signi-ficance
	Percen-tage of Scores	Mean	S.D.	Percen-tage of Scores	Mean	S.D.		
Inter-group Interaction	89.16	21.4	1.265	53.33	12.8	1.368	9.23	0.01
Intra-group Interaction	88.33	10.6	0.748	53.33	6.4	0.784	7.74	0.01
Student-teacher Interaction	86.66	26.0	1.31	76.76	21.8	1.255	4.97	0.01

The t-values obtained for the comparison of interaction in Cooperative and Conventional classrooms in three categories are found ***significant*** at 0.01 level. It suggests a significant ***difference exists*** between the Cooperative and Conventional classrooms with regard to three categories of classroom interaction. This indicates that ***interaction in Cooperative classroom is greater than interaction in the Conventional class as high mean scores are associated with the Cooperative classroom.*** Percentage of scores for each category obtained for the two groups also

reveal this fact. High percentage of interaction in the three categories were noticed in the Cooperative classroom than the Conventional class.

4.2. MAJOR ANALYSIS -- PART I

In this part of the chapter, various statistical techniques like ***Mean Difference Analysis*** and ***Two-way Factorial Analysis of Covariance (ANCOVA)*** were used. In this section, ***Comparison of the Experimental and Control groups*** in terms of variables such as Achievement, Gain and Retention in Social Science without controlling the Covariates is presented. ***Effectiveness of Cooperative Learning Strategy*** over Conventional lecture Method of Teaching after controlling the effect of Covariates were also described. The results obtained in these statistical techniques is described in details in the following sections.

4.2.1. MEAN DIFFERENCE ANALYSIS

To investigate the difference in ***Achievement*** (Objectivewise and Total score), ***Gain Score*** and ***Retention*** (Objectivewise and Total score) between the Experimental and Control groups, Mean Difference Analysis was employed. The investigation was done for the Total sample and Subsamples.

4.2.1.1. Comparison of Mean Achievement (Objectivewise and Total score) of Experimental and Control groups for the Total sample, Boys and Girls

Test of Significance of Difference between Means was used to study whether the Experimental and Control groups differ in Achievement or not.

The means and standard deviations of the Achievement scores (Objectivewise and Total score) of both of the groups were found out and subjected to the Mean Difference Analysis. The data and results of the t-test are presented in Table 4.5.

TABLE 4.5

Data and Results of the t-test for the Mean Achievement Scores (Objectivewise and Total) Between the Experimental and Control Groups (Total sample, Boys and Girls)

Sample	Variable	Experimental Group			Control Group			t-value	Level of Signi-ficance
		M_1	σ_1	N_1	M_2	σ_2	N_2		
Total Sample	Knowledge	7.2500	1.597	40	6.4500	2.183	40	1.87	NS
	Comprehension	9.3500	2.760	40	6.6250	2.618	40	5.36	0.01
	Application	3.5750	1.010	40	3.0250	1.209	40	2.21	0.05
	Analysis	3.0750	0.944	40	2.4250	0.931	40	3.10	0.01
	Synthesis	1.8500	0.700	40	1.3750	0.838	40	2.75	0.01
	Evaluation	2.1250	0.911	40	1.2500	0.899	40	4.32	0.01
	Achievement (Total)	27.700	5.910	40	21.5500	6.714	40	4.35	0.01
Boys	Knowledge	7.7308	1.485	26	6.4000	2.121	25	2.59	0.01
	Comprehension	10.8462	2.240	26	7.4400	2.468	25	5.16	0.01
	Application	3.7308	0.827	26	3.0400	1.172	25	2.42	0.05
	Analysis	3.2692	0.827	26	2.4000	0.913	25	3.56	0.01
	Synthesis	1.9231	0.685	26	1.4000	0.645	25	2.80	0.01
	Evaluation	2.1923	0.939	26	1.3600	0.860	25	3.30	0.01
	Achievement (Total)	29.6538	5.238	26	22.0800	6.429	25	4.60	0.01
Girls	Knowledge	6.3571	1.447	14	6.5333	2.356	15	0.24	NS
	Comprehension	8.0000	2.746	14	5.2667	2.344	15	2.87	0.01
	Application	3.2857	1.267	14	3.0000	1.309	15	0.60	NS
	Analysis	2.7143	1.069	14	2.4667	0.990	15	0.65	NS
	Synthesis	1.7143	0.726	14	1.3333	1.113	15	1.10	NS
	Evaluation	2.0000	0.877	14	1.0667	0.961	15	2.73	0.01
	Achievement (Total)	24.0714	5.498	14	20.6667	7.306	15	1.41	NS

NS - Not Significant

As per the Table 4.5, the obtained t-values for Achievement (Total and Objectivewise except the Objective, Knowledge) for the Total sample are found significant at 0.01 level and for the Objective Application is found significant at 0.05 level. But the t-value obtained for the Objective Knowledge is found not significant even at 0.05 level. From this it is clear that there is significant difference in the mean Achievement scores (Total and Objectivewise except the Objective Knowledge) between the Experimental and Control groups for the Total sample.

The obtained result shows that the Experimental and Control groups (Total sample) were ***dissimilar*** in case of their performance on the Achievement test. Since the ***higher means were associated with the Experimental group,*** they were found superior over the Control group in case of Achievement in Social Science.

The ***individual performance*** of the subjects in the Experimental and Control groups (Total sample) on the Achievement test was graphically examined and presented in Figure 4-1.

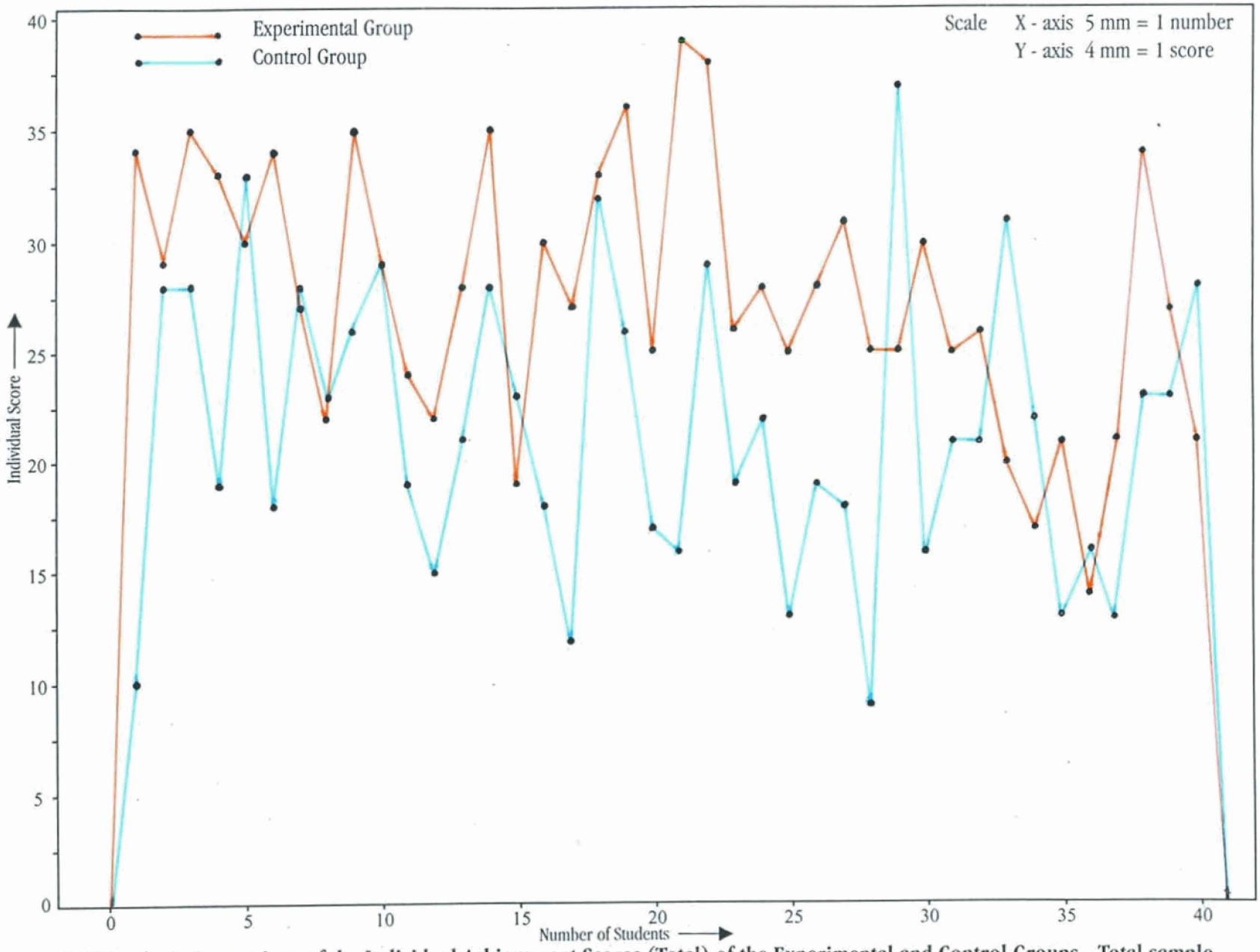


FIGURE 4 - 1 Comparison of the Individual Achievement Scores (Total) of the Experimental and Control Groups - Total sample

A visual examination of the graphical representation of individual Achievement scores (Total) between the Experimental and Control groups points that the individual performance of the subjects in both groups on the Achievement test is ***dissimilar. Statistically significant difference*** in this case is observed through the mean Difference Analysis. ***Performance of Experimental subjects is higher*** than those in the Control group.

For Boys, the t-values obtained for Achievement (Total score and Objectivewise except the Objective Application) were found to be more than the limit set for 0.01 level of significance and for the Objective Application, exceeding the limit set for 0.05 level. From the result of the t-test, it can be inferred that the performance of the Boys in the Experimental and Control groups were totally ***dissimilar*** in case of Achievement (Objectivewise and Total score). High mean scores attached with the Boys in the Experimental group over the Control group signifies the ***superiority*** of the ***Experimental group*** over the ***Control group***.

Graphical representation of the individual performance of Boys in the Experimental and Control groups was attempted and presented in Figure 4.2.

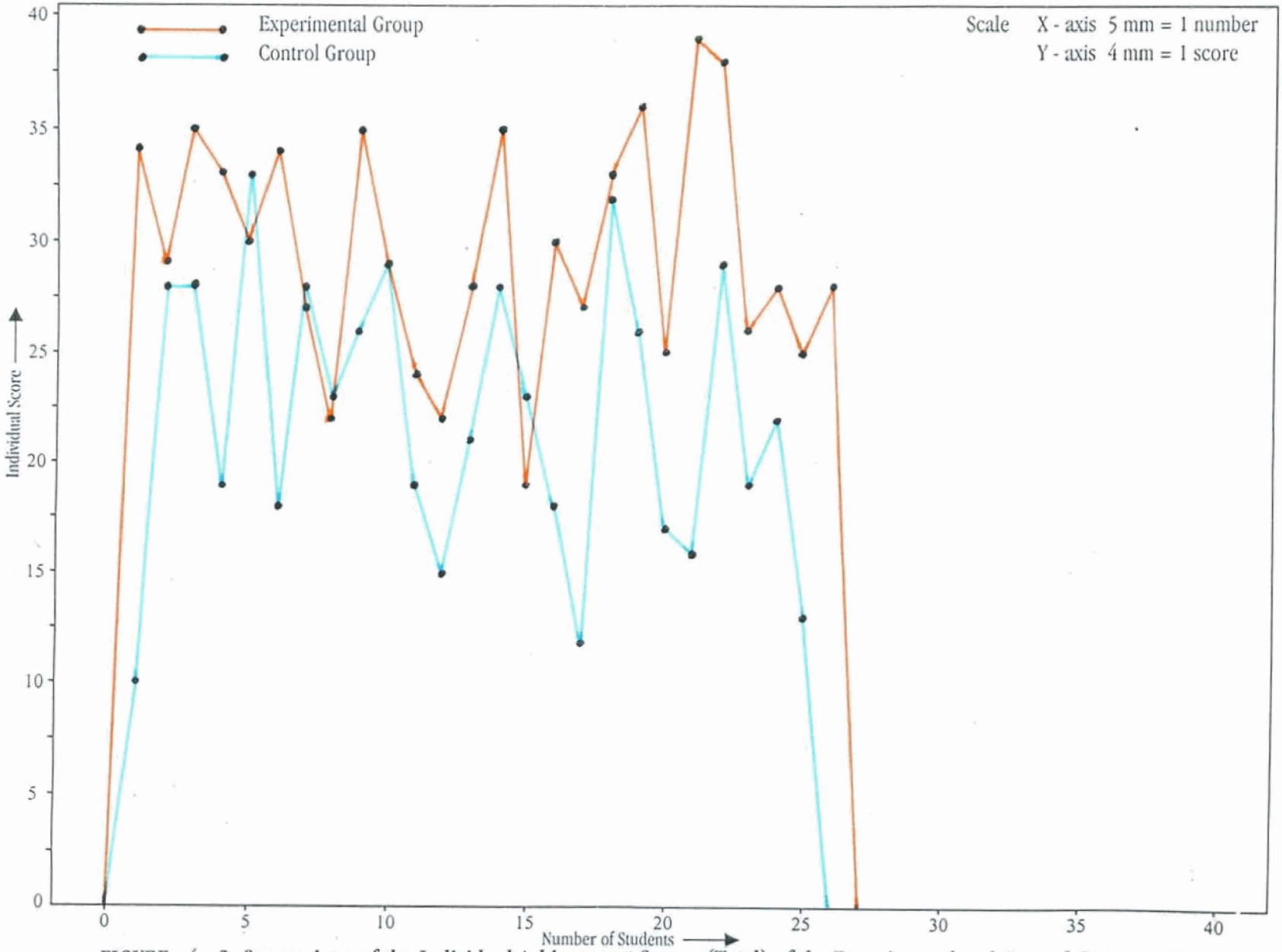


FIGURE 4 - 2 Comparison of the Individual Achievement Scores (Total) of the Experimental and Control Groups - Boys

As per Figure 4-2, ***clear difference*** in the performance of Boys in the Experimental and Control groups was noted. From the graphical representation it is evident that Boys in the ***Experimental group*** shows higher performance than Control group. This observation confirm the result of Mean Difference Analysis.

From the Table 4.5, it is noted that the t-values obtained for the Objectives, Comprehension and Evaluation for Girls were found to be exceeding the limit set for 0.01 level of significance. But the t-values obtained for Achievement (Total and four other Objectives) were not significant even at 0.05 level. From the result, it can be considered that Girls in the ***Experimental and Control groups differ*** in their performance on the Achievement test. Both of the groups were almost similar in case of their performance in Achievement (Total) and for the Objectives namely Knowledge, Application, Analysis and Synthesis. High mean scores associated with the Experimental group for Girls indicated their ***advantage over the Control group*** in the Objectivewise Achievement in Comprehension and Evaluation.

The performance of the Experimental and Control groups (Girls) on the Achievement test (Total score) was examined graphically and studied. The superimposed graphical representation is presented in Figure 4-3.

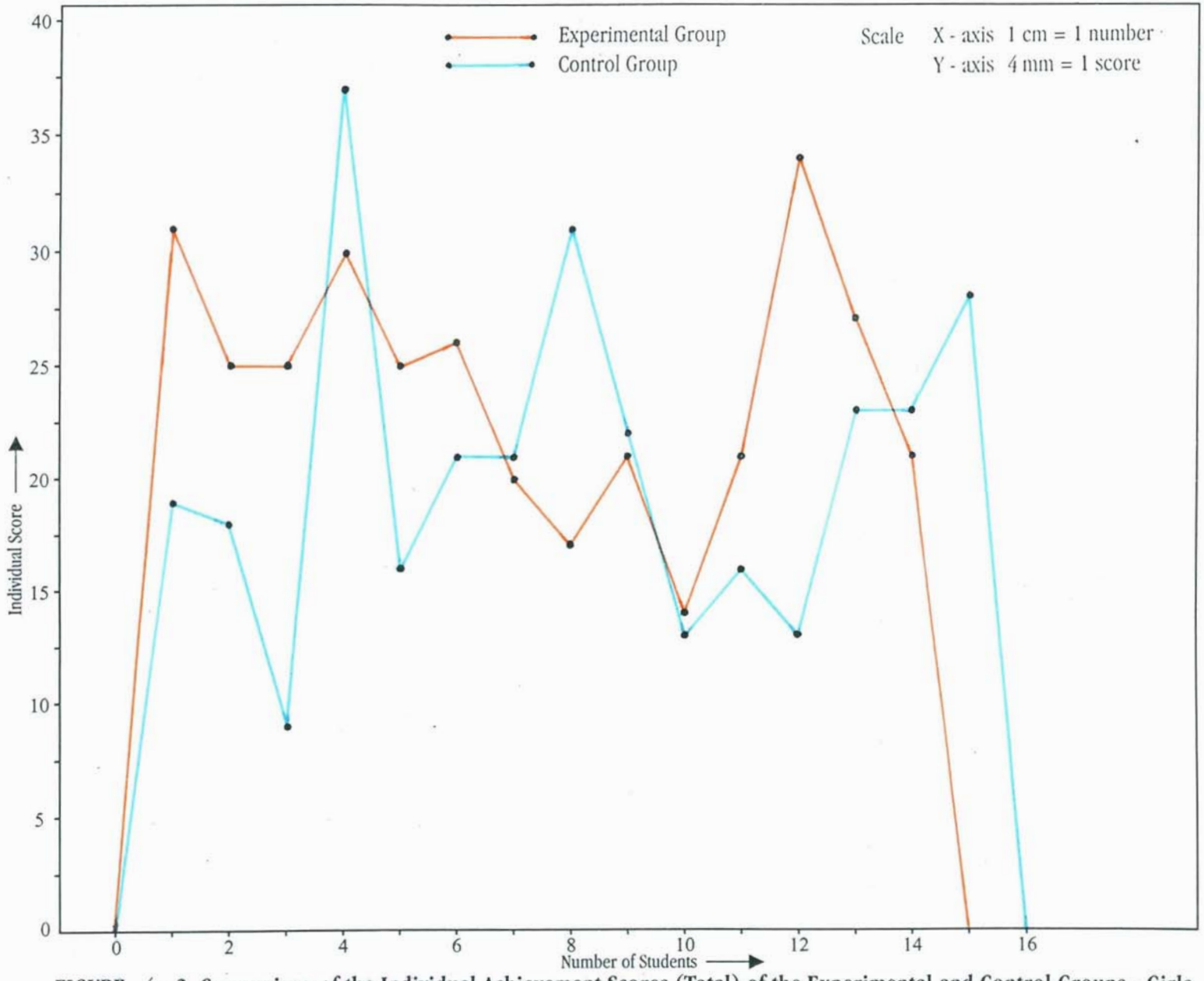


FIGURE 4 - 3 Comparison of the Individual Achievement Scores (Total) of the Experimental and Control Groups - Girls

From Figure 4-3, it is clear that the performance of the subjects in the two treatment groups (Girls) on Achievement test (Total score) is somewhat similar. The difference as observed in the graph is not found statistically significant. In this case, ***statistically significant difference*** is already noticed for the Objectives, Comprehension and Evaluation.

4.2.1.2. Comparison of Mean Gain score of Experimental and Control Groups for the Total sample, Boys and Girls

The mean Gain score of the Experimental and Control groups were compared using the Test of Significance of Difference between Means. The comparison was done for the Total sample, Boys and Girls.

The means and standard deviations for the Gain score of both of the groups were found out and subjected to the Mean Difference Analysis. The data and results of the t-test are presented in Table 4.6.

TABLE 4.6

Data and Results of the t-test for the Mean Gain Score Between the Experimental and Control Groups (Total sample, Boys and Girls)

Sl. No.	Sample	Experimental Group			Control Group			t-value	Level of Significance
		M_1	σ_1	N_1	M_2	σ_2	N_2		
1.	Total	12.60	4.528	40	9.00	4.766	40	3.46	0.01
2.	Boys	13.80	4.481	26	9.40	4.699	25	3.43	0.01
3.	Girls	10.36	3.815	14	8.33	4.967	15	1.24	NS

NS – Not significant;

The obtained t-values as presented in Table 4.6 for the mean Gain score of the Total sample and Boys are found to be exceeding the tabled value of 't' required for significance at 0.01 level. But the t-value obtained for Girls is found below the limit set for 0.05 level of significance. The results of the t-test suggests that there is ***significant difference*** in the mean Gain score between the Experimental and Control groups (Total sample and Boys) and there is no significant difference for Girls.

High mean Gain score associated with the Experimental group over the Control group for Total sample, Boys and Girls revealed the advantageous nature of the Experimental group.

The individual Gain score of both the Experimental and Control groups (Total sample, Boys and Girls) is examined graphically to study the difference. The graphical representation is presented respectively in Figures 4-4, 4-5 and 4-6.

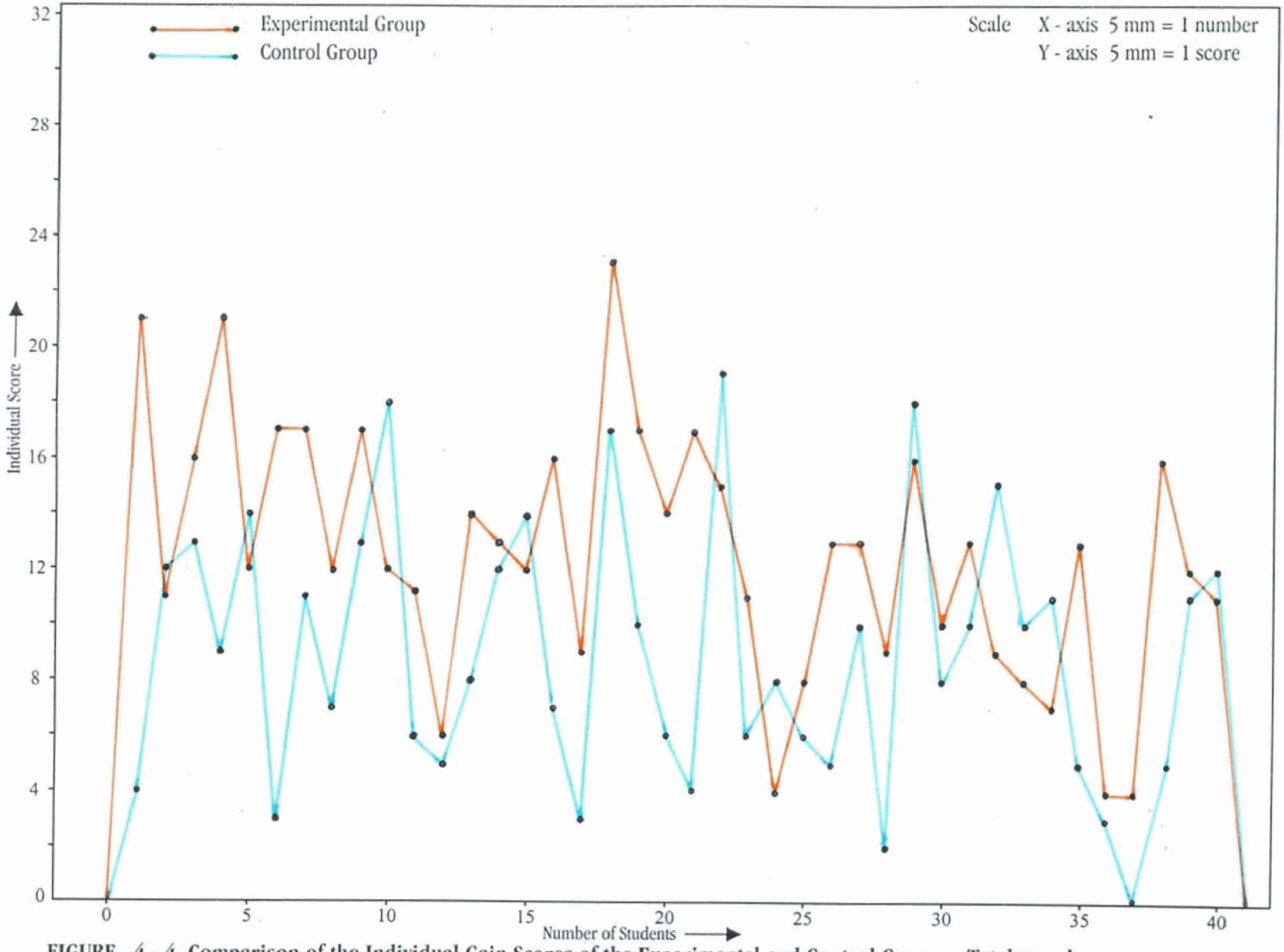


FIGURE 4 - 4 Comparison of the Individual Gain Scores of the Experimental and Control Groups - Total sample

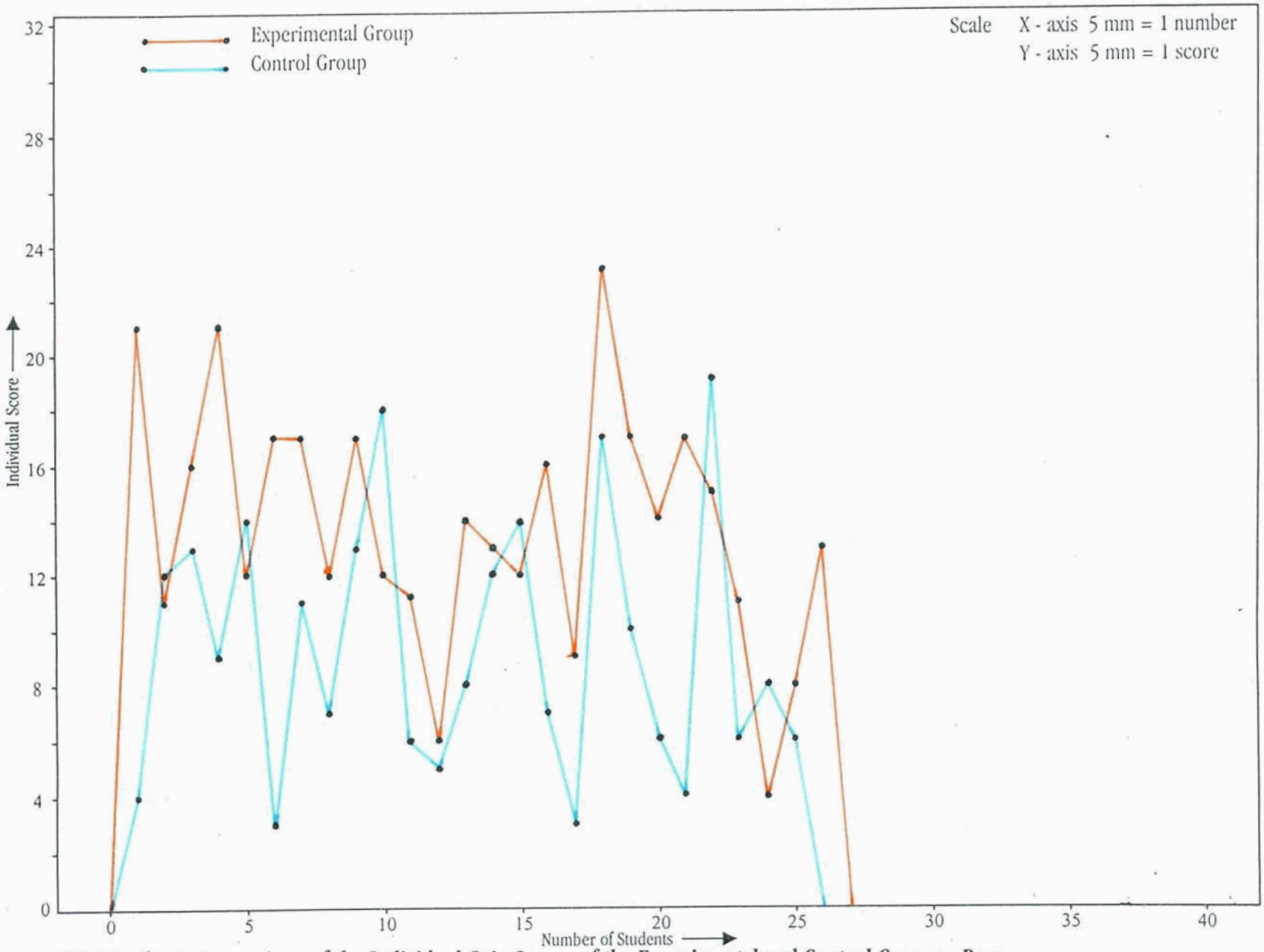


FIGURE 4 - 5 Comparison of the Individual Gain Scores of the Experimental and Control Groups - Boys

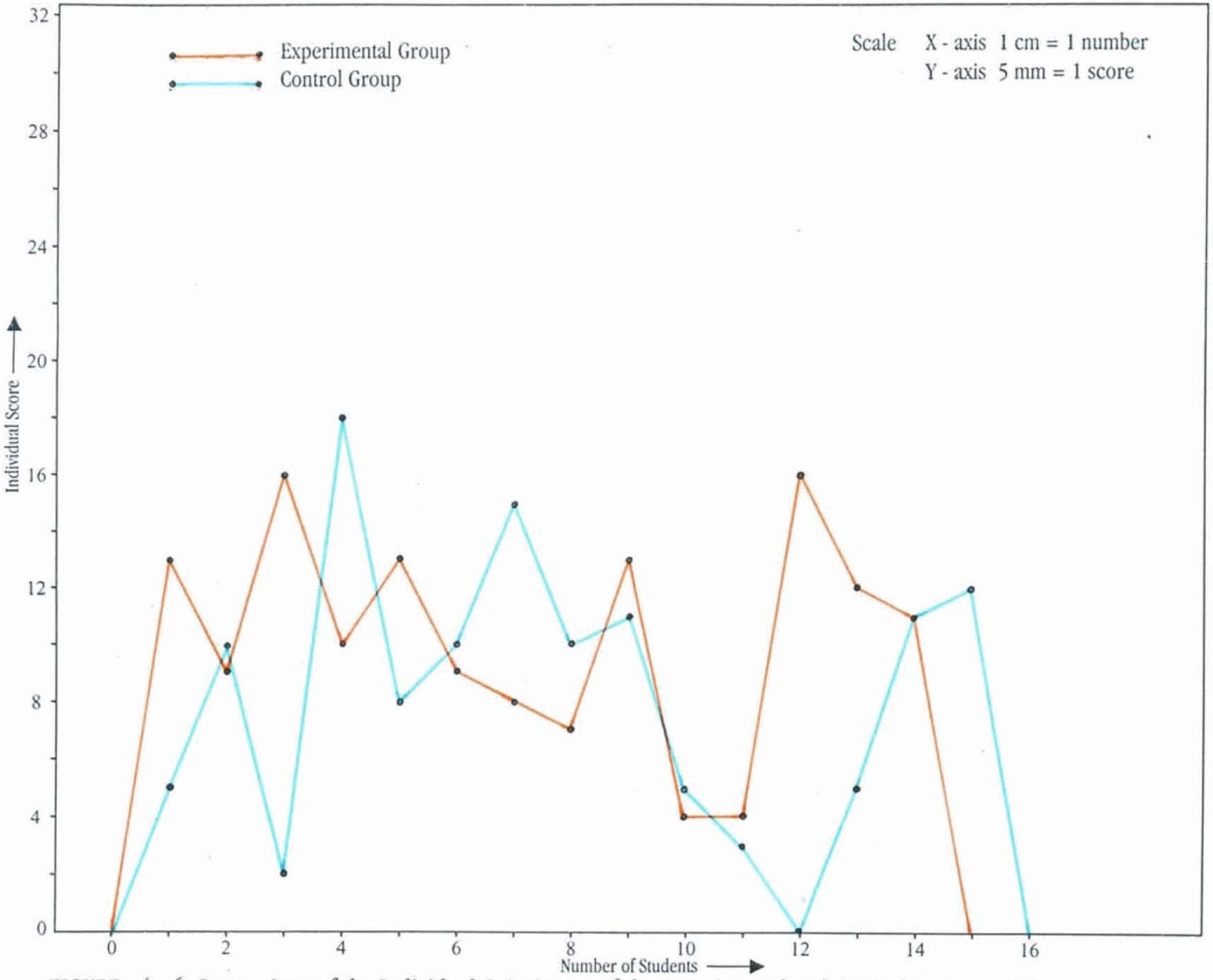


FIGURE 4 - 6 Comparison of the Individual Gain Scores of the Experimental and Control Groups - Girls

As the Figures 4-4, 4-5 and 4-6 revealed the individual Gain score of the subjects in the Experimental and Control groups (Total sample, Boys and Girls) show ***clear difference in favour of the Experimental group***. But the difference observed for Girls is not found statistically significant as seen in the Mean Difference Analysis.

4.2.1.3. Comparison of Mean Retention (Objectivewise and Total score) of Experimental and Control Groups for the Total sample, Boys and Girls

The Retention scores of the Experimental and Control groups were compared using the Test of Significance of Difference between Means. The comparison was done for the Total sample, Boys and Girls separately.

Means and standard deviations of the Retention scores of the Experimental and Control groups were found out and subjected to the Mean Difference Analysis. The data and results of the t-test are presented in Table 4.7.

TABLE 4.7

Data and Results of the t-test for the Mean Retention Scores (Objectivewise and Total) Between the Experimental and Control Groups (Total sample, Boys and Girls)

Sample	Variable	Experimental Group			Control Group			t-value	Level of Significance
		M_1	σ_1	N_1	M_2	σ_2	N_2		
Total Sample	Knowledge	6.15	1.77	40	5.43	2.18	40	1.63	NS
	Comprehension	7.08	2.33	40	6.03	1.99	40	2.17	0.05
	Application	3.10	1.43	40	2.40	1.28	40	2.26	0.05
	Analysis	2.73	0.99	40	2.15	1.33	40	2.19	0.05
	Synthesis	1.45	0.99	40	1.35	0.89	40	0.48	NS
	Evaluation	1.73	0.91	40	1.05	0.82	40	3.50	0.01
	Retention (Total score)	22.23	5.47	40	18.58	6.29	40	2.79	0.01
Boys	Knowledge	6.65	1.55	26	5.40	2.06	25	2.46	0.05
	Comprehension	7.81	2.08	26	5.96	1.88	25	3.33	0.01
	Application	3.27	1.28	26	2.36	1.29	25	2.53	0.05
	Analysis	2.80	0.85	26	1.96	1.37	25	2.65	0.01
	Synthesis	1.46	1.03	26	1.36	0.91	25	0.37	NS
	Evaluation	1.84	0.78	26	1.24	0.84	25	2.68	0.01
	Retention (Total score)	23.88	4.51	26	18.32	5.70	25	3.87	0.01
Girls	Knowledge	5.21	1.85	14	5.47	2.45	15	0.31	NS
	Comprehension	5.71	2.20	14	6.13	2.23	15	0.51	NS
	Application	2.79	1.81	14	2.47	1.30	15	0.54	NS
	Analysis	2.57	1.22	14	2.47	1.25	15	0.23	NS
	Synthesis	1.43	0.94	14	1.33	0.90	15	0.28	NS
	Evaluation	1.50	1.09	14	0.73	0.70	15	2.26	0.05
	Retention (Total score)	19.21	5.94	14	19.00	7.36	15	0.09	NS

NS - Not Significant

As per Table 4.7, the t-values obtained for Retention score (Total and for the Objective Evaluation) for the Total sample are found significant at 0.01 level and for the Objectives; Comprehension, Application and Analysis are significant at 0.05 level. Whereas the 't' values obtained for the Objectives; Knowledge and Synthesis are not found significant even at 0.05 level. The obtained result indicates that ***there exists significant difference*** in the mean Retention scores (Total and in the Objectives Comprehension, Application, Analysis and Evaluation) between Experimental and Control groups for the Total sample.

Since the ***higher means were associated with the Experimental group,*** they were found advantageous over the Control group in case of the Retention scores.

The individual Retention score of the subjects in the Experimental and Control groups (Total sample) was graphically examined and presented in Figure 4-7.

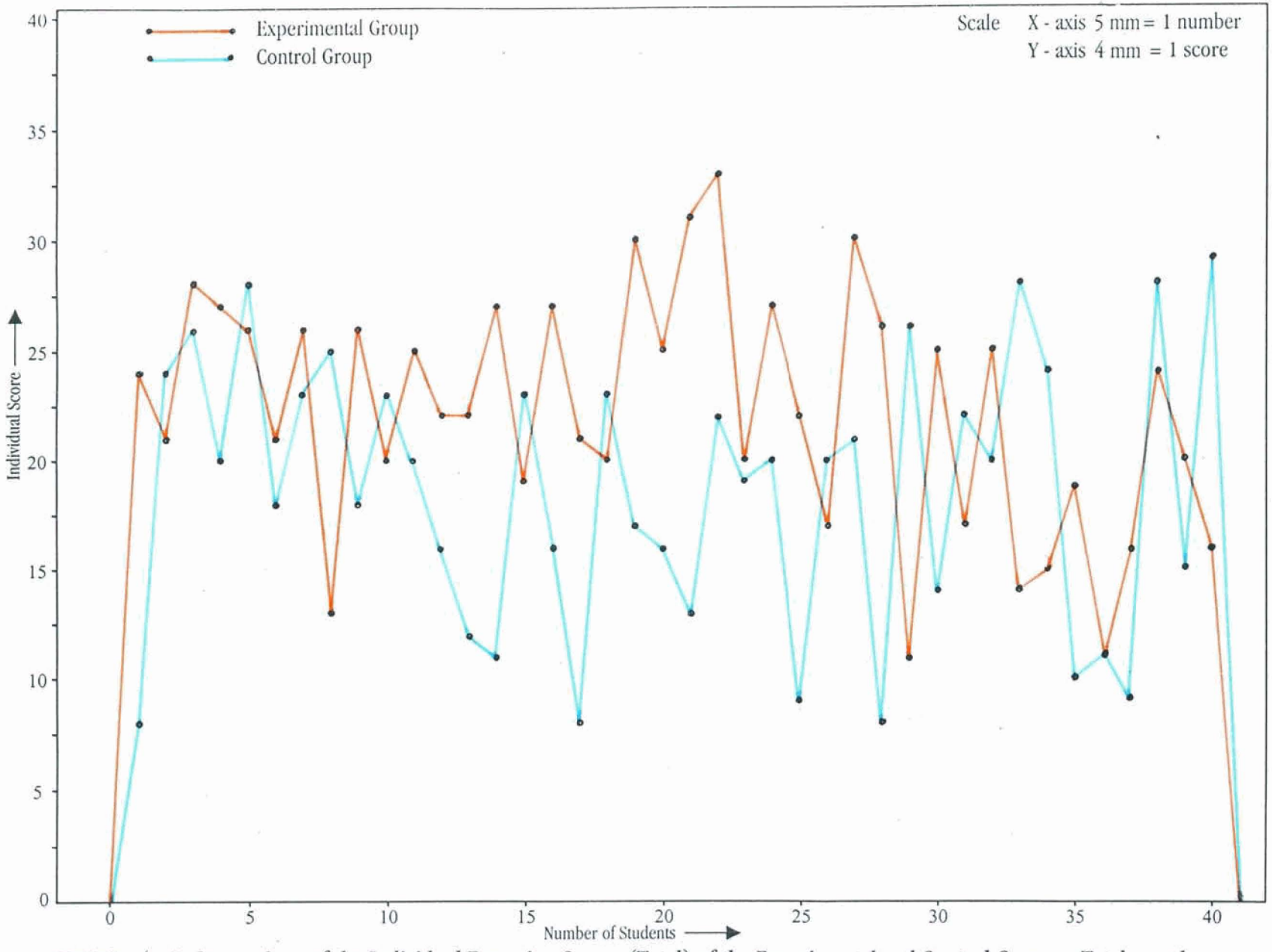


FIGURE 4 - 7 Comparison of the Individual Retention Scores (Total) of the Experimental and Control Groups - Total sample

Figure 4-7, depicts that the individual Retention score of the subjects in the Experimental and Control groups (Total sample) is ***considerably different.*** Mean Difference Analysis also yielded ***statistically significant difference*** in this case (wide Table 4.7). From the graphical representation, it is evident that the ***Experimental group is advantageous*** on Retention test over the Control group.

In case of Boys, the t-values obtained for the comparison of Retention-Total and Objectivewise scores (except Synthesis) between the Experimental and Control groups ***were found significant.*** From the result, it seems that the performance of Boys in the Experimental and Control groups is ***dissimilar*** in case of their Retention scores (except for the Objective Synthesis). High mean Retention scores ***gained by the Experimental group*** over the Control group for Boys indicated that the former is advantageous over the latter.

With the help of a superimposed graphical representation, the individual Retention Total score of the Experimental and Control groups (Boys) were compared and was studied. The graphical representation is presented in Figure 4-8.

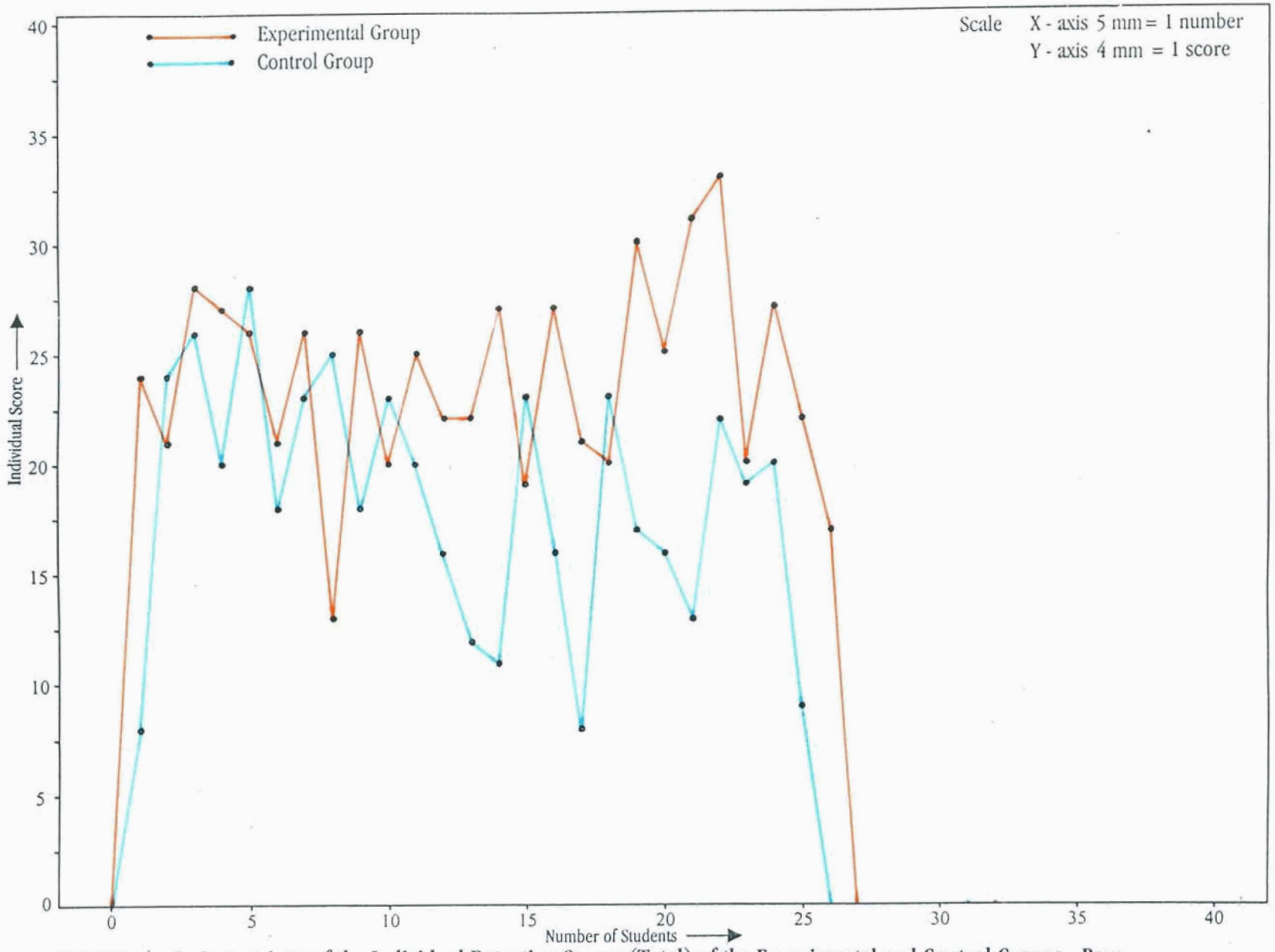


FIGURE 4 - 8 Comparison of the Individual Retention Scores (Total) of the Experimental and Control Groups - Boys

As shown in Figure 4-8 the Experimental and Control groups (Boys) were found ***different*** in their individual Retention scores (Total). The difference was already found ***statistically significant*** (Wide Table 4.7).

From the Table 4.7 it was found that the t-values obtained for the comparison of Retention scores (Total and Objectivewise except for the Objective Evaluation) for Girls are found less than the limit set for significance even at 0.05 level. This indicates that there is ***no significant difference*** exists between the means of Retention score (Total and Objectivewise except for the Objective Evaluation). From the obtained result, it can be inferred that the performance of the Experimental and Control groups on the Retention scores (Total and Objectivewise except the Objective Evaluation) was similar in case of Girls. Significant difference in Retention for the Objective Evaluation is noted ($P < 0.05$).

The Retention scores of the Girls in the Experimental and Control groups were graphically examined. The graphical representation is presented in Figure 4-9.

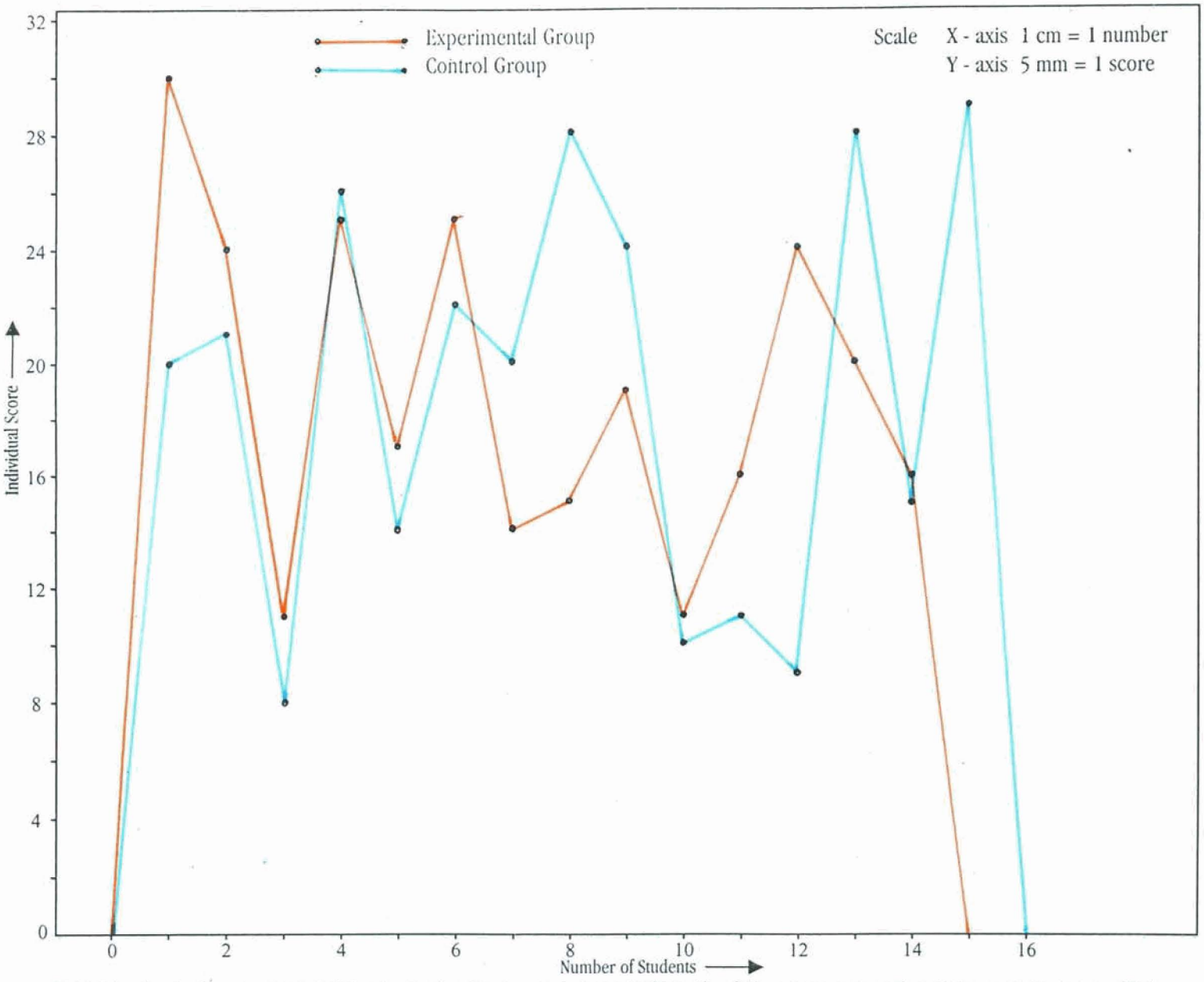


FIGURE 4 - 9 Comparison of the Individual Retention Scores (Total) of the Experimental and Control Groups - Girls

From Figure 4-9, the Retention score of the Experimental and Control groups (Girls) was found in tune with the result of the Mean Difference Analysis (Wide Table 4-7).

4.2.1.4. Summary and Discussion of Mean Difference Analysis

The results of the Mean Difference Analysis employed for the comparison of mean Achievement (Objectivewise and Total score), Gain and mean Retention scores (Objectivewise and Total score) between the Experimental and Control groups (Total sample, Boys and Girls) are summarised and presented in Table 4.8.

TABLE 4.8

Summary of Mean Difference Analysis

Sl. No.	Variable	t-value		
		Total sample	Boys	Girls
1.	Knowledge	1.87	2.59**	0.24
2.	Comprehension	5.36**	5.16**	2.87**
3.	Application	2.21*	2.42*	0.60
4.	Analysis	3.10**	3.56**	0.65
5.	Synthesis	2.75**	2.80**	1.10
6.	Evaluation	4.32**	3.30**	2.73**
7.	**Achievement (Total score)**	4.35**	4.60**	1.41
8.	**Gain score**	3.46**	3.43**	1.24
9.	Knowledge	1.63	2.46*	0.31
10.	Comprehension	2.17*	3.33**	0.51
11.	Application	2.26*	2.53*	0.54
12.	Analysis	2.19*	2.65**	0.23
13.	Synthesis	0.48	0.37	0.28
14.	Evaluation	3.50**	2.68**	2.26*
15.	**Retention (Total score)**	2.79**	3.87**	0.09

* Significant at 0.05 level.
** Significant at 0.01 level.

As per Table 4.8, the t-values obtained for Achievement (Total and Objectivewise except for Knowledge) for Total sample, Achievement (Total and Objectivewise) for Boys, Achievement for the Objectives, Comprehension and Evaluation for Girls were found significant. From the summarised result, it can be said that Achievement in Social Science (Total

and Objectivewise described earlier) ***differentiate*** the Experimental and Control groups (Total sample, Boys and Girls). The entire comparisons revealed the ***superiority of the Experimental group*** over the Control group.

Table 4.8 also suggests that the obtained t-values for the Gain score for Total sample and Boys were ***found to be significant.***

It can be seen from the Table 4.8, that the t-values obtained for Retention scores (Total and Objectivewise) namely Comprehension, Application, Analysis and Evaluation for Total sample, Retention (Total) and Objectivewise except Synthesis for Boys, Retention in the Objective Evaluation for Girls are found significant. From these results it can be considered that Retention in Social Science (Total and Objectivewise described earlier) for Total sample, Boys and Girls ***differentiate*** the ***Experimental*** and ***Control groups***.

The t-values obtained for Retention in the Objectives Knowledge and Synthesis for Total sample, Retention for the Objective Synthesis for Boys, Retention (Total and Objectivewise) except Evaluation for Girls were ***not found significant.***

The graphical representation of the individual Achievement, Gain and Retention scores of the subjects in the Experimental and Control groups (Total sample, Boys and Girls) revealed differences. In all graphs, generally it is observed that the Experimental group has higher Achievement, Gain and Retention score compared with that of the Control group.

4.2.2. ANALYSIS OF COVARIANCE FOR ACHIEVEMENT AND RETENTION

Effectiveness of Instructional Strategies particularly ***Cooperative Learning Strategy*** over the ***Conventional lecture Method of Teaching*** Social Science for standard VII pupils is studied employing the Two-way Factorial ANCOVA with three Covariates singly and in combination. The Covariates controlled are ***Previous Knowledge*** of the Subject Matter, ***Verbal Intelligence*** and ***Non-verbal Intelligence***. In the ANCOVA procedure, ***two levels of Instructional Strategies*** (Cooperative Learning Strategy and Conventional lecture Method of Teaching) and ***two levels of Achievement Motivation*** (Above Average Achievement Motivation and Below Average Achievement Motivation) were incorporated as ***Independent Variables.*** Achievement and Retention in Social Science (Objectivewise and Total score) were treated as ***Dependent Variables.***

4.2.2.1. Classificatory Technique

For facilitating the Two-way ANCOVA procedure, the two Independent Variables (Instructional Strategies and Achievement Motivation) were classified as follows. Instructional Strategies were classified into two levels as Cooperative Learning Strategy and Conventional lecture Method of Teaching. The ***Experimental group*** was taught through the Cooperative Learning Strategy and the ***Control group*** was taught through the Conventional lecture Method of Teaching.

Total number of subjects consisted in each of the two Instructional Strategies (Cooperative Learning Strategy and Conventional lecture Method of Teaching) were as follows.

Instructional Strategies	Boys	Girls	Total
Cooperative Learning Strategy	26	14	40
Conventional lecture Method of Teaching	25	15	40
Total	51	29	80

Above Average Achievement Motivation (AAAM) and ***Below Average Achievement Motivation (BAAM)*** were taken as the two levels of Achievement Motivation using median as the cut off point. From the Total sample (N = 80), subjects who attained a score above the median (68 in Total sample, 72 in Boys and 63 in Girls) were considered as Above Average Achievement Motivation (AAAM) group and those who got a score equal to or below the median as Below Average Achievement Motivation (BAAM) group. The same classificatory scheme was utilized for Two-Way ANOVA which is described in Major Analysis Part II. The actual number of subjects falling in each of the two levels were as follows.

Achievement Motivation	Boys	Girls	Total
Above Average Achievement Motivation (AAAM)	22	16	38
Below Average Achievement Motivation (BAAM)	29	13	42
Total	51	29	80

Prior to ANCOVA, the data used for Analysis is subjected to a thorough examination with a view to know whether the data is sufficient to

satisfy the major assumptions suggested by ***Winer (1977), Ferguson (1971)*** and ***Wildt*** and ***Ahtola (1978)*** to carry over the ANCOVA procedure. It is seen that the data is satisfied with the following assumptions (Wildt & Ahtola, 1978).

1. **The scores on the Dependent Variable are a linear combination of four independent components, an overall mean, a treatment effect, a linear covariate effect and an error term.**

2. **The error is normally and independently distributed with mean zero and variance σ^2E.**

3. **The (weighted) sum of all groups of the treatment/group effect is zero.**

4. **The coefficient of the covariate (slope of the regression line) is the same for each treatment group.**

5. **The covariate is a fixed mathematical variable measured without error, not a stochastic variable.**

Entire computations were done using the software, Statistical Package for Social Sciences - SPSS (Einspruch, 1998). Since the frequencies in the treatment cells are unequal, the ANCOVA procedure for unequal cell frequencies is utilised for analysis.

4.2.2.2. Tests for Basic Assumptions

To satisfy the basic assumptions of ANCOVA procedure, the collected date were specifically analysed and examined. The results of this analysis is presented in this section of the report.

a. Linear Relationship Between the Dependent Variable and the Covariates

To satisfy initially the assumption of the existence of linear relationship between the Dependent Variables (Achievement and Retention in Social Science - Objectivewise and Total score) and the Covariates (Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence), the nature of relationship is studied using the ***scatter plots*** of Dependent Variables by Covariates.

A visual examination of the scatter plots of three Covariates against the Dependent Variables (Achievement and Retention - Total score) is attempted by the investigator and presented as specimen in Figure 4-10.

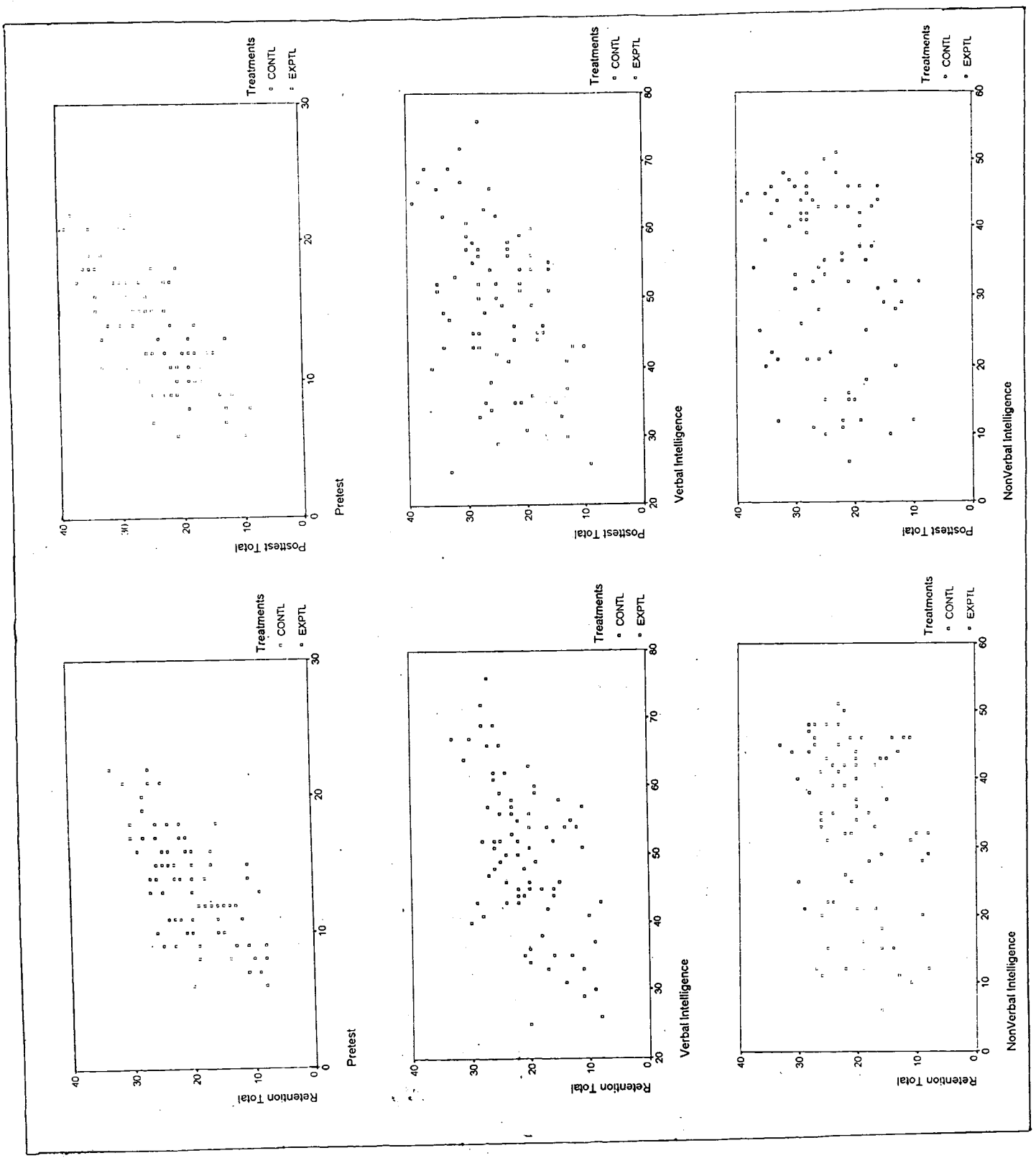


Figure 4-10 Scatter Plots of Achievement Retention (Total score) with All the Covariates

The visual examination of the scatter plots revealed that the relationship between the Dependent Variables (Achievement and Retention - Total score) and the Covariates (separately and in combination) was in a linear way. The scores of the Dependent Variable and the respective Covariates ***did not depart greatly*** from the line of good fit. Hence, the assumption of linear relationship between the Variate and the Covariate was ***successfully satisfied.***

b. Test of Homogeneity of Variance

To satisfy the assumption of ***homogeneity of variance,*** separate Analysis of Variance was used, to test whether the ***slopes of the regression lines are the same*** (Homogeneity of within-class regression) for the two levels of Independent Variables (Instructional Strategies and Achievement Motivation).

Separate Tests of Homogeneity of Variance were employed for each ANCOVA for Achievement and Retention with three Covariates (Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence) separately and in combination. From all the tests of homogeneity, it was inferred that the ***within-class regression coefficients*** were homogeneous or the same for two levels of Instructional Strategies and two levels of Achievement Motivation (Tables not attached). The outcome of this test, in part does not rule against pooling the ***within class regression*** (Winer, 1977). Thus the ***data were found appropriate*** to suit the ANCOVA model.

c. Analysis of Variance for Achievement and Retention

Separate Analysis of Variance for each ANCOVA, ***disregarding*** the Covariates, was used to study whether the treatments given in the Experimental and Control groups create any significant difference in the Criterion Variable (Achievement and Retention - Total score). For the purpose, the sum of squares, mean square variance along with the corresponding degrees of freedom and the F-ratios were calculated (Tables not attached). From the entire analysis employed, five out of seven ANOVA (six Objectivewise and a Total Achievement score as Dependent Variables) yielded significant F-values for Instructional Strategies on Achievement (Total and Objectives namely Comprehension, Analysis, Synthesis and Evaluation). Four out of seven ANOVA yielded significant F-values for Instructional Strategies on Retention (Total and Objectives namely Application, Analysis and Evaluation). This is due to the fact that the treatment means appears to have different Covariate means. If difference between the criterion means remain after a statistical adjustment has been made, the ANCOVA attempts to approximate the difference in which each of the treatment means is equated on the covariate (Winer, 1977).

4.2.2.3. ANALYSIS OF COVARIANCE FOR ACHIEVEMENT

Two-way Factorial ANCOVA was employed to study the effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching Social Science of standard VII pupils. Covariance Analysis made use of three Covariates ***(Previous Knowledge, Verbal Intelligence*** and ***Non-verbal Intelligence)*** singly and jointly. The ANCOVA

procedure incorporated two levels of Instructional Strategies ***(Cooperative Learning Strategy*** and ***Conventional lecture Method of Teaching)*** and two levels of Achievement Motivation ***(Above Average Achievement Motivation - AAAM*** and ***Below Average Achievement Motivation - BAAM)*** as ***Independent Variables. Achievement in Social Science*** (Objectivewise and Total score) was considered as the ***Dependent Variable.*** Scheffe' Test of Post-hoc Comparison was employed with every ANCOVA, which shows significant F-values for Instructional Strategies, to find out the group that causes difference in the criterion means. The ANCOVA was done for the Total sample only. A detailed description of the procedures employed in the ANCOVA is dealt in this section of the report.

4.2.2.3.a. Analysis of Covariance for Achievement - Previous Knowledge Controlled

Two-way Factorial ANCOVA with Previous Knowledge as Covariate was employed to study the effectiveness of Instructional Strategies, over Conventional lecture Method of Teaching Social Science of standard VII Pupils.

Summary of Two-way Factorial ANCOVA is presented in Table 4.9.

TABLE 4.9

Summary of Two-way Factorial ANCOVA for Achievement in Social Science (Objectivewise and Total score) for Total sample - Previous Knowledge as Covariate

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Source of Variation			
					Instructional Strategies	Achievement Motivation	Instructional Strategies X Achievement Motivation
1.	Total sample	80	Knowledge	SS MS df F	0.02 1 0.02 0.01	0.97 1 0.97 0.39	6.22 1 6.22 2.52
2.		80	Comprehension	SS MS df F	79.31 1 79.31 15.36**	20.33 1 20.33 3.94	0.44 1 0.44 0.09
3		80	Application	SS MS df F	0.37 1 0.37 0.39	0.28 1 0.28 0.29	1.09 1 1.09 1.17
4		80	Analysis	SS MS df F	3.51 1 3.51 4.54*	1.02 1 1.02 1.32	0.10 1 0.10 0.12
5		80	Synthesis	SS MS df F	2.31 1 2.31 4.06*	0.48 1 0.48 0.84	0.46 1 0.46 0.81
6		80	Evaluation	SS MS df F	5.08 1 5.08 8.93**	0.24 1 0.24 0.43	0.05 1 0.05 0.08
7		80	Achievement (Total)	SS MS df F	183.48 1 183.48 7.94**	3.42 1 3.42 0.15	2.09 1 2.09 0.09

* Significant at 0.05 level.

** Significant at 0.01 level.

From the Table 4.9, the F-values obtained for Instructional Strategies on Achievement in Social Science (Objectivewise and Total score) namely Comprehension and Evaluation are found beyond the tabled value (6.96) and significant at 0.01 level of significance (1,75 df). The F-values obtained for the Objectives Analysis and Synthesis are found beyond the tabled value (3.96) at 0.05 level for 1,75 df. Whereas the F-values obtained for the Objectives, Knowledge and Application are found below the tabled value (3.96) for 1,75 df.

The results indicates statistically ***significant difference*** between the criterion means in case of Achievement in Social Science (Total and for the relevant Objectives) even after the adjustment is made for the linear effect of the Covariate ie. Previous Knowledge. From the Covariance Analysis it can be inferred that, when a linear adjustment is made for the effect of variation due to difference in Previous Knowledge, there is ***statistically significant difference*** still existing between the two types of Instructional Strategies except for the two Objectives, Knowledge and Application.

In the Covariance Analysis, the F-values for Achievement Motivation and Instructional Strategies x Achievement Motivation are not taken into account because Achievement Motivation is considered as a ***fixed factor*** (Winer, 1977).

Adjusted Means and Post-hoc Comparison

Post-hoc Comparison is undertaken to determine which one of the two groups of Instructional Strategies (CLS and CMT) cause difference in terms of the variation in the criterion means. In the ANCOVA procedure this comparison is made with adjusted criterion means, which were

adjusted to avoid the effect of the Covariate. In the present study ***Scheffe'*** Test of Post-hoc Comparison (Ferguson, 1971) was used as a technique to compare the adjusted criterion means of the Experimental and Control groups.

F-ratios between pairs of means was calculated using the ***within group variance*** (Sw^2). Table of F-values was consulted to obtain the value of F required for significance at 0.05 level and 0.01 level for $df_1 = k - 1$ and $df_2 = N - K$ using the formula $F' = (K - 1)$, the quantity of F, for the required df was also calculated. The value of F' was compared with the values of F to decide the significance of the difference between means.

The F-ratios computed for the adjusted criterion means (Achievement in Social Science - Objectivewise and Total) and details of the Scheffe' Test of Post-hoc Comparison are presented in Table 4.10.

TABLE 4.10

Results of the Scheffe' Test of Post-hoc Comparison Between the Adjusted Means of Achievement in Social Science (Objectivewise and Total score) for the Experimental and Control Groups for Total Sample

Sample	N	Dependent Variable	Groups Compared	Adjusted Means		F-value	Values of F'		Level of Significance
				M_1	M_2		0.05	0.01	
Total sample	80	Comprehension	CLS – CMT (Experimental – Control)	9.296	7.173	37.83	3.96	6.96	0.01
	80	Analysis	CLS – CMT (Experimental – Control)	2.983	2.536	5.09	3.96	6.96	0.05
	80	Synthesis	CLS – CMT (Experimental – Control)	1.780	1.417	4.55	3.96	6.96	0.05
	80	Evaluation	CLS – CMT (Experimental – Control)	1.956	1.418	10.62	3.96	6.96	0.01
	80	Achievement - Total	CLS – CMT (Experimental – Control)	26.24	23.015	9.03	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

As per Table 4.10, the F-ratios obtained for Achievement - Total and for the Objectives Comprehension and Evaluation are found significant at 0.01 level and the Objectives Analysis and Synthesis at 0.05 level. Thus ***significant difference*** was noticed for the two groups, as the F-values exceeds the values of F' (3.96 - 0.05 level; 6.96 - 0.01 level) at respective level of significance. ***Significant difference*** in mean Achievement (Total and for the Objectives, Comprehension, Analysis, Synthesis and Evaluation) scores based on Instructional Strategies (CLS and CMT) is evident after adjustment has made. In all of these comparisons, as high

means were associated with the Cooperative Learning Strategy (Experimental group) they were found ***advantageous*** over the Control group to which Conventional lecture Method of Teaching was used.

4.2.2.3.b. Analysis of Covariance for Achievement - Verbal Intelligence Controlled

Two-way Factorial ANCOVA was employed to examine the effectiveness of Cooperative Learning Strategy over Conventional lecture Method, treating Verbal Intelligence as Covariate.

Result of the Two-way Factorial ANCOVA is summarised in Table 4.11.

TABLE 4.11

Summary of Two-way Factorial ANCOVA for Achievement in Social Science (Objectivewise and Total score) for Total sample - Verbal Intelligence as Covariate

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Source of Variation			
				Instructional Strategies		Achievement Motivation	Instructional Strategies x Achievement Motivation
1.	Total sample	80	Knowledge	SS MS df F	9.59 1 9.59 3.11	7.53 1 7.53 2.44	4.82 1 4.82 1.57
2.		80	Comprehension	SS MS df F	167.46 1 167.46 27.17**	45.82 1 45.82 7.43	0.96 1 0.96 0.16
3		80	Application	SS MS df F	5.02 1 5.02 5.43*	1.98 1 1.98 2.14	1.92 1 1.92 2.07
4		80	Analysis	SS MS df F	8.86 1 8.86 10.30**	0.18 1 0.18 0.21	0.05 1 0.05 0.06
5		80	Synthesis	SS MS df F	4.82 1 4.82 8.44**	0.14 1 0.14 0.24	0.63 1 0.63 1.11
6		80	Evaluation	SS MS df F	14.82 1 14.82 22.38**	0.12 1 0.12 0.18	0.19 1 0.19 0.28
7		80	Achievement (Total)	SS MS df F	668.22 1 668.22 22.14**	74.69 1 74.69 2.47	8.85 1 8.85 0.29

* Significant at 0.05 level.

** Significant at 0.01 level.

From Table 4.11, it is noted that the F-values obtained for Instructional Strategies on Total and Objectivewise Achievement in Social Science viz. Comprehension, Analysis, Synthesis and Evaluation are found

significant at 0.01 level (Tabled value 7.01, df 1,75) and that of Application (5.43) at 0.05 level of significance. This suggests that Achievement in Social Science (Objectivewise and Total) except for the Objective Knowledge ***changes with regard to changes in the Instructional Strategies.***

The result shows that statistically significant difference between criterion means for the Experimental and Control groups exists even after the adjustment made for the linear effect of Covariate. Thus, from the result it can be clearly assumed that when linear adjustment is made for the effect of variation due to Verbal Intelligence of the students, there remain statistically ***significant difference*** between the Experimental and Control groups.

Since Achievement Motivation is considered as a ***fixed factor,*** F-values obtained for Achievement Motivation and Instructional Strategies x Achievement Motivation are not interpreted.

Adjusted Means and Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison (Ferguson, 1971) was employed for comparing the adjusted criterion means of the Experimental and Control groups wherever the F-ratios were found significant. A detailed description of the post-hoc comparison is presented in the sub section 4.2.2.3.a

Details of the Scheffe Test of Post-hoc Comparison is given in Table 4.12.

TABLE 4.12

Results of the Scheffe' Test of Post-hoc Comparison Between the Adjusted Means of Achievement in Social Science (Objectivewise and Total score) for the Experimental and Control Groups for Total Sample

Sample	N	Dependent Variable	Groups Compared	Adjusted Means		F-value	Values of F'		Level of Significance
				M_1	M_2		0.05	0.01	
Total sample	80	Comprehension	CLS – CMT (Experimental – Control)	9.711	6.757	28.25	3.96	6.96	0.01
	80	Application	CLS – CMT (Experimental – Control)	3.537	3.025	5.81	3.96	6.96	0.05
	80	Analysis	CLS – CMT (Experimental – Control)	3.100	2.420	10.74	3.96	6.96	0.01
	80	Synthesis	CLS – CMT (Experimental – Control)	1.849	1.348	8.33	3.96	6.96	0.01
	80	Evaluation	CLS – CMT (Experimental – Control)	2.126	1.248	23.45	3.96	6.96	0.01
	80	Achievement - Total	CLS – CMT (Experimental – Control)	27.58	21.679	23.06	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

Table 4.12 revealed that the F-ratios obtained for the pairs CLS-CMT groups based on Achievement in Social Science are significant at 0.01 level for Comprehension, Analysis, Synthesis, Evaluation and Achievement – Total score. For the Objective Application, F-value is found significant at 0.05 level. From the result it can be inferred that the two groups (Experimental and Control) ***significantly differ*** in their mean Achievement scores in Social Science (Total and Objectivewise except Knowledge). From

the post-hoc comparison it is seen that the ***Experimental group*** shows ***superiority*** over the Control group as high mean Achievement scores were associated with it.

4.2.2.3.c. Analysis of Covariance for Achievement - Non-verbal Intelligence Controlled

Effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching was investigated using another Two-way Factorial ANCOVA with Non-verbal Intelligence as Covariate.

Results of the Two-way Factorial ANCOVA is summarised and presented in Table 4.13.

TABLE 4.13

Summary of Two-way Factorial ANCOVA for Achievement in Social Science (Objectivewise and Total score) for Total sample - Non-verbal Intelligence as Covariate

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Source of Variation			
				Instructional Strategies		Achievement Motivation	Instructional Strategies x Achievement Motivation
1.	Total sample	80	Knowledge	SS MS df F	24.98 1 24.98 8.67**	6.08 1 6.08 2.11	5.28 1 5.28 1.83
2.		80	Comprehension	SS MS df F	205.61 1 205.61 33.28**	42.50 1 42.50 6.88	0.56 1 0.56 0.09
3		80	Application	SS MS df F	9.67 1 9.67 9.00**	1.75 1 1.75 1.63	1.27 1 1.27 1.18
4		80	Analysis	SS MS df F	11.85 1 11.85 13.98**	0.25 1 0.25 0.29	0.07 1 0.07 0.09
5		80	Synthesis	SS MS df F	5.12 1 5.12 8.45**	0.13 1 0.13 0.22	0.43 1 0.43 0.70
6		80	Evaluation	SS MS df F	18.80 1 18.80 24.60**	0.09 1 0.09 0.12	0.05 1 0.05 0.06
7		80	Achievement (Total)	SS MS df F	969.53 1 969.53 29.47**	63.21 1 63.21 1.92	3.19 1 3.19 0.10

** Significant at 0.01 level.

As given in Table 4.13, the F-values obtained for Instructional Strategies on Achievement in Social Science (Objectivewise and Total Score)

are found well beyond the tabled value (7.01, 1,75 df) and significant at 0.01 level. From the obtained result it can be considered that Achievement in Social Science (Objectivewise and Total Score) is influenced by the variation in the levels of Instructional Strategies. The results indicate ***statistically significant difference*** between the criterion means for two groups, even after the adjustment is made for the linear effect of the Covariate, Non-verbal Intelligence. From the result, it can be assumed that Achievement in Social Science (Objectivewise and Total Score) is not independent with respect to the ***changes in the levels of Instructional Strategies***.

Since Achievement Motivation is considered as a ***fixed factor,*** F-values obtained for Achievement Motivation and Instructional Strategies x Achievement Motivation were not examined in the Covariance Analysis.

Adjusted Means and Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison was employed to determine the group, which may cause difference in terms of the variation in the criterion means. As a part of the post-hoc comparison, F-ratio is computed between adjusted criterion means for the Experimental and Control groups. Details of the Scheffe' Test is given in Table 4.14.

TABLE 4.14

Results of the Scheffe' Test of Post-hoc Comparison Between the Adjusted Means of Achievement in Social Science (Objectivewise and Total score) for the Experimental and Control Groups for Total Sample

Sample	N	Dependent Variable	Groups Compared	Adjusted Means		F-value	Values of F'		Level of Significance
				M_1	M_2		0.05	0.01	
Total sample	80	Knowledge	CLS – CMT (Experimental – Control)	7.515	6.317	9.86	3.96	6.96	0.01
	80	Compre-hension	CLS – CMT (Experimental – Control)	9.953	6.515	38.28	3.96	6.96	0.01
	80	Application	CLS – CMT (Experimental – Control)	3.654	2.908	11.00	3.96	6.96	0.01
	80	Analysis	CLS – CMT (Experimental – Control)	3.173	2.347	15.95	3.96	6.96	0.01
	80	Synthesis	CLS – CMT (Experimental – Control)	1.870	1.327	9.66	3.96	6.96	0.01
	80	Evaluation	CLS – CMT (Experimental – Control)	2.207	1.167	28.42	3.96	6.96	0.01
	80	Achievement - Total	CLS – CMT (Experimental – Control)	28.363	20.896	33.83	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

From Table 4.14, the significant F-ratios obtained for Achievement - Total and Objectivewise scores at 0.01 level, as they exceeds the value of F' (6.96) at 0.01 level of significance. Hence, it can be assumed that the ***Experimental and Control groups differ significantly*** with respect to their mean Achievement scores (Objectivewise and Total). The ***advantageous***

nature of the ***Experimental group*** over the Control group is noticed from their high mean Achievement scores.

4.2.2.3.d. Analysis of Covariance for Achievement - Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence Controlled in Combination

Apart from the Covariance Analysis done by controlling Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence separately, another Two-way Factorial ANCOVA with the Covariates in combination of the three at a time was utilized to investigate the effectiveness of Instructional Strategies. Summary of the Two-way Factorial ANCOVA is presented in Table 4.15.

TABLE 4.15

Summary of Two-way Factorial ANCOVA for Achievement in Social Science (Objectivewise and Total score) for Total sample - Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence as Covariates in Combination

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Source of Variation			
				Instructional Strategies		Achievement Motivation	Instructional Strategies X Achievement Motivation
1.	Total sample	80	Knowledge	SS MS df F	2.55 1 2.55 1.07	1.36 1 1.36 0.57	4.84 1 4.84 2.03
2.		80	Comprehension	SS MS df F	77.89 1 77.89 14.89**	21.81 1 21.81 4.17	0.82 1 0.82 0.16
3		80	Application	SS MS df F	1.43 1 1.43 1.69	0.60 1 0.60 0.71	1.85 1 1.85 2.18
4		80	Analysis	SS MS df F	3.95 1 3.95 5.01*	0.93 1 0.93 1.18	0.06 1 0.06 0.08
5		80	Synthesis	SS MS df F	1.58 1 1.58 2.80	0.37 1 0.37 0.66	0.58 1 0.58 1.02
6		80	Evaluation	SS MS df F	4.63 1 4.63 8.53**	0.13 1 0.13 0.23	0.14 1 0.14 0.27
7		80	Achievement (Total)	SS MS df F	233.64 1 233.64 10.69**	8.01 1 8.01 0.37	7.48 1 7.48 0.34

* Significant at 0.05 level.

** Significant at 0.01 level.

Table 4.15 reveals that the F-values obtained for Instructional Strategies on Total and Objectivewise Achievement in Social Science (Comprehension and Evaluation) are found well beyond the tabled value for significance at 0.01 level and Analysis at 0.05 level. No significant F-ratios were obtained for the Objectives Knowledge, Application and Synthesis. From the result it seems that, Achievement in Social Science (Total and Objectivewise) namely Comprehension, Analysis and Evaluation is changing with the corresponding changes in the ***levels of Instructional Strategies***. It can also be inferred that ***statistically significant difference*** between the two groups exists even after the linear adjustment is made for the variation due to the combined effect of Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence.

F-values for Achievement Motivation and Achievement Motivation x Instructional Strategies were not considered for interpretation, because Achievement Motivation is treated as a ***fixed*** factor.

Adjusted Means and Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison was attempted between adjusted criterion means (Achievement in Social Science - Objectivewise and Total score), where significant F-values obtained in ANCOVA. Details of the post-hoc comparison is given in Table 4.16.

TABLE 4.16

Results of the Scheffe' Test of Post-hoc Comparison Between the Adjusted Means of Achievement in Social Science (Objectivewise and Total score) for the Experimental and Control Groups for Total Sample

Sample	N	Dependent Variable	Groups Compared	Adjusted Means		F-value	Values of F'		Level of Significance
				M_1	M_2		0.05	0.01	
Total sample	80	Comprehension	CLS – CMT (Experimental – Control)	9.417	7.051	22.69	3.96	6.96	0.01
	80	Analysis	CLS – CMT (Experimental – Control)	3.026	2.494	7.25	3.96	6.96	0.01
	80	Evaluation	CLS – CMT (Experimental – Control)	1.975	1.399	12.96	3.96	6.96	0.01
	80	Achievement - Total	CLS – CMT (Experimental – Control)	26.678	22.582	15.42	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

As per Table 4.16, significant F-ratios at 0.01 level is obtained for the comparison groups. Significant difference at 0.01 level was noticed between groups as the obtained F-values exceeds the value of F' (6.96). The result suggests that the two Instructional Strategies (Cooperative Learning Strategy - CLS and Conventional lecture Method of Teaching - CMT) ***differ significantly*** in their mean Achievement scores - Total and with respect to the Objectives Comprehension, Analysis and Evaluation.

The ***Experimental group is advantageous*** over Control group as evidenced a by their high mean Achievement scores.

4.2.2.3.e. Summary and Discussion of ANCOVA for Achievement

Results of 28 ANCOVA undertaken to study the effectiveness of Instructional Strategies, particularly Cooperative Learning Strategy over Conventional lecture Method of Teaching on Achievement in Social Science (Objectivewise and Total Score) of standard VII pupils are sumarised and discussed in this section.

The F-values obtained for 28 ANCOVA are consolidated and presented in Table 4.17.

TABLE 4.17

Summary of F-values of ANCOVA for Achievement

Sl. No.	Independent Variable	Dependent Variable	Covariates			
			Previous Knowledge	Verbal Intelligence	Non-verbal Intelligence	Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence
			F-Values			
1.	Instructional Strategies	Knowledge	0.01	3.11	8.67**	1.07
2.		Compre-hension	15.36**	27.17**	33.28**	14.89**
3.		Application	0.39	5.43*	9.00**	1.69
4.		Analysis	4.54*	10.30**	13.98**	5.01*
5.		Synthesis	4.06*	8.44**	8.45**	2.80
6.		Evaluation	8.93**	22.38**	24.60**	8.53**
7.		Achievement (Total)	7.94**	22.14**	29.47**	10.69**

* Significant at 0.05 level

** Significant at 0.01 level

Totally 28 ANCOVA (4x7- Six Objectivewise and a Total Achievement score as Dependent Variables in four ANCOVA with three Covariates singly and in combination) were undertaken to study the effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching. Covariates are used singly and in combination of the three at a time. In ***five*** out of ***seven*** ANCOVA for Achievement in Social Science (Objectivewise and Total score), significant F-values were obtained for Instructional Strategies when ***Previous Knowledge*** is controlled. When the effect of ***Verbal Intelligence*** and ***Non-verbal Intelligence*** are controlled separately, in ***six*** and ***seven*** ANCOVA significant F-values were yielded respectively. Significant F-values were noted in ***four*** out of ***seven*** ANCOVA using the three ***Covariates in combination.*** These significant F-ratios for Instructional Strategies are further subjected to Scheffe' Test of Post-hoc Comparison to identify the group (Experimental / Control) which causes the difference.

Results of the Post-hoc comparison of adjusted criterion means between the Experimental and Control groups also yielded ***significant difference*** in favour of the ***Experimental group.*** In all comparisons the Experimental group has advantage as signifies by the high mean scores. This indicated that the ***effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching is highly evident*** in case of Achievement in Social Science. These findings of the present study are in agreement with the earlier research findings of Christine (1997), Brauer *et al.* (1997), Sullivan and King (1999), Holliday (2001) and Kumar and Bindhu (2002).

4.2.2.4. ANALYSIS OF COVARIANCE FOR RETENTION

In this section of the report, the procedure of the Two-way Factorial ANCOVA employed to examine the effectiveness of Instructional Strategies on Retention (Objectivewise and Total Score) after controlling the single and joint effects of the Covariates, is presented. In the ANCOVA procedure for Retention (Objectivewise and Total Score), two levels of Instructional Strategies (***CLS*** and ***CMT***) and two levels of Achievement Motivation (***AAAM*** and ***BAAM***) were included as the ***Independent Variables***. The Covariates of the ANCOVA procedure consists of three variables namely ***Previous Knowledge, Verbal Intellgience*** and ***Non-verbal Intelligence*** separately and in combination. ***Retention*** in Social Science (Objectivewise and Total Score) was utilized as the ***Dependent Variable***.

Scheffe' Test of Post-hoc Comparison was done for the comparison of adjusted means to find out the group which create any significant difference in the criterion means wherever significant F-values obtained.

4.2.2.4.a. Analysis of Covariance for Retention - Previous Knowledge Controlled

Effectiveness of Cooperative Learning Strategy (CLS) over Conventional lecture Method of Teaching (CMT) on Retention in Social Science (Objectivewise and Total Score) was investigated, employing the Two-way Factorial ANCOVA with Previous Knowledge as Covariate. Summary of the Two-way Factorial ANCOVA is presented in Table 4.18.

TABLE 4.18

Summary of Two-way Factorial ANCOVA for Retention in Social Science (Objectivewise and Total score) for Total sample - Previous Knowledge as Covariate

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Source of Variation			
				Instructional Strategies		Achievement Motivation	Instructional Strategies X Achievement Motivation
1.	Total sample	80	Knowledge	SS MS df F	0.75 1 0.75 0.22	0.39 1 0.39 0.11	0.59 1 0.59 0.17
2.		80	Comprehension	SS MS df F	0.67 1 0.67 0.20	3.95 1 3.95 1.16	0.49 1 0.49 0.04
3		80	Application	SS MS df F	1.25 1 1.25 0.80	0.12 1 0.12 0.01	0.06 1 0.06 0.04
4		80	Analysis	SS MS df F	0.95 1 0.95 0.85	0.21 1 0.21 0.19	1.83 1 1.83 1.63
5		80	Synthesis	SS MS df F	0.05 1 0.05 0.06	1.48 1 1.48 1.71	0.20 1 0.20 0.23
6		80	Evaluation	SS MS df F	3.98 1 3.98 6.06*	0.41 1 0.41 0.63	0.21 1 0.21 0.31
7		80	Retention (Total)	SS MS df F	21.67 1 21.67 0.99	3.96 1 3.96 0.18	0.71 1 0.71 0.06

* Significant at 0.05 level.

As per Table 4.18, the F-values obtained for Instructional Strategies on Retention in Social Science (Objectivewise and Total) are found below the tabled value (3.96) of F set for 0.05 level of significance (df = 1,78) except for the Objective Evaluation (6.06) which is significant at 0.05 level. From the result obtained, it can be assumed that Retention in Social Science (for the Objective Evaluation only) is influenced by the effect of Instructional Strategies.

From the result, it can be assumed that there was no statistically significant difference between the Experimental and Control groups in Achievement except in the Objective Evaluation when the effect of Previous Knowledge is controlled.

F-values for Achievement Motivation and Achievement Motivation x Instructional Strategies are not considered for interpretation because Achievement Motivation was treated as a *fixed* factor.

Adjusted Means and Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison was attempted to determine whether which one of the groups based on Instructional Strategies make difference in terms of variation in the criterion means (Achievement in the Objective Evaluation). The criterion means were adjusted and subjected to the post-hoc comparison. Details of the Scheffe' Test is presented in Table 4.19.

TABLE 4.19

Results of the Scheffe' Test of Post-hoc Comparison Between the Adjusted Means of Retention in Social Science for the Experimental and Control Groups for Total Sample

Sample	N	Dependent Variable	Groups Compared	Adjusted Means		F-value	Values of F'		Level of Signi-ficance
				M_1	M_2		0.05	0.01	
Total sample	80	Evaluation	CLS – CMT (Experimental-Control)	1.618	1.142	7.66	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

From Table 4.19, significant F-value at 0.01 level is obtained for the Objective Evaluation (7.66)only. This F-value shows ***significant difference*** between the groups (CLS-CMT) at 0.01 level as the F-ratio exceeds the value of F' (6.96) at 0.01 level. The result suggests that the two groups differ in their mean Retention scores with regard to the Objective Evaluation for Total sample. High mean Retention score associated with the Experimental group proclaims their ***superiority*** over the Control group.

4.2.2.4.b. Analysis of Covariance for Retention - Verbal Intelligence Controlled

Two-way Factorial ANCOVA with Verbal Intelligence as Covariate was employed to investigate the relative effectiveness of Instructional Strategies (Cooperative Learning Strategy - CLS and Conventional lecture Method of Teaching - CMT) on Retention.

Results of the Two-way Factorial ANCOVA is summarised and presented in Table 4.20.

TABLE 4.20

Summary of Two-way Factorial ANCOVA for Retention in Social Science (Objectivewise and Total score) for Total sample - Verbal Intelligence as Covariate

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Source of Variation			
				Instructional Strategies		Achieve-ment Motivation	Instructional Strategies X Achievement Motivation
1.	Total sample	80	Knowledge	SS MS df F	10.10 1 10.10 2.76	0.43 1 0.43 0.12	0.18 1 0.18 0.05
2.		80	Compre-hension	SS MS df F	16.45 1 16.45 4.70*	14.37 1 14.37 4.10	0.57 1 0.57 0.16
3		80	Application	SS MS df F	9.26 1 9.26 7.45**	0.95 1 0.95 0.76	0.73 1 0.73 0.59
4		80	Analysis	SS MS df F	6.41 1 6.41 5.34*	0.15 1 0.15 0.13	2.52 1 2.52 2.10
5		80	Synthesis	SS MS df F	0.03 1 0.03 0.04	2.13 1 2.13 2.50	0.10 1 0.10 0.12
6		80	Evaluation	SS MS df F	9.23 1 9.23 13.42**	0.01 1 0.01 0.02	0.37 1 0.37 0.53
7		80	Retention (Total)	SS MS df F	232.16 1 232.16 10.02**	60.18 1 60.18 2.60	4.57 1 4.57 0.20

* Significant at 0.05 level.

** Significant at 0.01 level.

With respect to Table 4.20, the obtained F-values for Instructional Strategies on Retention in Social Science (Total and Objectivewise namely Application and Evaluation) are found well beyond the tabled value (6.96, df 1,78) for significance at 0.01 level. Significant F-values at 0.05 level were noted for the Objectives Comprehension and Analysis. But no significant F-value is obtained for the Objectivewise Retention in Knowledge and Synthesis.

The result indicates that Retention in Social Science (Objectivewise and Total) except for the Objectives; Knowledge and Synthesis changes with respect to changes in the Instructional Strategies. This suggests ***statistically significant difference*** between criterion means for the two groups, exists even after the adjustment is made for the effect of the Covariate (Verbal Intelligence).

Since Achievement Motivation is treated as a ***fixed*** factor, F-values obtained for Achievement Motivation and Achievement Motivation x Instructional Strategies are not considered.

Adjusted Means and Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison was employed and the F-ratios were calculated between adjusted criterion means (Retention in Social Science – Objectivewise and Total score) for which significant F-values were obtained in ANCOVA. Details of the comparison is given in Table 4.21.

TABLE 4.21

Results of the Scheffe' Test of Post-hoc Comparison Between the Adjusted Means of Retention in Social Science (Objectivewise and Total Score) for the Experimental and Control Groups for Total Sample

Sample	N	Dependent Variable	Groups Compared	Adjusted Means		F-value	Values of F'		Level of Signi-ficance
				M_1	M_2		0.05	0.01	
Total sample	80	Compre-hension	CLS – CMT (Experimental-Control)	7.020	6.094	5.05	3.96	6.96	0.05
	80	Application	CLS – CMT (Experimental-Control)	3.097	2.402	8.00	3.96	6.96	0.01
	80	Analysis	CLS – CMT (Experimental-Control)	2.700	2.122	5.66	3.96	6.96	0.05
	80	Evaluation	CLS – CMT (Experimental-Control)	1.726	1.033	14.08	3.96	6.96	0.01
	80	Retention (Total)	CLS – CMT (Experimental-Control)	22.182	18.703	10.43	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

As per Table 4.21, significant F-ratios at 0.01 level is obtained for the comparison of adjusted means in Application, Evaluation and Retention – Total. For the Objectivewise Retention in Comprehension and Analysis, the F-ratios are significant at 0.05 level, as they exceeds the corresponding values of F' (3.96).

The entire comparisons point out that the Experimental and Control groups ***significantly differ*** in their mean Retention scores (Total and the

relevant Objectives). High mean Retention scores gained by the ***Experimental group*** reveals the ***effectiveness of Cooperative Learning Strategy over the Control group*** (Conventional lecture Method).

4.2.2.4.c. Analysis of Covariance for Retention – Non-verbal Intelligence Controlled

Two-way Factorial ANCOVA with Non-verbal Intelligence as Covariate was employed to study the effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching on Retention in Social Science.

Summary of the Two-way Factorial ANCOVA is presented in Table 4.22.

TABLE 4.22

Summary of Two-way Factorial ANCOVA for Retention in Social Science (Objectivewise and Total score) for Total sample –Non-verbal Intelligence as Covariate

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Source of Variation			
				Instructional Strategies		Achievement Motivation	Instructional Strategies X Achievement Motivation
1.	Total sample	80	Knowledge	SS MS df F	19.96 1 19.96 5.35*	0.25 1 0.25 0.07	0.42 1 0.42 0.11
2.		80	Compre-hension	SS MS df F	28.52 1 28.52 6.74*	13.71 1 13.71 3.24	0.03 1 0.03 0.01
3		80	Application	SS MS df F	15.97 1 15.97 9.23**	0.85 1 0.85 0.49	0.13 1 0.13 0.07
4		80	Analysis	SS MS df F	10.38 1 10.38 8.06**	0.10 1 0.10 0.08	1.93 1 1.93 1.50
5		80	Synthesis	SS MS df F	0.51 1 0.51 0.02	2.31 1 2.31 2.60	0.27 1 0.27 0.31
6		80	Evaluation	SS MS df F	12.74 1 12.74 18.42**	0.04 1 0.04 0.06	0.28 1 0.28 0.40
7		80	Retention (Total)	SS MS df F	402.30 1 402.30 13.71**	53.53 1 53.53 1.82	0.20 1 0.20 0.01

* Significant at 0.05 level.

** Significant at 0.01 level.

As per Table 4.22, the obtained F-values for Instructional Strategies on Retention in Social Science (Total) and the Objectives Application, Analysis and Evaluation are found exceeding the tabled value (7.01, 1,75 df) set for significance at 0.01 level. At the same time F-values for the Objectives, Knowledge and Comprehension are found beyond the tabled value for significance at 0.05 level. From the obtained result it can be assumed that Retention in Social Science (Objectivewise and Total) except the Objective Synthesis is ***dependent on variation in the Instructional Strategies***. The result indicates ***statistically significant difference*** between criterion means of the two groups of Instructional Strategies even after a linear adjustment is made for the effect of variation due to Non-verbal Intelligence (Covariate).

Since Achievement Motivation is considered as a ***fixed*** factor, the F-values for Achievement Motivation and Instructional Strategies x Achievement Motivation is not taken into account.

Adjusted Means and Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison was utilized to compare the adjusted criterion means of Retention (Total and for the relevant Objectives) of Experimental and Control groups. F-ratios are calculated between adjusted criterion means for the Experimental and Control groups. Details of the Scheffe' Test is presented in Table 4.23.

TABLE 4.23

Results of the Scheffe' Test of Post-hoc Comparison Between the Adjusted Means of Retention in Social Science (Objectivewise and Total Score) for the Experimental and Control Groups for Total Sample

Sample	N	Dependent Variable	Groups Compared	Adjusted Means		F-value	Values of F'		Level of Significance
				M_1	M_2		0.05	0.01	
Total sample	80	Knowledge	CLS – CMT (Experimental-Control)	6.348	5.277	6.00	3.96	6.96	0.05
	80	Compre-hension	CLS – CMT (Experimental-Control)	7.197	5.911	7.76	3.96	6.96	0.01
	80	Application	CLS – CMT (Experimental-Control)	3.229	2.271	11.50	3.96	6.96	0.01
	80	Analysis	CLS – CMT (Experimental-Control)	2.798	2.025	9.66	3.96	6.96	0.01
	80	Evaluation	CLS – CMT (Experimental-Control)	1.808	0.952	21.76	3.96	6.96	0.01
	80	Retention (Total)	CLS – CMT (Experimental-Control)	22.848	18.037	15.74	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

From Table 4.23, results of the post-hoc comparison revealed that the F-values for Total and Objectivewise Retention in Comprehension, Application, Analysis and Evaluation are found exceeding the value of F' (6.96) at 0.01 level of significance. For the Objective Knowledge the F-ratio exceeds the value of F' (3.96) at 0.05 level of significance. These results show that the Experimental (CLS) and Control (CMT) groups ***significantly differ*** in their mean Retention scores (Total and the aforesaid Objectives). Higher

Retention score of the Experimental group (CLS) over the Control group (CMT) signifying the ***advantage of the Experimental group*** to which Cooperative Learning procedure was applied.

4.2.2.4.d. Analysis of Covariance for Retention - Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence Controlled in Combination

In the previous subsections, effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching on Retention is studied utilizing ANCOVA with three Covariates separately. In this subsection, relative effectiveness of Instructional Strategies on Retention is investigated using the three Covariates in combination at a time.

Results of the Covariance Analysis is summarised and presented in Table 4.24.

TABLE 4.24

Summary of Two-way Factorial ANCOVA for Retention in Social Science (Objectivewise and Total score) for Total sample - Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence as Covaraites in Combination

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Source of Variation			
				Instructional Strategies		Achievement Motivation	Instructional Strategies X Achievement Motivation
1.	Total sample	80	Knowledge	SS MS df F	2.97 1 2.97 0.87	0.15 1 0.15 0.04	0.20 1 0.20 0.06
2.		80	Comprehension	SS MS df F	1.45 1 1.45 0.46	5.78 1 5.78 1.85	0.42 1 0.42 0.13
3		80	Application	SS MS df F	3.24 1 3.24 2.66	0.24 1 0.24 0.19	0.67 1 0.67 0.55
4		80	Analysis	SS MS df F	1.57 1 1.57 1.42	0.09 1 0.09 0.08	2.41 1 2.41 2.18
5		80	Synthesis	SS MS df F	0.43 1 0.43 0.51	1.66 1 1.66 1.98	0.14 1 0.14 0.16
6		80	Evaluation	SS MS df F	5.30 1 5.30 8.18**	0.28 1 0.28 0.44	0.36 1 0.36 0.56
7		80	Retention (Total)	SS MS df F	48.31 1 48.31 2.57	11.35 1 11.35 0.60	3.55 1 3.55 0.19

** Significant at 0.01 level.

As per Table 4.24, significant F-value obtained for Instructional Strategies on Retention in the Objective Evaluation only at 0.01 level of significance (F-value 8.18, Tabled value 6.96, df 1,76). This indicated that Retention in the Objective Evaluation is depended on the corresponding changes in the Instructional Strategies. No significant F-ratios were obtained for Instructional Strategies on Retention-Total and other Objectives such as Knowledge, Comprehension, Application, Analysis and Synthesis.

Since Achievement Motivation is treated as a ***fixed*** factor, F-values obtained for Achievement Motivation and Instructional Strategies x Achievement Motivation is not considered for interpretation.

Adjusted Means and Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison was utilized to compute the F-ratio between adjusted means of Retention in the Objective-Evaluation for the Experimental and Control groups. For the purpose, the criterion means were adjusted to remove statistically the joint effect of Covariates in combination, simultaneously from the actual result. Details of Scheffe' Test is given in Table 4.25.

TABLE 4.25

Results of the Scheffe' Test of Post-hoc Comparison Between the Adjusted Means of Retention in Social Science (Evaluation)for the Experimental and Control Groups for Total Sample

Sample	N	Dependent Variable	Groups Compared	Adjusted Means		F-value	Values of F'		Level of Signi-ficance
				M_1	M_2		0.05	0.01	
Total sample	80	Retention – Evaluation	CLS – CMT (Experimental-Control)	1.688	1.071	11.87	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

Table 4.25 shows that the F-value obtained for the post-hoc comparison for the Objective Evaluation (F = 11.87) exceeds the value of F' (6.96) at 0.01 level of significance. Hence, ***significant difference exists*** between the two groups with regard to Retention in Social Science (for the Objective Evaluation).

Effectiveness of Experimental treatment over the Control treatment is clear from the higher mean Retention score gained by them.

4.2.2.4.e. Summary and Discussion of Analysis of Covariance for Retention

28 ANCOVA (seven each with six Objectivewise and a Total Achievement score as Dependent Variables, in four ANCOVA with three Covariates singly and in combination) were employed to examine the effectiveness of Instructional Strategies on Retention by controlling the

Covarites separately and in combination. The results obtained are summarised and discussed in this subsection.

In Table 4.26, the F-values obtained for the 28 ANCOVA are consolidated and presented.

TABLE 4.26

Summary of F-values of ANCOVA for Retention

Sl. No.	Independent Variable	Dependent Variable	Covariates			
			Previous Know-ledge	Verbal Intelligence	Non-verbal Intelligence	Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence
			F-values			
1.	Instructional Strategies	Knowledge	0.22	2.76	5.35*	0.87
2.		Comprehension	0.20	4.70*	6.74*	0.46
3.		Application	0.80	7.45**	9.23**	2.66
4.		Analysis	0.85	5.34*	8.06**	1.42
5.		Synthesis	0.06	0.04	0.02	0.51
6.		Evaluation	6.06*	13.42**	18.42**	8.18**
7.		Retention (Total)	0.99	10.02**	13.71**	2.57

* Significant at 0.05 level

** Significant at 0.01 level

Out of 28 ANCOVA undertaken to study the effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching on Retention in Social Science (Objectivewise and Total score) 13 ANCOVA were found significant. When ***seven*** ANCOVA on Retention in Social Science (Objectivewise and Total) were done using ***Previous***

Knowledge as Covariate, only in ***one*** ANCOVA significant F-value is noted. But when another ***seven*** ANCOVA were employed with ***Verbal Intelligence*** as the Covariate, five significant F-values were yielded for Retention in Social Science (Total) and for the Objectives Comprehension, Application, Analysis and Evaluation. The result shows that the ***effectiveness of Cooperative Learning*** was found more significant when the effect of Verbal Intelligence was removed. When the third set of ANCOVA (seven) was employed controlling ***Non-verbal Intelligence, six*** out of ***seven*** ANCOVA yielded significant F-values except for the Objective Synthesis. The result again shows that the ***effectiveness of Cooperative Learning Strategy*** is more evident only when the effect of Non-verbal Intelligence removed. Finally, when ***seven*** ANCOVA were conducted using the three ***Covariates in combination, one*** ANCOVA for the Objective Evaluation yielded a significant F-value. The post-hoc comparison employed, also confirmed the fact that the ***Experimental and Control groups showed significant differences*** in the mean Retention scores (relevant Objectives and Total score), even after the removal of the effects of the Covariates (separately and in combination) from the Dependent Variables (Retention in Social Science). Effectiveness of the Cooperative Learning Strategy is more transparent, when the higher mean Retention scores is found with the ***Experimental group***. These findings of the present study are in agreement with the earlier research findings of Peterson (1991), Miller (1992), Billington (1994), Keeler and Anson (1995), Joyce (1999) and Kumar and Bindhu (2002).

4.3. MAJOR ANALYSIS - PART II

In this section of the chapter data were analysed to get an insight in to the second phase of the study. The second phase is mainly intended to study the ***main*** and ***interaction*** effects of Independent Variables (Instructional Strategies and Achievement Motivation) on Dependent Variables (Achievement and Retention in Social Science) employing the statistical technique, Two-way Analysis of Variance. The results obtained are described in details in the following sections, which will help to understand whether variation in the Instructional Strategies and Achievement Motivation singly and jointly cause changes in the Dependent Variables.

4.3.1. ANALYSIS OF VARIANCE FOR ACHIEVEMENT AND RETENTION

The main and interaction effects of Instructional Strategies and Achievement Motivation on Achievement and Retention in Social Science were examined employing Two-way ANOVA with 2x2 Factorial design. This was done separately for Total sample, Boys and Girls.

Two-way ANOVA with 2 x 2 Factorial design includes ***two levels*** of Instructional Strategies ***(Cooperative Learning Strategy - CLS*** and ***Conventional lecture Method of Teaching - CMT)*** and ***two levels*** of Achievement Motivation ***(Above Average Achievement Motivation- AAAM*** and ***Below Average Achievement Motivation - BAAM)***. The whole computations were done using the computer programme, ***Statistical Package for the Social Science*** - SPSS (Einspruch, 1998). Due to the unequal number of cases in the treatment cells, the programme for unequal numbers was used for processing the data. Among the 42 ANOVA done,

21 were undertaken to study the ***main*** and ***interaction effects of Instructional Strategies*** and ***Achievement Motivation*** on ***Achievement in Social Science*** (Objectivewise and Total score) for Total sample, Boys and Girls. The remaining 21 ANOVA were undertaken to study the ***main*** and ***interaction effects of Instructional Strategies*** and ***Achievement Motivation*** on ***Retention*** for Total sample, Boys and Girls. (ANCOVA for seven Dependent Variables in three samples)

As a precautionary step, before proceeding with ANOVA, the investigator has checked the data whether the assumptions of ANOVA as suggested by ***Scheffe' (1959), Hays (1973), Guilford*** and ***Fruchter (1978)*** and ***Fox (1984)*** have been followed and found reasonably satisfied. In 2x2 ANOVA the same classificatory technique used for Two-way Factorial ANCOVA (wide Section 4.2.2.1) was used. With every ANOVA, which showed significant F-values for the main effect of the Independent Variables, ***Scheffe' Test of Post-hoc Comparison*** was employed. This Statistical technique was used to extract the particular group (Experimental/Control) which differ in terms of the Dependent Variables.

4.3.1.1. ANALYSIS OF VARIANCE FOR ACHIEVEMENT

The results of 21 ANOVA undertaken to investigate the main and interaction effects of Independent Variables (Instructional Strategies and Achievement Motivation on ***Achievement*** in Social Science (Objectivewise and Total score) are summarised and discussed especially in this part of the chapter. 21 Two way ANOVA consists seven ANOVA each in three samples - Total sample, Boys and Girls.

2x2 ANOVA was utilized to observe whether Achievement in Social Science vary due to the single or combined effect of the Independent Variables.

4.3.1.1.a. Main and Interaction Effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score)- Total sample

Seven Two-way ANOVA were employed to study the main and interaction effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) separately for Total sample, Boys and Girls.

Summary of Two-way ANOVA for Total sample is given in Table 4.27.

TABLE 4.27

Summary of Two-way ANOVA for Achievement in Social Science (Objectivewise and Total score) by Instructional Strategies by Achievement Motivation in Total sample

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Main Effect of Instructional Strategies		Main Effect of Achievement Motivation	Interaction Effect of Instructional Strategies and Achievement Motivation
1	Total sample	80	Knowledge	SS MS df F	8.533 8.533 1 2.417	8.533 8.533 1 2.417	8.533 8.533 1 2.417
2		80	Compre-hension	SS MS df F	162.169 162.169 1 23.900**	48.769 48.769 1 7.187**	0.019 0.019 1 0.003
3.		80	Application	SS MS df F	4.408 4.408 1 3.577	2.408 2.408 1 1.954	0.675 0.675 1 0.548
4.		80	Analysis	SS MS df F	8.533 8.533 1 9.508**	0.133 0.133 1 0.149	0.208 0.208 1 0.232
5.		80	Synthesis	SS MS df F	4.602 4.602 1 7.600**	0.102 0.102 1 0.169	0.352 0.352 1 0.581
6.		80	Evaluation	SS MS df F	14.008 14.008 1 16.722**	0.208 0.208 1 0.249	0.51 0.51 1 0.026
7.		80	**Achievement (Total)**	SS MS df F	627.919 627.919 1 15.745**	89.269 89.269 1 2.238	0.052 0.052 1 0.001

** Significant at 0.01 level

Main Effect of Instructional Strategies

From Table 4.27, significant F-values are obtained for the main effect of Instructional Strategies on Achievement (Total) and for the Objectives, Comprehension, Analysis, Synthesis and Evaluation at 0.01 level. From the obtained result it can be inferred that Achievement in Social Science (Total and Objectivewise) Comprehension, Analysis, Synthesis and Evaluation is ***depended*** on the changes in the Instructional Strategies.

The F-values for the main effect of Instructional Strategies on Objectivewise Achievement in Knowledge (2.417) and Application (3.577) for the Total sample are not found to be significant even at 0.05 level for 1,76 df. This indicates that Achievement in Social Science, for the aforesaid Objectives, ***do not change*** with the corresponding changes in the Instructional Strategies.

Main Effect of Achievement Motivation

The obtained F-values for the main effect of Achievement Motivation on Achievement in Social Science for the Objective Comprehension only was found significant at 0.01 level of significance. But the F-values obtained for Achievement (Total) and for the Objectives Knowledge, Application, Analysis, Synthesis and Evaluation, were not found significant even at 0.05 level of significance (Tabled value 3.96, df 1,76). Thus, from the result, it can be inferred that Achievement in Social Science, for the Objective Comprehension is considered to be ***influenced*** by Achievement Motivation independently.

Interaction Effect of Instructional Strategies and Achievement Motivation

As per table 4.27, the F-values obtained for the interaction effect of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) for Total sample are found far below the tabled value (3.96) for 1,76 degrees of freedom at 0.05 level of significance. This suggests that Achievement in Social Science of standard VII pupils do not change with respect to the ***combined effect*** of Instructional Strategies and Achievement Motivation.

Graphical Representation of the Interaction Effect

The investigator has studied the pattern of interaction graphically. For this purpose the mean scores of the Dependent Variable, ***Achievement in Social Science*** (Objectivewise and Total score) are plotted as the ordinate of the graph and two levels of ***Achievement Motivation*** (AAAM and BAAM) as the abscissa. ***Instructional Strategies*** (Cooperative Learning Strategy and Conventional lecture Method of Teaching) are represented as lines on the graph.

The pattern of interaction in Total sample is graphically represented in Figure 4.11.

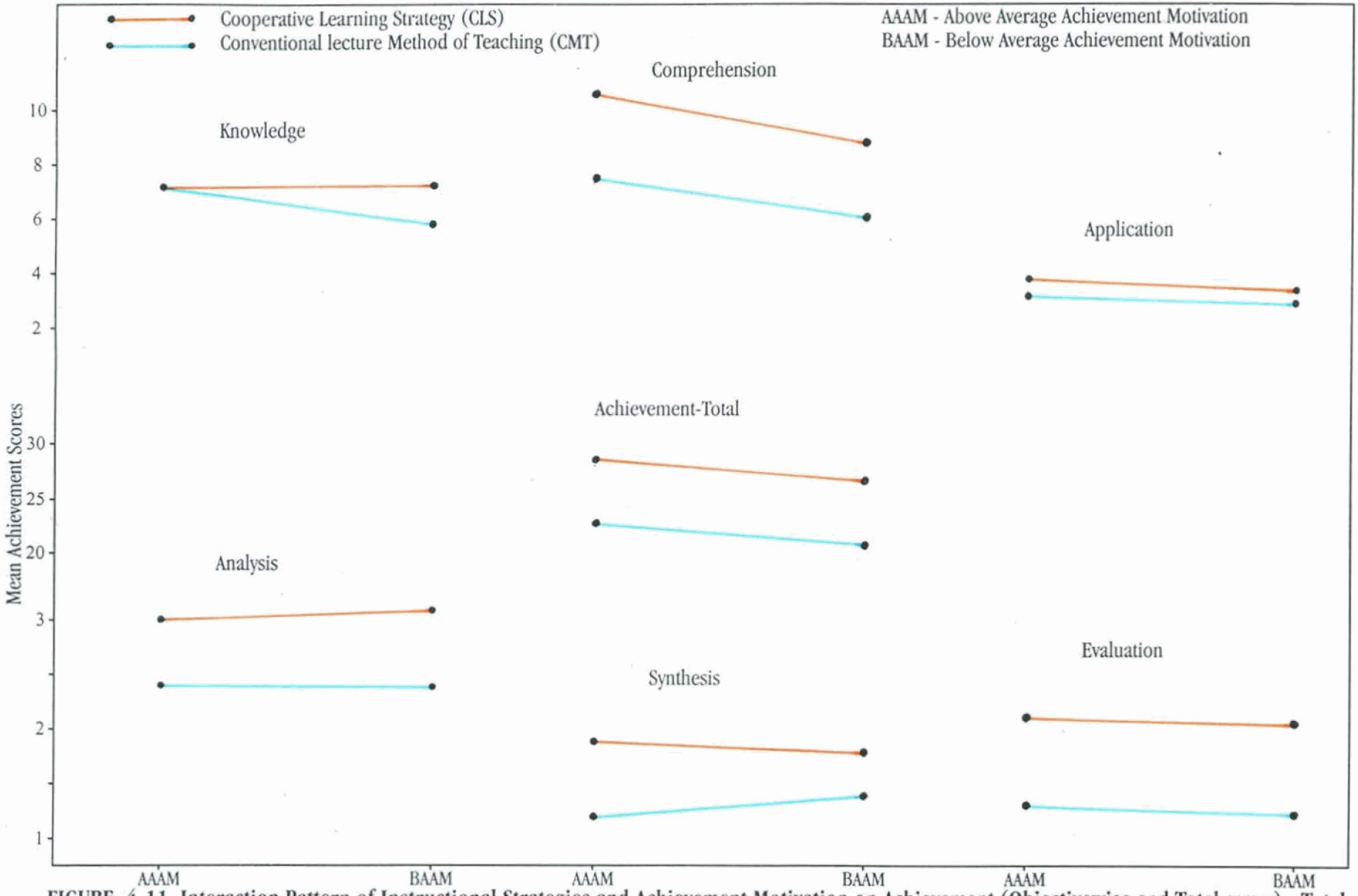


FIGURE 4-11 Interaction Pattern of Instructional Strategies and Achievement Motivation on Achievement (Objectivewise and Total score) - Total sample

As represented in Figure 4.11, the mean Achievement score (Total) for Total sample with Cooperative Learning Strategy and AAAM is higher. This points that Cooperative Learning Strategy with AAAM favours higher level of performance in Social Science. The graphical representation also shows that Cooperative Learning with BAAM does not result in a high Achievement in Social Science. Where as the students, with AAAM and BAAM taught through Conventional lecture Method of Teaching, are ***not achieving as high*** as from Cooperative Learning.

As shown in Figure 4.11, the pattern of relationship between Independent and Dependent Variables show that Objectivewise Achievement in Comprehension, Application, Synthesis and Evaluation is high for those subjects who were taught through Cooperative Learning Strategy and have Above Average Achievement Motivation. Like wise, those who have Above Average Achievement Motivation score more from Conventional lecture Method of Teaching. Pupils taught through Conventional lecture Method of Teaching and having BAAM generally not out perform those who achieves from Cooperative Learning.

Scheffe' Test of Post-hoc Comparison Based on Two Groups of Instructional Strategies

Scheffe' Test of Post-hoc Comparison was done to determine the group difference between the two groups based on Instructional Strategies (Cooperative Learning Strategy and Conventional lecture Method of Teaching). This was done on the basis of the significant F-values obtained for the main effect of Instructional Strategies on Achievement. The

procedure of post-hoc comparison has already been described in the ANCOVA section 4.2.2.3.a

Details of the Scheffe' Test are presented in Table 4.28.

TABLE 4.28

Results of the Scheffe' Test of Post-hoc Comparison Between the Means of Achievement in Social Science (Objectivewise and Total score) Based on Two Groups of Instructional Strategies for Total Sample

Sample	Dependent Variable	Groups Compared	Means		Number of Students		F-value	Values of F'		Level of Signifi-cance
			M_1	M_2	N_1	N_2		0.05	0.01	
Total sample	Comprehension	CLS - CMT	9.850	6.625	40	40	30.67	3.96	6.96	0.01
	Analysis	CLS - CMT	3.075	2.425	40	40	10.55	3.96	6.96	0.01
	Synthesis	CLS - CMT	1.850	1.375	40	40	7.356	3.96	6.96	0.01
	Evaluation	CLS - CMT	2.125	1.250	40	40	18.24	3.96	6.96	0.01
	Achievement (Total)	CLS-CMT	27.700	21.550	40	40	19.00	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

As per Table 4.28, significant F-ratios at 0.01 level were obtained for the Post-hoc comparison of mean Achievement (Total and for the Objectives Comprehension, Analysis, Synthesis and Evaluation). Thus, it can be inferred that ***significant difference exists*** between the two levels of Instructional Strategies (CLS-CMT) with reference to the mean Achievement scores (Total and for the relevant Objectives).

From the Scheffe' Test, it is also clear that the ***Experimental group (CLS) gained more Achievement*** than the Control group (CMT) as revealed from the high mean Achievement scores associated with the ***Experimental group*** to which Cooperative Learning Strategy was utilized.

Scheffe' Test of Post-hoc Comparison Based on Two Groups of Achievement Motivation

Scheffe' Test was further employed to determine the group difference between the two groups based on Achievement Motivation (Above Average Achievement Motivation - AAAM and Below Average Achievement Motivation - BAAM). This was employed on the basis of the significant F-values yielded for the main effect of Achievement Motivation on Achievement for the Objective Comprehension for Total sample.

Details of the Scheffe' Test of Post-hoc Comparison is presented in Table 4.29.

TABLE 4.29

Results of the Scheffe' Test of Post-hoc Comparison Between the Means of Achievement in Social Science (Objectivewise) Based on Two Groups of Achievement Motivation for Total Sample

Sample	Dependent Variable	Groups Compared	Means		Number of Students		F-value	Values of F'		Level of Significance
			M_1	M_2	N_1	N_2		0.05	0.01	
Total sample	Achievement – Comprehension	AAAM – BAAM	9.32	7.15	40	40	13.89	3.96	6.96	0.01

AAAM – Above Average Achievement Motivation
BAAM - Below Average Achievement Motivation

From Table 4.29, it is found that, significant F-ratio was obtained for the post-hoc comparison of mean Achievement in Comprehension. Thus, ***significant difference*** in the two levels of Achievement Motivation (AAAM - BAAM) with regard to mean Achievement in Comprehension can be inferred.

As per Table 4.29, it is also evident that the Above Average Achievement Motivation group (AAAM) was advantageous than the Below Average Achievement Motivation group (BAAM), as revealed from the high mean Achievement score attached with them.

4.3.1.1. b. Main and Interaction Effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) - Boys.

The main and interaction effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) for Boys were studied using Two-way ANOVA. Summary of Two-way ANOVA for Boys is given in Table 4.30.

TABLE 4.30

Summary of Two-way ANOVA for Achievement in Social Science (Objectivewise and Total score) by Instructional Strategies by Achievement Motivation in Boys

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Main Effect of Instructional Strategies		Main Effect of Achievement Motivation	Interaction Effect of Instructional Strategies and Achievement Motivation
1	Boys	51	Knowledge	SS MS df F	19.561 19.561 1 6.295*	1.652 1.652 1 0.532	15.551 15.551 1 5.005*
2		51	Compre-hension	SS MS df F	122.660 122.660 1 22.426**	14.098 14.098 1 2.577	0.437 0.437 1 0.080
3.		51	Application	SS MS df F	5.779 5.779 1 5.490*	0.001 0.001 1 0.001	0.604 0.604 1 0.574
4.		51	Analysis	SS MS df F	10.165 10.165 1 13.583**	0.418 0.418 1 0.558	1.056 1.506 1 2.013
5.		51	Synthesis	SS MS df F	3.732 3.732 1 8.127**	0.258 0.258 1 0.563	0.005 0.005 1 0.011
6.		51	Evaluation	SS MS df F	7.616 7.616 1 9.101**	0.446 0.446 1 0.533	0.021 0.021 1 0.025
7.		51	**Achieve-ment (Total)**	SS MS df F	656.104 656.104 1 18.816**	16.013 16.013 1 0.459	23.324 23.324 1 0.669

* Significant at 0.05 level

** Significant at 0.01 level

Main Effect of Instructional Strategies

The obtained F-values as presented in Table 4.30 for the main effect of Instructional Strategies on Achievement in Social Science (Total) and for the Objectives; Comprehension, Analysis, Synthesis and Evaluation are well beyond the tabled value of F at 0.01 level of significance for 1,47 degrees of freedom. Where as, the F-values for the Objectives; Knowledge and Application are found beyond the tabled value (4.06) set for significance at 0.05 level. (df 1,47). The results clearly indicates that Achievement in Social Science (Objectivewise and Total) with respect to Boys tends to differ in accordance with the ***changes in the Instructional Strategies***.

Main Effect of Achievement Motivation

From Table 4.30, the F-values obtained for the main effect of Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) was not found significant even at 0.05 level of significance. Hence, it can be presumed that Achievement in Social Science (Objective wise and Total) for Boys is found ***independent on*** the changes in the levels of Achievement Motivation.

Interaction Effect of Instructional Strategies and Achievement Motivation

As per Table 4.30, the F-values obtained for the interaction effect of ***Instructional Strategies*** and ***Achievement Motivation*** on Achievement in Social Science for the Objective Knowledge is found significant at 0.05 level. From the result it can be summarised that Achievement in Social Science,

for the Objective Knowledge, is influenced by the ***combined effect of Instructional Strategies and Achievement Motivation.***

The F-values obtained for the interaction effect of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Total) and for the remaining Objectives were not found significant even at 0.05 level. Thus it can be said that Achievement in Social Science (Total and Objectivewise) except for the Objective Knowledge ***does not change*** with regard to the joint effect of Instructional Strategies and Achievement Motivation.

Graphical Representation of the Interaction Effect

To study the pattern of interaction graphically, the mean scores of the Dependent Variable, ***Achievement in Social Science*** (Objectivewise and Total score) are plotted as the ordinate of the graph and the two levels of ***Achievement Motivation*** (AAAM and BAAM) as abscissa. ***Instructional Strategies*** (CLS and CMT) are represented as lines on the graph.

The patterns of interaction of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objective wise and Total score) in Boys are graphically examined and presented in Figure 4.12.

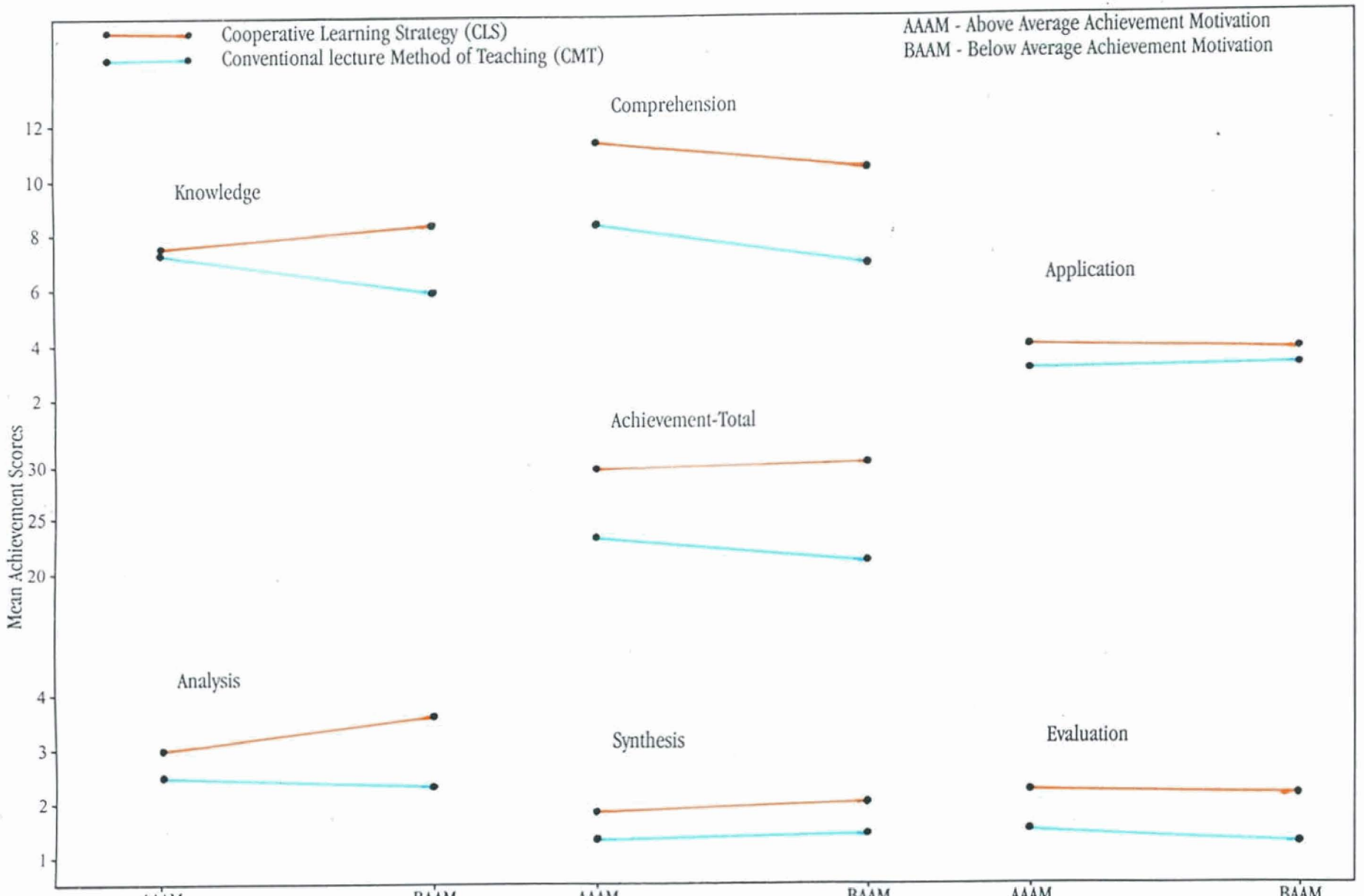


FIGURE 4-12 Interaction Pattern of Instructional Strategies and Achievement Motivation on Achievement (Objectivewise and Total score) - Boys

As illustrated in Figure 4.12, Boys show high mean Achievement scores (Total) for Cooperative Learning Strategy with AAAM and BAAM. But ***BAAM group more favour Cooperative Learning Strategy than AAAM.***

For Boys, AAAM and BAAM favours Cooperative Learning Strategy on mean Achievement scores for the six Objectives.

Scheffe' Test of Post-hoc Comparison Based on Two Groups of Instructional Strategies

For Boys, the significant F-values obtained for the main effect of Instructional Strategies on Achievement (Objectivewise and Total score) were subjected to Scheffe' Test of ***Post -hoc Comparison.*** This technique was employed to examine the level of Instructional Strategies (CLS or CMT) which causes variation in Achievement. In the Scheffe' Test, the mean Achievement scores of Boys in two groups of Instructional Strategies (CLS and CMT) were compared. Data and results of the Scheffe' Test of Post-hoc Comparison are presented in Table 4.31.

TABLE 4.31

Results of the Scheffe' Test of Post-hoc Comparison Between the Means of Achievement in Social Science (Objectivewise and Total score) Based on Two Groups of Instructional Strategies for Boys

Sample	Dependent Variable	Groups Compared	Means		Number of Students		F-value	Values of F'		Level of Significance
			M_1	M_2	N_1	N_2		0.05	0.01	
Boys	Knowledge	CLS - CMT	7.731	6.400	26	25	7.38	4.03	7.17	0.01
	Comprehension	CLS - CMT	10.846	7.440	26	25	27.04	4.03	7.17	0.01
	Application	CLS - CMT	3.731	3.040	26	25	5.71	4.03	7.17	0.05
	Analysis	CLS - CMT	3.269	2.400	26	25	12.66	4.03	7.17	0.01
	Synthesis	CLS - CMT	1.923	1.400	26	25	7.50	4.03	7.17	0.01
	Evaluation	CLS - CMT	2.192	1.360	26	25	9.86	4.03	7.17	0.01
	Achievement - Total	CLS - CMT	29.654	22.080	26	25	20.53	4.03	7.17	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

Table 4.31 reveals that significant F-ratios obtained for Achievement -Total and Objectivewise Achievement in Knowledge, Comprehension, Analysis, Synthesis and Evaluation ($P< 0.01$) and for the Objective Application ($P< 0.05$). From the results, it can be assumed that, there exists statistically ***significant difference*** between the mean Achievement scores (Total and relevant Objectives mentioned) based on two groups of Instructional Strategies (CLS and CMT) for Boys.

Superiority of the Cooperative Learning Strategy over the Conventional lecture Method of Teaching group is noticed, as the high mean scores associated with them.

4.3.1.1.c Main and Interaction Effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) for Girls

Two-way ANOVA was employed separately for Girls to study the main and interaction effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score).

The results of Two-way ANOVA are summarised and presented in Table 4.32.

TABLE 4.32

Summary of Two-way ANOVA for Achievement in Social Science (Objectivewise and Total score) by Instructional Strategies by Achievement Motivation in Girls

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Main Effect of Instructional Strategies		Main Effect of Achievement Motivation	Interaction Effect of Instructional Strategies and Achievement Motivation
1	Girls	29	Knowledge	SS MS df F	1.322 1.322 1 0.328	3.222 3.222 1 0.800	1.523 1.523 1 0.378
2		29	Compre-hension	SS MS df F	41.884 41.884 1 6.110*	2.669 2.669 1 0.389	0.563 0.563 1 0.082
3.		29	Application	SS MS df F	0.389 0.389 1 0.218	0.171 0.171 1 0.096	0.083 0.083 1 0.046
4.		29	Analysis	SS MS df F	0.502 0.502 1 0.441	0.118 0.118 1 0.104	0.047 0.047 1 0.042
5.		29	Synthesis	SS MS df F	1.274 1.274 1 1.381	0.584 0.584 1 0.633	0.407 0.407 1 0.441
6.		29	Evaluation	SS MS df F	6.988 6.988 1 7.927**	0.870 0.870 1 0.987	0.002 0.002 1 0.003
7.		29	**Achievement (Total)**	SS MS df F	66.956 66.956 1 1.476	0.160 0.160 1 0.004	6.226 6.226 1 0.138

* Significant at 0.05 level

** Significant at 0.01 level

Main Effect of Instructional Strategies

The obtained F-values, as shown in Table 4.32, for the main effect of Instructional Strategies on Achievement in Social Science for the Objective Comprehension (6.110) was found to be significant at 0.05 level of significance (Tabled value, 4.23; df, 1,25). For the Objective Evaluation, the obtained F-value (7.927) was found significant at 0.01 level. But the F-values obtained for Achievement in Social Science (Total) and the remaining Objectives namely Knowledge, Application, Analysis and Synthesis were not found significant even at 0.05 level. Thus from the result , it can be assumed that Achievement in Social Science (For the Objectives; comprehension and Evaluation) is ***depended on the changes in the Instructional Strategies.***

Main Effect of Achievement Motivation

From Table 4.32 the F-values obtained for the main effect of Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) of Girls were not found significant even at 0.05 level of significance. This suggests that changes in the levels of Achievement Motivation ***could not make significant effect on Achievement in Social Science (Objectivewise and Total score).***

Interaction Effect of Instructional Strategies and Achievement Motivation

For the interaction effect of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score), the obtained F-values were found far below the tabled value (4.24) even at 0.05 level of significance. Hence, it can be inferred that

Achievement in Social Science (Objectivewise and Total score) of Girls ***does not alter with the combined effect of Instructional Strategies and Achievement Motivation.***

Graphical Representation of the Interaction Effect

The pattern of interaction was studied graphically by plotting the mean scores of the Dependent Variable, ***Achievement in Social Science*** in the Objectives Comprehension and Evaluation in the ordinate of the graph and the two levels of ***Achievement Motivation,*** AAAM and BAAM, as abscissa. ***Instructional Strategies*** (Cooperative Learning Strategy and Conventional lecture Method of Teaching) are represented as lines on the graph.

The pattern of interaction of Instructional Strategies and Achievement Motivation on Achievement in Social Science in Girls was graphically examined and presented in Figure 4-13.

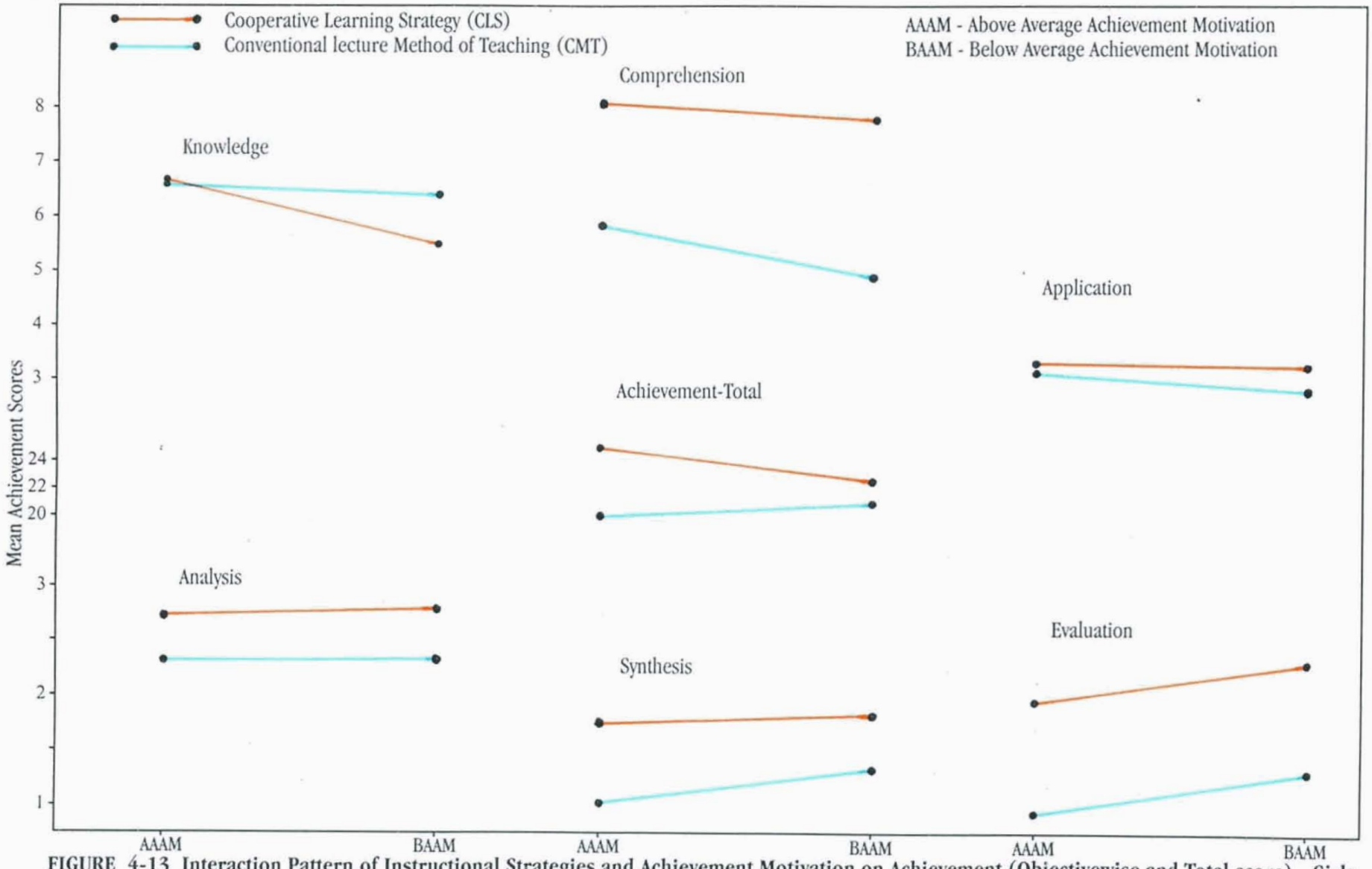


FIGURE 4-13 Interaction Pattern of Instructional Strategies and Achievement Motivation on Achievement (Objectivewise and Total score) - Girls

As shown in Figure 4-13, it is evident that Girls with AAAM, taught through ***Cooperative Learning Strategy*** gains relatively high mean Achievement scores. So AAAM is found beneficial from Cooperative Learning Strategy. From Figure 4-13, it is also clear that Girls with BAAM also brings high mean Achievement score (Total and Objectivewise), except for the Objective Knowledge, from Cooperative Learning Strategy.

A tendency of interaction between the Independent Variables is evident for the Objective Knowledge, but not found statistically significant.

Scheffe' Test of Post-hoc Comparison

In the 2x2 ANOVA, significant main effect of Instructional Strategies on Achievement in Social Science (Objectivewise viz., Comprehension and Evaluation) was found. Using the Scheffe' Test of Post-hoc Comparison, group difference based on two groups of Instructional Strategies (CLS and CMT) was examined by comparing the mean Achievement scores of relevant groups. Details of the Scheffe' Test of Post-hoc Comparison for Girls is presented in Table 4.33.

TABLE 4.33

Results of the Scheffe' Test of Post-hoc Comparison Between the Means of Achievement in Social Science (Objectivewise and Total score) Based on Two Groups of Instructional Strategies for Girls

Sample	Dependent Variable	Groups Compared	Means		Number of Students		F-value	Values of F'		Level of Significance
			M_1	M_2	N_1	N_2		0.05	0.01	
Girls	Comprehension	CLS - CMT	8.000	5.267	14	15	8.19	4.21	7.68	0.01
	Evaluation	CLS - CMT	2.000	1.067	14	15	7.90	4.21	7.68	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

As per Table 4.33, the F-ratios obtained for the comparison based on Instructional Strategies on Achievement for the Objectives Comprehension (8.79) and Evaluation (7.90) are found significant at 0.01 level, as the values of F exceeds the values of F' (7.68, df 1,27) at 0.01 level. The result suggests that there is ***statistically significant difference*** between two groups of Instructional Strategies (CLS-CMT) with respect to the mean Achievement scores for the Objectives stated earlier. High mean Achievement scores associated with the ***CLS (Experimental group) points their superiority*** over the CMT (Control group).

4.3.1.1.d. Summary and Discussion of Analysis of Variance for Achievement

The results of 21 ANOVA (seven each in Total sample, Boys and Girls) undertaken to study the ***main*** and ***interaction*** effects of Instructional Strategies (Cooperative Learning Strategy and Conventional lecture Method of Teaching) and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) helped the investigator to check ***whether changes in the levels of Instructional Strategies create any change on the Dependent Variable or not.*** The F-values obtained for 21 ANOVA for Achievement are summarised, consolidated and presented in Table 4.34 and discussed in this part of the report.

TABLE 4.34

Summary of F-values of the Main and Interaction Effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) in Total Sample, Boys and Girls

Sl. No.	Sample	Dependent Variable	F-values		
			Main Effect of Instructional Strategies	Main Effect of Achievement Motivation	Interaction Effect of Instructional Strategies and Achievement Motivation
1.	Total	Knowledge	2.417	2.417	2.417
2.		Comprehension	23.900**	7.187**	0.003
3.		Application	3.577	1.954	0.548
4.		Analysis	9.508**	0.149	0.232
5.		Synthesis	7.600**	0.169	0.581
6.		Evaluation	16.722**	0.249	0.026
7.		**Achievement (Total)**	15.745**	2.238	0.001
8.	Boys	Knowledge	6.295*	0.532	5.005*
9		Comprehension	22.426**	2.577	0.080
10.		Application	5.490*	0.001	0.574
11.		Analysis	13.583**	0.558	2.013
12.		Synthesis	8.127**	0.563	0.011
13.		Evaluation	9.101**	0.533	0.025
14.		**Achievement (Total)**	18.816**	0.459	0.669
15.	Girls	Knowledge	0.328	0.800	0.378
16.		Comprehension	6.110*	0.389	0.082
17.		Application	0.218	0.096	0.046
18.		Analysis	0.441	0.104	0.042
19.		Synthesis	1.381	0.633	0.441
20.		Evaluation	7.927**	0.987	0.003
21.		**Achievement (Total)**	1.476	0.004	0.138

* Significant at 0.05 level

** Significant at 0.01 level

A scrutiny of the results of ANOVA shows that, out of 21 ANOVA conducted to study the main and interaction effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score), ***five ANOVA*** shows significant main effect of Instructional Strategies on Total and Objectivewise Achievement in Social Science namely Comprehension, Analysis, Synthesis and Evaluation for ***Total sample.*** ***Seven ANOVA*** shows significant main effect of Instructional Strategies on Achievement in Social Science (Objectivewise and Total score) for ***Boys***. Whereas, the result of ***two ANOVA*** shows significant main effect of Instructional Strategies on Achievement in Social Science for the Objectives, Comprehension and Evaluation for ***Girls***. So, from the result of 21 ANOVA undertaken, it can be inferred that Achievement in Social Science (Total and the Objectives mentioned above) for Total sample and Boys and Achievement in Social Science for the Objectives Comprehension and Evaluation for Girls are depended on changes in the Instructional Strategies.

Scheffe' Test of Post-hoc Comparison done after ANOVA, for the significant values of F, revealed that ***Cooperative Learning Strategy influence the student Achievement*** (relevant Objectives and Total score) as higher mean Achievement scores associated with them.

Scrutiny of the F-values obtained for the main effect of Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) denotes that only one ANOVA shows significant main effect of Achievement Motivation on Achievement in Social Science, for the Objective Comprehension in Total sample. From the result, it can be clearly

inferred that Achievement in Social Science (Objectivewise and Total score) for Total sample, Boys and Girls is ***independent of the changes*** in the levels of Achievement Motivation, except the Objective Comprehension for Total sample. Result obtained from the Scheffe' Test of Post-hoc Comparison revealed that ***Above Average Achievement Motivation (AAAM) gained more achievement*** (for comprehension) in Total sample as evident from their higher mean Achievement score.

As per Table 4.34, out of 21 ANOVA undertaken to study the main and interaction effects of Instructional Strategies and Achievement Motivation on Achievement in Social Science (Objectivewise and Total score) for Total sample, Boys and Girls, only one ANOVA shows significant interaction effect on Achievement in Social Science, for the Objective Knowledge for Boys. The result suggests that Achievement in Social Science (Objectivewise and Total score) for Total sample, Boys and Girls is ***free from the joint effect*** of Instructional Strategies and Achievement Motivation, except for the Objective Knowledge for Boys.

4.3.1.2. ANALYSIS OF VARIANCE FOR RETENTION

21 ANOVA each in three samples - Total sample, Boys and Girls were undertaken to study the main and interaction effects of Instructional Strategies and Achievement Motivation on ***Retention*** in Social Science (Objectivewise and Total score). Two way ANOVA was employed to examine whether the Instructional Strategies and Achievement Motivation (separately and in combination) have any profound affect on Retention in

Social Science or not. The results of 21 ANOVA are presented and discussed in this subsection of analysis.

4.3.1.2.a. Main and Interaction Effects of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score) -Total Sample

Two-way ANOVA was employed for Total sample, Boys and Girls separately to find out the main and interaction effects of Instructional Strategies and Achievement Motivation on Retention in Social Science. Summary of Two-way ANOVA for Total sample is given in Table 4.35.

TABLE 4.35

Summary of Two-way ANOVA for Retention in Social Science (Objectivewise and Total score) by Instructional Strategies by Achievement Motivation in Total sample

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Main Effect of Instructional Strategies		Main Effect of Achievement Motivation	Interaction Effect of Instructional Strategies and Achievement Motivation
1	Total sample	80	Knowledge	SS MS df F	9.075 9.075 1 2.247	0.675 0.675 1 0.167	1.200 1.200 1 0.297
2		80	Compre-hension	SS MS df F	14.352 14.352 1 3.124	16.502 16.502 1 3.592	0.102 0.102 1 0.022
3.		80	Application	SS MS df F	8.008 8.008 1 4.118*	1.408 1.408 1 0.724	0.66 0.66 1 0.061
4.		80	Analysis	SS MS df F	5.852 5.852 1 4.215*	0.252 0.252 1 0.182	1.302 1.302 1 0.938
5.		80	Synthesis	SS MS df F	0.019 0.019 1 0.021	2.269 2.269 1 2.594	0.252 0.252 1 0.288
6.		80	Evaluation	SS MS df F	8.802 8.802 1 11.580**	0.002 0.002 1 0.003	0.102 0.102 1 0.134
7.		80	**Retention (Total)**	SS MS df F	206.719 206.719 1 5.971*	74.419 74.419 1 2.150	1.752 1.752 1 0.051

* Significant at 0.05 level

** Significant at 0.01 level

Main Effect of Instructional Strategies

As per Table 4.35, significant F-values obtained for the main effect of Instructional Strategies on Retention in Social Science (Total and Objectivewise) namely Application, Analysis ($P < 0.05$) and Evaluation ($P < 0.01$). But the main effect of Instructional Strategies on Retention for the remaining Objectives were not found significant even at 0.05 level of significance (Tabled value 3.96; df 1,76). Hence, it can be inferred that ***Retention in Social Science (Total and Objectivewise) namely Application, Analysis and Evaluation for Total sample changes with regard to the changes in the levels of Instructional Strategies.***

Main Effect of Achievement Motivation

The F-values, as shown in Table 4.35, for the main effect of Achievement Motivation on Retention in Social Science (Objectivewise and Total score) for Total sample were found below the tabled value (3.96) at 0.05 level for 1,76 degrees of freedom. Thus, the obtained F-values were not found significant even at 0.05 level of significance. The result indicates that ***any changes in the levels of Achievement Motivation cannot make significant variation in the scores of Retention in Social Science (Objectivewise and Total score) of standard VII pupils.***

Interaction Effect of Instructional Strategies and Achievement Motivation

The F-values for the interaction effect of Instructional Strategies and Achievement Motivation on Retention for Total sample were found far below the tabled value (3.96) at 0.05 level of significance. It clarifies that F-values for Retention were not found significant even at 0.05 level of

significance. The obtained result thus suggests that ***Retention in Social Science*** (Objectivewise and Total) for Total sample is ***not influenced by the combined effect of the Instructional Strategies and Achievement Motivation.***

Graphical Representation of the Interaction Effect

To study the pattern of interaction graphically, the mean scores of the Dependent Variable, ***Retention in Social Science*** (Objectivewise and Total score) are plotted as the ordinate of the graph and the two levels of ***Achievement Motivation (AAAM*** and ***BAAM)*** as the abscissa. ***Instructional Strategies (CLS*** and ***CMT)*** are represented as the lines on the graph.

The pattern of relationship for the Total sample is given in Figure 4-14.

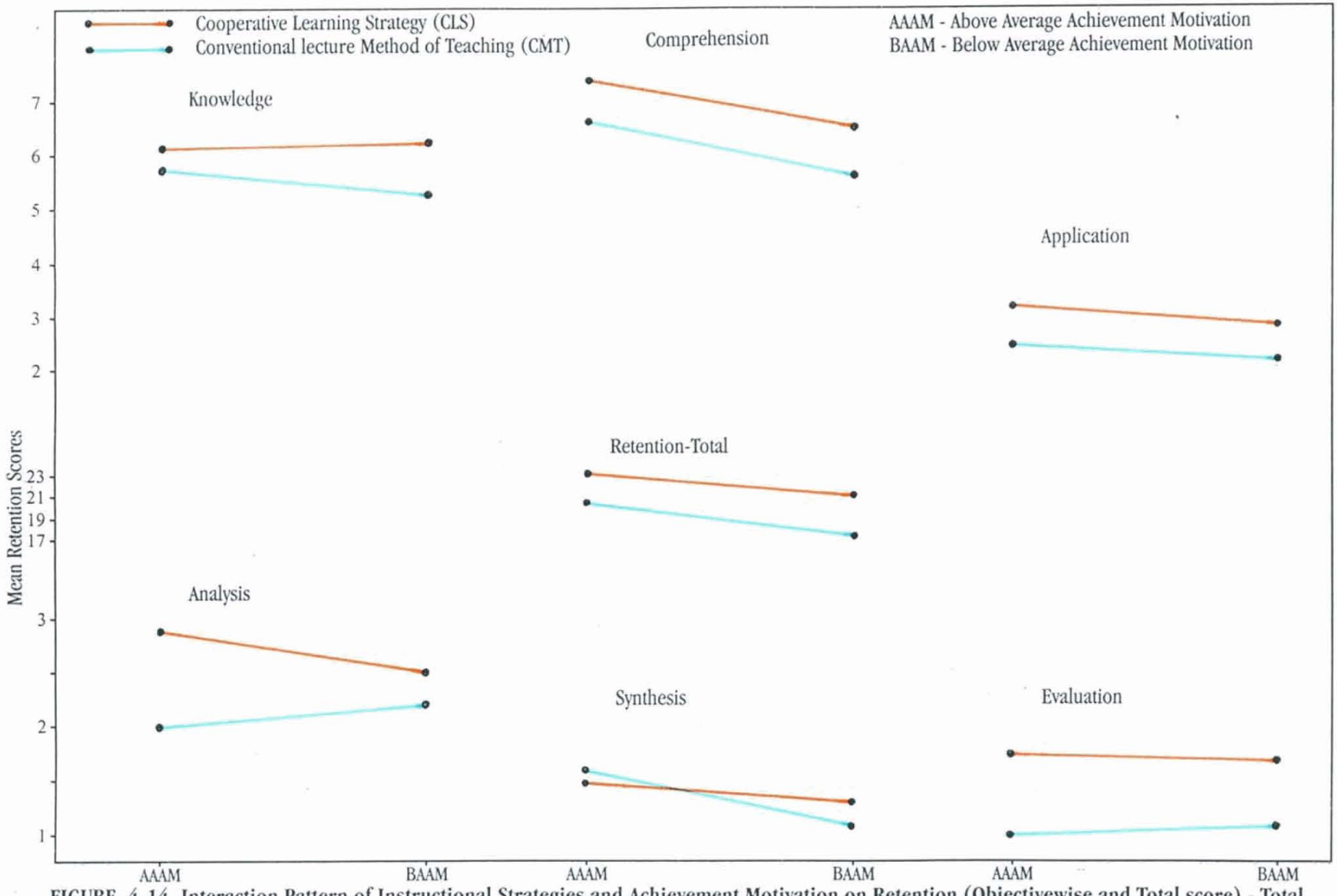


FIGURE 4-14 Interaction Pattern of Instructional Strategies and Achievement Motivation on Retention (Objectivewise and Total score) - Total sample.

Figure 4-14, revealed that Retention in Social Science (Objectivewise and Total score) with BAAM and AAAM brings high mean Retention scores from Cooperative Learning Strategy except for the Objective Synthesis, for which AAAM favours Conventional lecture Method of Teaching.

Figure 4-14 also shows that Conventional lecture Method of Teaching with AAAM gains high mean Retention scores (Objectivewise and Total) except the Objectives Analysis and Evaluation, compared with BAAM.

Scheffe' Test of Post-hoc Comparison Based on Two Groups of Instructional Strategies

In the 2x2 ANOVA, significant F-values were obtained for the main effect of Instructional Strategies on Total and Objectivewise Retention in Social Science namely Application, Analysis and Evaluation for Total sample. Hence, the mean Retention scores of the two levels of Instructional Strategies (CLS-CMT) were compared using the Scheffe' Test of Post-hoc Comparison.

Data and Results of the Scheffe' Test for the Total sample is presented in Table 4.36 and discussed.

TABLE 4.36

Results of the Scheffe' Test of Post-hoc Comparison Between the Means of Retention in Social Science (Objectivewise and Total score) Based on Two Groups of Instructional Strategies for Total Sample

Sample	Dependent Variable	Groups Compared	Means		Number of Students		F-value	Values of F'		Level of Significance
			M_1	M_2	N_1	N_2		0.05	0.01	
Total sample	Application	CLS - CMT	3.100	2.400	40	40	5.44	3.96	6.96	0.05
	Analysis	CLS - CMT	2.725	2.150	40	40	5.33	3.96	6.96	0.05
	Evaluation	CLS - CMT	1.725	1.050	40	40	25.00	3.96	6.96	0.01
	Retention (Total)	CLS - CMT	22.250	18.575	40	40	7.82	3.96	6.96	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

From Table 4.36, the F-ratios obtained for the comparison of mean Retention - Total (7.82) and for the Objective Evaluation (25.00) are significant at 0.01 level as they exceeds the values of F' (6.96, df 1,78) at 0.01 level of significance. Simultaneously, the F-ratios obtained for Retention - for the Objectives Application and Analysis (5.44 and 5.33 respectively) are found significant at 0.05 level as they exceeds the values of F' (3.96) at 0.05 level. Thus, ***statistically significant difference is noticed between the Mean Retention scores achieved by the Experimental group (CLS) and Control group (CMT).***

As higher mean Retention scores associated with the group taught through the ***Cooperative Learning Strategy*** (Experimental group) they were seen to excel the Control group (CMT).

4.3.1.2.b. Main and Interaction Effects of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score) for Boys

To study the main and interaction effects of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score) for Boys, Two-way ANOVA was employed.

The summary of the results of ANOVA is presented in Table 4.37.

TABLE 4.37

Summary of Two-way ANOVA for Retention in Social Science (Objectivewise and Total score) by Instructional Strategies by Achievement Motivation in Boys

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Main Effect of Instructional Strategies		Main Effect of Achievement Motivation	Interaction Effect of Instructional Strategies and Achievement Motivation
1	Boys	51	Knowledge	SS MS df F	18.050 18.050 1 5.511*	0.581 0.581 1 0.178	7.417 7.417 1 2.265
2		51	Compre-hension	SS MS df F	40.658 40.658 1 10.144**	0.203 0.203 1 0.051	4.436 4.436 1 1.107
3.		51	Application	SS MS df F	10.491 10.491 1 6.188*	0.061 0.061 1 0.036	1.124 1.124 1 0.663
4.		51	Analysis	SS MS df F	7.496 7.496 1 5.685*	0.990 0.990 1 0.751	0.033 0.033 1 0.025
5.		51	Synthesis	SS MS df F	0.002 0.002 1 0.002	2.068 2.068 1 2.201	0.002 0.002 1 0.002
6.		51	Evaluation	SS MS df F	5.537 5.537 1 8.504**	1.284 1.284 1 1.971	0.068 0.068 1 0.105
7.		51	**Retention (Total)**	SS MS df F	363.153 363.153 1 13.604**	3.902 3.902 1 0.146	29.826 29.826 1 1.117

* Significant at 0.05 level

** Significant at 0.01 level

Main Effect of Instructional Strategies

As per Table 4.37, significant F-values were obtained for the main effect of Instructional Strategies on Retention in Social Science - Total and for the Objectives Comprehension and Evaluation ($P < 0.01$) and Knowledge, Application and Analysis ($P < 0.05$). No significant F-value is observed for the Objective Synthesis.

From the result, it can be inferred that ***variations in the scores of Retention in Social Science*** (Objectivewise and Total score) except for the Objective Synthesis for Boys ***is clearly attributed to variations in the Instructional Strategies.***

Main Effect of Achievement Motivation

As shown in Table 4.37, for the main effect of Achievement Motivation on Retention in Social Science (Objectivewise and Total score), none of the F-values were found significant even at 0.05 level of significance for 1,47 degrees of freedom. Hence, it can be assumed that ***variation in the scores on Retention in Social Science is not due to the variations in the levels of Achievement Motivation.***

Interaction Effect of Instructional Strategies and Achievement Motivation

When the interaction effect of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score) for Boys was studied, the F-values obtained were ***not found to be significant*** even at 0.05 level of significance. From the result it can be summarised that ***Retention in Social Science (Objectivewise and Total***

score) for Boys is not affected by the combined effect of Instructional Strategies and Achievement Motivation.

Graphical Representation of the Interaction Effect

Graphical representation of the interaction effect involved, plotting the mean scores of the ***Retention in Social Science*** (Objectivewise and Total score) as the ordinate of the graph and the two levels of ***Achievement Motivation (AAAM*** and ***BAAM)*** as the abscissa. Two levels of ***Instructional Strategies (CLS*** and ***CMT)*** are represented as lines on the graph.

The pattern of relationship is studied graphically and presented in Figure 4-15.

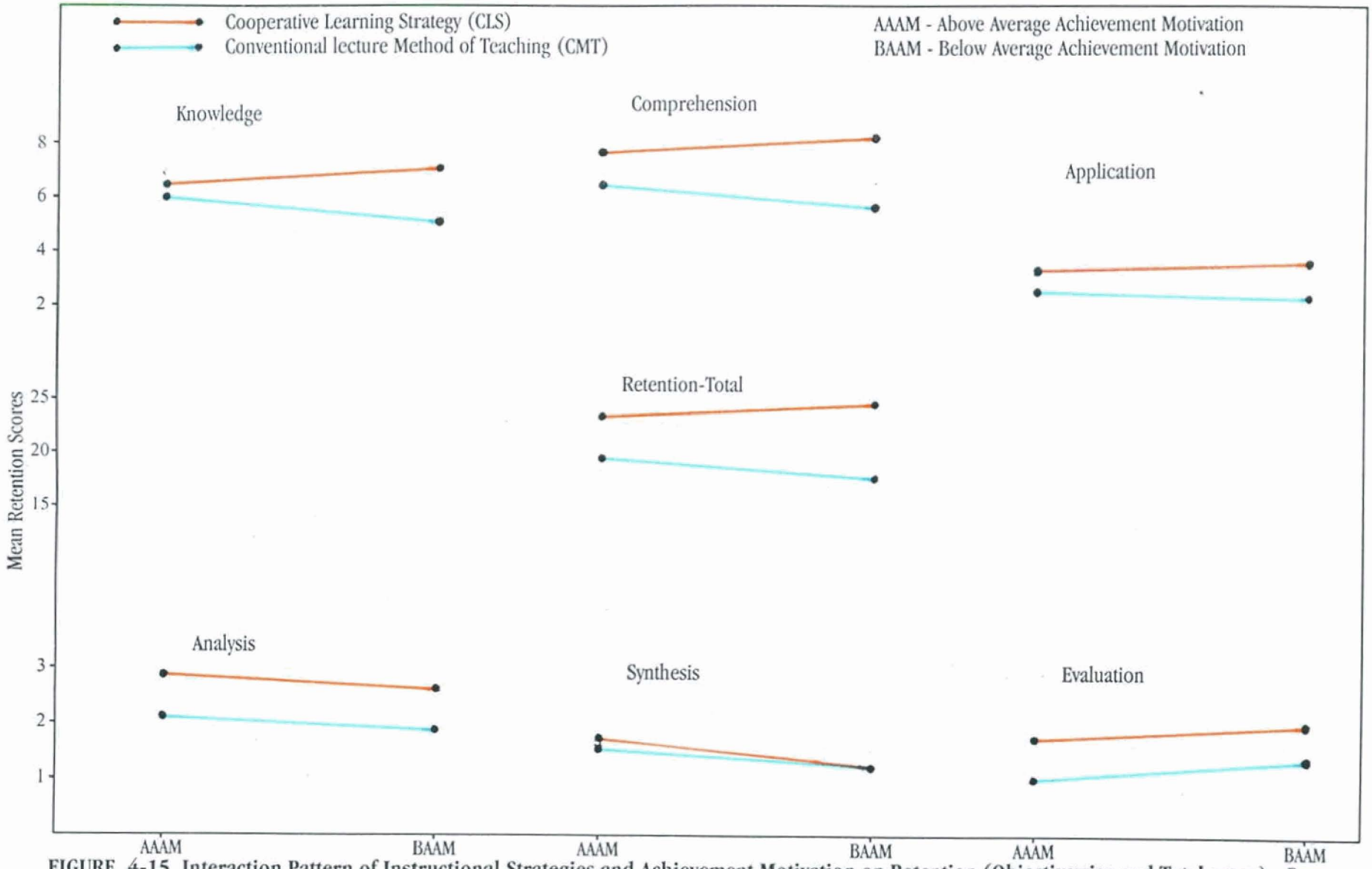


FIGURE 4-15 Interaction Pattern of Instructional Strategies and Achievement Motivation on Retention (Objectivewise and Total score) - Boys.

As per Figure 4-15, even though Cooperative Learning Strategy with BAAM and AAAM gained high mean Retention scores, Cooperative Learning with BAAM favours ***higher level of performance*** except for the Objectives Analysis and Synthesis. For those, Cooperative Learning Strategy with AAAM favours higher performance.

From Figure 4-15, Boys with AAAM taught through Conventional lecture Method of Teaching scored more mean Retention in Social Science (Total and Objectivewise) except the Objective Evaluation than Boys with BAAM, taught through Conventional lecture Method of Teaching

Scheffe' Test of Post-hoc Comparison Based on Two Groups of Instructional Strategies

Significant F-values were obtained for the main effect of Instructional Strategies on Retention (Objectivewise and Total score) except the Objective Synthesis for Boys. Thus, mean Retention scores of the two groups based on Instructional Strategies were compared using Scheffe' Test of Post-hoc Comparison.

Data and results of the Scheffe' Test for Boys are presented in Table 4.38 and discussed.

TABLE 4.38

Results of the Scheffe' Test of Post-hoc Comparison Between the Means of Retention in Social Science (Objectivewise and Total score) Based on Two Groups of Instructional Strategies for Boys

Sample	Dependent Variable	Groups Compared	Means		Number of Students		F-value	Values of F'		Level of Significance
			M_1	M_2	N_1	N_2		0.05	0.01	
Boys	Knowledge	CLS - CMT	6.654	5.400	26	25	4.96	4.03	7.17	0.05
	Comprehension	CLS - CMT	7.808	5.960	26	25	10.68	4.03	7.17	0.01
	Application	CLS - CMT	3.269	2.360	26	25	6.38	4.03	7.17	0.05
	Analysis	CLS - CMT	2.808	1.960	26	25	7.20	4.03	7.17	0.01
	Evaluation	CLS - CMT	1.846	1.240	26	25	7.40	4.03	7.17	0.01
	Retention (Total)	CLS - CMT	23.885	18.320	26	25	14.49	4.03	7.17	0.01

CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

As per Table 4.38 significant F-values were obtained for Retention - Total and for the Objectives Comprehension, Analysis and Evaluation at 0.01 level as they exceeds the values of F' (7.17). Whereas the F-values obtained for Retention for the Objectives Knowledge and Application are significant at 0.05 level. The comparisons show that significant difference exists between two groups of Instructional Strategies in case of Retention (Total and for the Objectives mentioned). From the results of the Scheffe' Test, it can be drawn that the ***Experimental group (CLS)*** shows superiority over the ***Control group (CMT)*** as revealed from their high mean Retention scores.

4.3.1.2.c. Main and Interaction Effects of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score) for Girls

The investigator made use of Two-way ANOVA to study the main and interaction effects of Instructional Strategies and Achievement Motivation on Retention in Social Science for Girls. Results of Two-way ANOVA is summarised and presented in Table 4.39.

TABLE 4.39

Summary of Two-way ANOVA for Retention in Social Science (Objectivewise and Total score) by Instructional Strategies by Achievement Motivation in Girls

Sl. No.	Sample	Number of Students (N)	Dependent Variable	Main Effect of Instructional Strategies		Main Effect of Achievement Motivation	Interaction Effect of Instructional Strategies and Achievement Motivation
1	Girls	29	Knowledge	SS MS df F	0.364 0.364 1 0.072	0.364 0.364 1 0.072	1.850 1.850 1 0.368
2		29	Compre-hension	SS MS df F	1.404 1.404 1 0.267	0.502 0.502 1 0.096	0.696 0.696 1 0.133
3.		29	Application	SS MS df F	0.512 0.512 1 0.198	0.016 0.106 1 0.006	1.290 1.290 1 0.498
4.		29	Analysis	SS MS df F	0.277 0.277 1 0.172	0.896 0.896 1 0.559	0.100 0.100 1 0.062
5.		29	Synthesis	SS MS df F	0.087 0.087 1 0.095	0.016 0.016 1 0.018	0.016 0.016 1 0.018
6.		29	Evaluation	SS MS df F	2.511 2.511 1 2.991	0.552 0.552 1 0.658	1.048 1.048 1 1.248
7.		29	**Retention (Total)**	SS MS df F	0.43 0.43 1 0.008	0.831 0.831 1 0.017	2.601 2.601 1 0.054

Main Effect of Instructional Strategies

As shown in Table 4.39, the F-values obtained for the main effect of Instructional Strategies on Retention in Social Science (Objectivewise and Total score) for Girls were not found significant even at 0.05 level of significance (Tabled value 4.06) for 1,25 degrees of freedom. Therefore, it can be inferred that ***Retention in Social Science (Objectivewise and Total score) is not changing with regard to the variations in the Instructional Strategies.***

Main Effect of Achievement Motivation

From Table 4.39, no significant F-values were obtained for the main effect of Achievement Motivation on Retention in Social Science (Objectivewise and Total score). The F-values are far below the tabled value (4.24) for 0.05 level of significance at 1,25 df. The result suggests that ***variation in the levels of Achievement Motivation does not make any changes in the scores of Retention in Social Science (Objectivewise and Total).***

Interaction Effect of Instructional Strategies and Achievement Motivation

The F-values obtained for the interaction effect of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score) for Girls, were found not significant even at 0.05 level of significance (Tabled value 4.24; df 1,25). Hence, it can be assumed that ***changes in the scores on Retention in Social Science is totally free from the combined effect of Instructional Strategies and Achievement Motivation.***

Graphical Representation of the Interaction Effect

To study the pattern of relationship graphically, the mean scores of the Dependent Variable, ***Retention in Social Science*** (Objectivewise and Total score), are plotted as the ordinate of the graph and the two levels of ***Achievement Motivation - AAAM*** and ***BAAM,*** as the abscissa. The lines for the graph were represented by the two levels of ***Instructional Strategies*** (***Cooperative Learning Strategy*** and ***Conventional lecture Method of Teaching***).

The graph is presented in Figure 4-16.

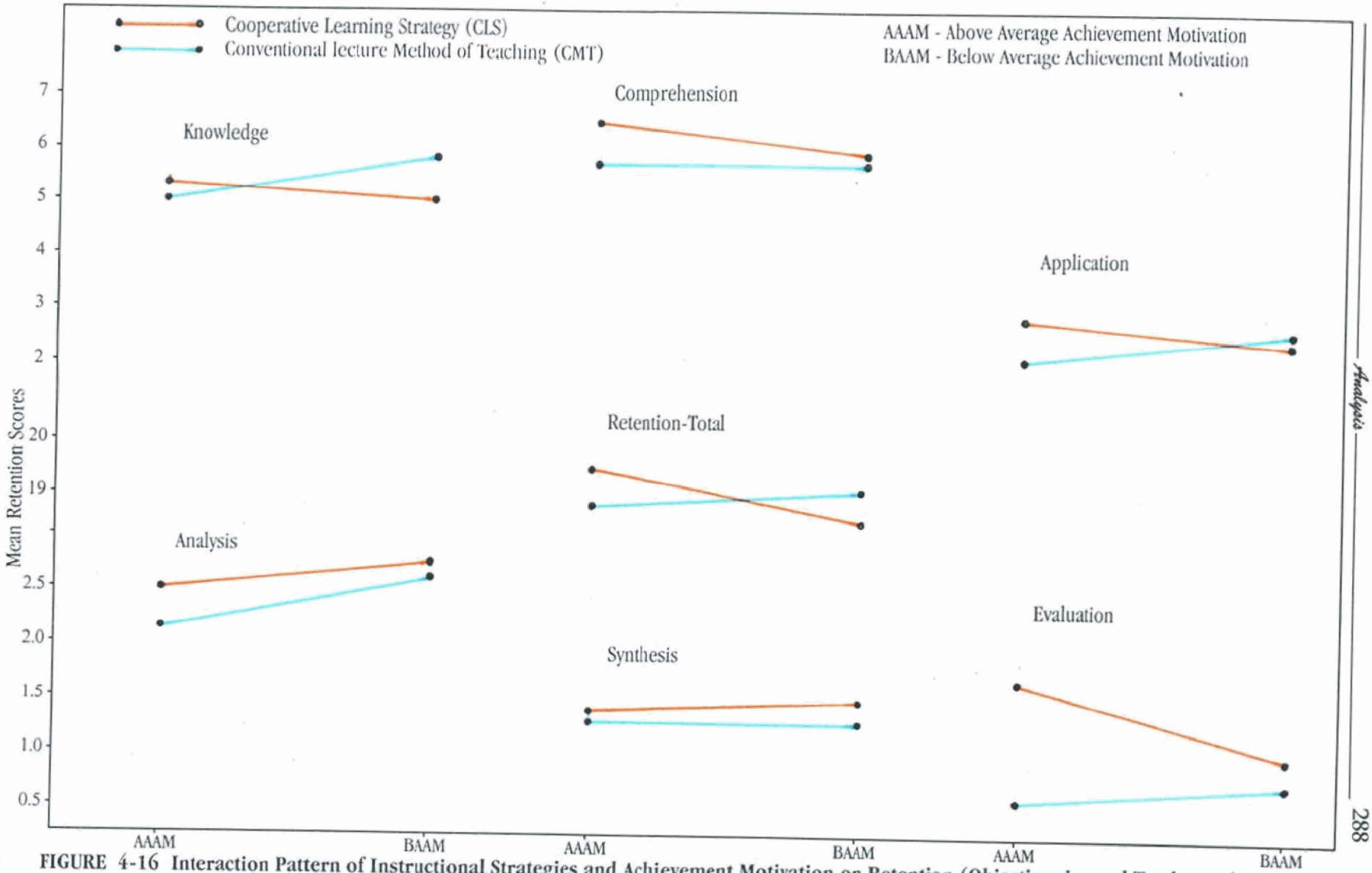


FIGURE 4-16 Interaction Pattern of Instructional Strategies and Achievement Motivation on Retention (Objectivewise and Total score) - Girls.

The graphical representation of interaction effect shows that AAAM favours Cooperative Learning except the Objective Knowledge and Analysis for higher Retention. For Knowledge AAAM favours Conventional lecture Method of Teaching for better Retention.

In contrary, Girls with BAAM taught through Conventional lecture Method of Teaching scored high mean Retention scores in Social Science (Total and Objectivewise) namely Knowledge and Application. So BAAM is found beneficial for Girls taught through Conventional lecture Method of Teaching.

A considerable tendency of interaction between Cooperative Learning Strategy and Conventional lecture Method of Teaching for mean Retention in Social Science (Total) and for the Objectives Knowledge and Application for Boys is evident from the graphical representation. But ***no one of them is found statistically significant.***

As the F-values obtained for the main effect of Instructional Strategies and Achievement Motivation on Retention for Girls were not found significant, Scheffe' Test of Post-hoc Comparison was not employed.

4.3.1.2.d. Summary and Discussion of Analysis of Variance for Retention

The results of 21 ANOVA (seven ANOVA each for Total sample, Boys and Girls) conducted to examine the ***main*** and ***interaction*** effects of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score) are summarised and discussed in this subsection of the chapter.

The F-values obtained for 21 ANOVA for Retention are consolidated and presented in Table 4.40.

TABLE 4.40

Summary of F-values for the Main and Interaction Effects of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score) in Total Sample, Boys and Girls

Sl. No.	Sample	Dependent Variable	F-values		
			Main Effect of Instructional Strategies	Main Effect of Achievement Motivation	Interaction Effect of Instructional Strategies and Achievement Motivation
1.	Total	Knowledge	2.247	0.167	0.297
2.		Comprehension	3.124	3.592	0.022
3.		Application	4.118*	0.724	0.061
4.		Analysis	4.215*	0.182	0.938
5.		Synthesis	0.021	2.594	0.288
6.		Evaluation	11.580**	0.003	0.134
7.		**Retention (Total)**	5.971*	2.150	0.051
8.	Boys	Knowledge	5.511*	0.178	2.265
9		Comprehension	10.144**	0.051	1.107
10.		Application	6.188*	0.036	0.663
11.		Analysis	5.685*	0.751	0.025
12.		Synthesis	0.002	2.201	0.002
13.		Evaluation	8.504**	1.971	0.105
14.		**Retention (Total)**	13.604**	0.146	1.117
15.	Girls	Knowledge	0.072	0.072	0.368
16.		Comprehension	0.267	0.096	0.133
17.		Application	0.198	0.006	0.498
18.		Analysis	0.172	0.559	0.062
19.		Synthesis	0.095	0.018	0.018
20.		Evaluation	2.991	0.658	1.248
21.		**Retention (Total)**	0.008	0.017	0.054

* Significant at 0.05 level

** Significant at 0.01 level

From Table 4.40, out of 21 ANOVA undertaken to study the main and interaction effects of Instructional Strategies and Achievement Motivation on Retention in Social Science (Objectivewise and Total score), ***four*** ANOVA out of ***seven*** shows significant main effect of Instructional Strategies on Retention in Social Science - ***Total*** and Objectivewise Retention in ***Application, Analysis*** and ***Evaluation*** for ***Total sample.*** For ***Boys, six*** ANOVA out of ***seven*** have shown significant main effect of Instructional Strategies on Retention in Social Science (Total and Objectivewise) except for the Objective Synthesis. In case of ***Girls, none*** of the F-values were found significant. Therefore, it indicates that Retention in Social Science (Total and the Objectives mentioned earlier) for Total sample and Boys is considered to be ***affected by Instructional Strategies***.

Scheffe' Test of Post-hoc Comparison suggested that the variation due to the changes in the levels of Instructional Strategies is accountable with the Cooperative Learning Strategy as ***it caused higher Retention scores*** compared with Conventional lecture Method of Teaching.

From the entire analysis done, ***none*** of the ANOVA shows ***significant main effect of Achievement Motivation*** on Retention in Social Science (Total and Objectivewise for Total sample, Boys and Girls, out of 21 ANOVA undertaken). Likewise, out of 21 ANOVA employed, ***no ANOVA shows significant interaction effect of Instructional Strategies and Achievement Motivation*** on Retention in Social Science (Objectivewise and Total score). So from the obtained result, it can be assumed that ***Retention***

in Social Science (Objectivewise and Total score) is independent of the main effect of Achievement Motivation and the combined effect of Achievement Motivation and Instructional Strategies.

SUMMARY FINDINGS AND SUGGESTIONS

Hameed A."Interaction of instructional strategies and achievement motivation on achievement in social science of standard VII pupils" Thesis. Department of Education, University of Calicut, 2002

Chapter Five

SUMMARY FINDINGS AND SUGGESTIONS

SUMMARY FINDINGS AND SUGGESTIONS 5

This chapter gives an overview regarding the significant aspects of the stages of conducting the study, the important findings, educational implications derived and suggestions for further research.

5.1. STUDY IN A NUTSHELL

Significant aspects pertaining to the different phases of the present study like the Statement of the Problem, Variables, Objectives, Hypotheses, Methodology etc. are given in retrospect.

5.1.1. RESTATEMENT OF THE PROBLEM

The problem of the present study was stated as INTERACTION OF INSTRUCTIONAL STRATEGIES AND ACHIEVEMENT MOTIVATION ON ACHIEVEMENT IN SOCIAL SCIENCE OF STANDARD VII PUPILS.

5.1.2. VARIABLES OF THE STUDY

The Independent, Dependent and Control Variables selected for the present experimental study were the following.

5.1.2.1 Independent Variables

The following Independent Variables were selected for the study.

5.1.2.1.a. Instructional Strategies (Cooperative Learning Strategy-Learning Together Model and Conventional lecture Method of Teaching).

5.1.2.1.b. Achievement Motivation

5.1.2.2. Dependent Variables

The following were the Dependent Variables incorporated in the study.

5.1.2.2.a. Achievement in Social Science (Objectivewise scores in Knowledge, Comprehension, Application , Analysis, Synthesis and Evaluation and a Total score).

5.1.2.2.b. Retention in Social Science (Objectivewise scores in Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation and a Total score).

5.1.2.3 Control Variables

The Control Variables selected for the study were the following.

5.1.2.3.a. Previous Knowledge of the Subject Matter Measured by a Pretest

5.1.2.3.b. Verbal Intelligence

5.1.2.3.c. Non-verbal Intelligence

5.1.3 OBJECTIVES

The study was done with the following objectives under consideration.

5.1.3.1. To study whether there exists ***any difference in the mean Achievement scores*** (Objectivewise and Total score) of the

Experimental and Control groups for the Total sample, Boys and Girls.

5.1.3.2. To study whether there exists ***any difference in the mean Gain score*** of the Experimental and Control groups for the Total sample, Boys and Girls.

5.1.3.3. To study whether there exists ***any difference in the mean Retention score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

5.1.3.4. To study the ***effectiveness*** of ***Cooperative Learning Strategy*** over Conventional lecture Method of Teaching, if any, in terms of Achievement in Social Science of standard VII pupils.

5.1.3.5. To study the ***effectiveness of Cooperative Learning Strategy*** over Conventional lecture Method of Teaching, if any, in terms of Retention in Social Science of standard VII pupils.

5.1.3.6. To study the ***main effects*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls).

5.1.3.7. To study the ***interaction effect*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

5.1.3.8. To study the ***main effects*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

5.1.3.9. To study the ***interaction effect*** of the Independent Variables (Instructional Strategies and Achievement Motivation) on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

5.1.4. HYPOTHESES

The following hypotheses were tested for the study.

5.1.4.1. There will be no significant difference in the ***mean Achievement score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

5.1.4.2. There will be no significant difference in the ***mean Gain score*** of the Experimental and Control groups for the Total sample, Boys and Girls.

5.1.4.3. There will be no significant difference in the ***mean Retention score*** (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls.

5.1.4.4. Pupils taught through ***Cooperative Learning Strategy*** will not differ significantly from pupils taught through ***Conventional lecture Method of Teaching*** in terms of ***Achievement in Social Science*** of standard VII pupils.

5.1.4.5. Pupils taught through ***Cooperative Learning Strategy*** will not differ significantly from pupils taught through ***Conventional lecture Method of Teaching*** in terms of ***Retention in Social Science*** of standard VII pupils.

5.1.4.6. There will be no significant main effects of the Independent Variables ***(Instructional Strategies*** and ***Achievement Motivation)*** on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

5.1.4.7. There will be no significant interaction effect of the Independent Variables ***(Instructional Strategies*** and ***Achievement Motivation)*** on ***Achievement in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

5.1.4.8. There will be no significant main effects of the Independent Variables ***(Instructional Strategies*** and ***Achievement Motivation)*** on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

5.1.4.9. There will be no significant interaction effect of the Independent Variables ***(Instructional Strategies*** and ***Achievement Motivation)*** on ***Retention in Social Science*** (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls.

5.1.5. PROCEDURE

The procedure followed for the present study is outlined in this section. The study was conducted in ***two major phases***. In the first phase, the study was focused to find out the ***effectiveness of Cooperative Learning Strategy (Learning Together Model)*** over ***Conventional lecture Method of Teaching,*** if any, with regard to ***Achievement*** and ***Retention in Social Science*** of standard VII pupils. In the second phase, it was aimed to find out the ***main*** and ***interaction effects of Instructional Strategies*** (Cooperative Learning Strategy and Conventional lecture Method of Teaching) and ***Achievement Motivation*** on ***Achievement*** and ***Retention in Social Science*** of Standard VII pupils.

5.1.5.1. Design of the Study

The study made use of the ***Pretest-Post test Equivalent Groups Design.*** The Experimental group was taught using the Cooperative Learning Strategy (CLS)-Learning Together Model and the Control group, through the Conventional lecture Method of Teaching (CMT).

5.1.5.2 Sample for the Study

The Experimental and Control schools were selected at random, consisted of two intact class groups of 40 students each being the ***Experimental*** and ***Control*** groups respectively. These two groups were equated with regard to some select variables.

5.1.5.3 Selection of Topics for Treatment

The topics for treatment in the study were selected from the syllabus of Social Science prescribed for standard VII pupils of Kerala state for the academic year 2001-2002. The curriculum, syllabus and text books prescribed were studied carefully, before the selection of the topics. Besides, the investigator consulted with experts and teachers concerned. Five topics were selected for treatment. All the lessons were examined thoroughly and found amenable to Cooperative Learning (Learning Together Model) and Conventional lecture Method of Teaching.

5.1.5.4 Tools used for Treatment

The investigator made use of the following tools for the study.

a) ***Lesson Transcripts for Cooperative Learning Strategy (Kumar & Hameed, 2001).***

The investigator prepared Lesson Transcripts for Cooperative Learning Strategy (Learning Together) following the ***four phases*** (details are given in chapter 3) designed by Johnson and Johnson (1975) for their Learning Together Model of Cooperative Learning and used for treatment in the Experimental group.

b) ***Lesson Transcripts for Conventional Lecture Method of Teaching (Kumar & Hameed, 2001).***

The Lesson Transcripts for Conventional lecture Method of Teaching were prepared by the investigator for the Control group, on the basis of the instructional objectives of cognitive domain.

5.1.5.5. Other Tools Used

Other tools used for the present study are as follows:

a) Scale of Achievement Motivation-SAM (Pillai & Kumar, 1993)

The Scale of Achievement Motivation, a multi-factorial scale in Malayalam language, developed by ***Pillai*** and ***Kumar*** (1993), was employed to measure the Achievement Motivation of the pupils, one of the Independent Variables in the study.

b) Verbal Group Test of Intelligence- VGTI (Kumar, et al., 1997)

For the study the Confounding Variable, Verbal Intelligence was measured using the Verbal Group Test of Intelligence - VGTI, developed and standardized by Kumar, et al., (1997).

c) Standard Progressive Matrices Test-SPMT (Raven, 1958)

The Confounding Variable, Non-verbal Intelligence was measured using the Standard Progressive Matrices Test, developed by Raven (1958). It is a popular measure of the '*g*' factor of intelligence.

d) General Data Sheet for Assessing Socio-Economic Status (SES)

The General Data Sheet was used by the investigator to assess the Socio-Economic Status of the pupils in terms of information regarding ***Income, Education*** and ***Occupation*** of Parents.

e) Achievement Test in Social Science - ATSS (Kumar & Hameed, 2001)

Achievement Test in Social Science (ATSS) was developed and standardised by Kumar and Hameed (2001) was used as a Pretest and Post test on the topics selected for treatment and also to measure Retention.

f) Classroom Interaction Rating Scale - CIRS (Kumar & Hameed, 2001)

A Classroom Interaction Rating Scale (CIRS) was prepared by the investigator to investigate the pattern of interaction under the Cooperative situation and the Conventional classroom situation.

5.1.5.6. Execution of the Experiment

After getting the prior permission from the Heads of the two schools (Experimental and Control), arrangements were made to collect the date from both the schools and a schedule was prepared accordingly. Before starting the treatment, both the Experimental and Control groups were given the ***same Pretest*** to measure the Previous Knowledge of the students in terms of Achievement in Social Science. A newly made Achievement Test by the investigator was used for this purpose.

a. Experimental Treatment

After the administration of the Pretest, the Experimental group was taught through the ***Cooperative Learning Strategy*** (***Learning Together*** model) for 20 class periods. Duration of each period was 45 minutes. Thus 15 hours were taken for the Experimental treatment.

b. Control Treatment

In the Control group, ***Conventional lecture Method of Teaching*** was used. For the Conventional class, the available teaching aids in the respective school were only used. The topics selected and duration of time were the same as in the Experimental group.

c. Data Collection Procedure

As stated earlier, the same Pretest was administered in the Experimental and Control group. Immediately after the completion of the treatment, the Post test data were collected utilizing the ***same Achievement Test*** that has already been used as the Pretest. The test was again administered on both the groups as ***Retention test,*** after one month.

During the course of the Experiment, data on other variables such as ***Achievement Motivation, Verbal Intelligence, Non-verbal Intelligence*** and ***Socio-Economic Status*** were collected from both the Experimental and Control groups using standardized tools concerned. Data on Classroom Interaction was also collected using teachers as raters who observed the pattern of interaction in the Experimental and Control groups.

d. Scoring and Consolidation of Data

According to the respective test manuals, scoring keys and value points, all response sheets were scored. After scoring the response sheets, the scores were tabulated separately for the Experimental and Control groups.

5.1.5.7. Statistical Techniques

The entire analysis was done using the following statistical techniques.

a) Mean Difference Analysis

Test of Significance of Difference between Means was used to compare the relevant variables between the Experimental and Control groups. This statistical technique was mainly employed to study whether

significant difference exists between the Experimental and Control groups in case of ***Achievement, Gain*** and ***Retention*** scores, without controlling the effects of Covariates. Mean Difference Analysis was again employed to study the interaction in Cooperative and Conventional classrooms and to equate the two groups with regard to the Previous Knowledge, Verbal and Non-verbal Intelligence and Socio-Economic Status of the pupils.

b) Analysis of Covariance (ANCOVA)

Two-Factor ANCOVA was employed with three Covariates (separately and in combination) to compare the effectiveness of Instructional Strategies (Cooperative Learning Strategy and Conventional lecture Method of Teaching) on ***Achievement*** and ***Retention*** in Social Science (Objectivewise and Total score).

c. Two-way Analysis of Variance (ANOVA) with 2x2 Factorial Design

Two-way Analysis of Variance was employed to investigate the main and interaction effects of Independent Variables on Dependent Variables (***Achievement*** and ***Retention*** in Social Science). In the ANOVA procedure two levels of Instructional Strategies (Cooperative Learning Strategy and Conventional lecture Method of Teaching) and two levels of Achievement Motivation (Above Average Achievement Motivation and Below Average Achievement Motivation) were utilized.

d) Scheffe' Test of Post-hoc Comparison

Scheffe' Test of Post-hoc Comparison was used, after ANCOVA and ANOVA, to compare the criterion means of the Experimental and Control groups to study the group difference.

5.2. MAJOR FINDINGS OF THE STUDY

A brief discussion of the major findings of the study are presented in this section of the report. Analysis of the consolidated date comprises *45* mean comparisons and *56* ANCOVA of which *28* ANCOVA each were employed to investigate the effectiveness of Cooperative Learning Strategy over Conventional lecture Method on ***Achievement*** and ***Retention*** in Social Science as Dependent Variables. In ANCOVA, Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence as Covariates separately and in combination of the three at a time is used.

In addition to the Covariance Analysis, 21 ANOVA each (Total *42* ANOVA) were undertaken to examine the main and interaction effects of Instructional Strategies and Achievement Motivation on ***Achievement*** and ***Retention*** in Social Science (Objectivewise and Total score) for Total Sample, Boys and Girls.

5.2.1. RESULTS OF THE INVESTIGATION OF CLASSROOM INTERACTION

Mean Difference Analysis and Percentage of scores were used to compare the classroom interaction pattern under the Cooperative and Conventional classroom situations. The t-value obtained for the comparison of each category of classroom interaction are given in the descending order as follows.

Category of Interaction	Percentage of Scores		t-value
	Cooperative Classroom	Conventional Classroom	
Inter-group Interaction	89.16	53.33	9.23**
Intra-group Interaction	88.66	53.33	7.74**
Student-Teacher Interaction	86.06	76.76	4.97**

** P> 0.01

Significant difference in the nature of interaction between the Cooperative and Conventional set up is noticed. In all of these comparisons, higher mean scores were seen to attach with the ***Cooperative classroom*** group. Thus it was evident that classroom ***interaction was higher in the Cooperative classroom*** group than the Conventional. Percentage of scores of each category obtained for the two groups also confirmed this result.

5.2.2. RESULTS OF MEAN DIFFERENCE ANALYSIS

Mean Difference Analysis was employed in the study as a preliminary step to investigate the difference between the Experimental and Control groups (Total sample, Boys and Girls) with respect to ***Achievement, Gain*** and ***Retention*** in Social Science, without controlling the select variables. Results of the Mean Difference Analysis are briefly presented in the following sections.

5.2.2.1. Comparison of the Mean Achievement (Objectivewise and Total score) of the Experimental and Control Groups (Total sample, Boys and Girls)

Significant difference in the Mean Achievement (Objectivewise and Total score) except the Objective Knowledge between the Experimental and Control groups for the Total sample was noted. Between Boys in the Experimental and Control groups, significant difference in the Mean Achievement scores (Objectivewise and Total score) was found. Mean Achievement scores in Comprehension and Evaluation were found significantly different in case of Girls in the Experimental and Control groups. The significant t-values are presented in the decreasing order of magnitude.

Sample	Dependent Variable	t-value
Total sample	Comprehension	5.36**
	Achievement (Total)	4.35**
	Evaluation	4.32**
	Analysis	3.10**
	Synthesis	2.75**
	Application	2.21*
Boys	Comprehension	5.16**
	Achievement (Total)	4.60**
	Analysis	3.56**
	Evaluation	3.30**
	Synthesis	2.80**
	Knowledge	2.59**
	Application	2.42*
Girls	Comprehension	2.87**
	Evaluation	2.73**

* Significant at 0.05 level; **. Significant at 0.01 level

No significant difference is found in the Mean Achievement scores in Knowledge for Total sample and mean Achievement (Total) and in Knowledge, Application, Analysis and Synthesis for Girls.

5.2.2.2. Comparison of the Mean Gain score of the Experimental and Control Groups (Total sample, Boys and Girls)

Significant difference in the Mean Gain score is obtained between the Experimental and Control groups (Total sample and Boys only). Significant t-values are presented in the decreasing order of magnitude.

Variable	Sample	t-value
Gain score	Total sample	3.46**
Gain score	Boys	3.43**

** Significant 0.01 level

No significant difference in Gain score between the Experimental and Control groups is obtained in case of Girls.

5.2.2.3. Comparison of the Mean Retention Score (Objectivewise and Total score) of the Experimental and Control Groups (Total sample, Boys and Girls)

Significant difference in the Mean Retention score, Total and in the Objectives Comprehension, Application, Analysis and Evaluation for Total sample is found. Retention-Total and in the Objectives Knowledge, Comprehension, Application, Analysis and Evaluation except the Objective synthesis are significantly differentiating the Boys in the Experimental and Control groups. Mean Retention score in the Objective Evaluation for Girls

was found significantly different. Significant t-values obtained are presented in the decreasing order of magnitude.

Sample	Dependent Variable	t-value
Total sample	Evaluation	3.50**
	Retention (Total)	2.79**
	Application	2.26*
	Analysis	2.19*
	Comprehension	2.17*
Boys	Retention (Total)	3.87**
	Comprehension	3.33**
	Evaluation	2.68**
	Analysis	2.65**
	Application	2.53*
	Knowledge	2.46*
Girls	Evaluation	2.26*

* Significant at 0.05 level

** Significant at 0.01 level

No significant difference in the mean Retention score in the Objectives Knowledge and Synthesis for Total sample; Synthesis only for Boys and Retention-Total and Objectivewise except the Objective Evaluation for Girls were obtained.

5.2.3. RESULTS OF THE COVARIANCE ANALYSIS FOR ACHIEVEMENT

In this part, results of the Two-way Factorial ANCOVA employed to examine the ***effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching*** Social Science by controlling the select Covariates are presented.

5.2.3.1. Effectiveness of Instructional Strategies on Achievement-Previous Knowledge Controlled

Results of the ANCOVA using Previous Knowledge as Covariate revealed that the F-values obtained for the effectiveness of Instructional Strategies on Total and Objectivewise Achievement in Comprehension, Analysis, Synthesis and Evaluation were statistically significant. The significant F-values obtained are presented in the decreasing order of magnitude as follows.

Dependent Variable	F- value
Comprehension	15.36**
Evaluation	8.93**
Achievement (Total)	7.94**
Analysis	4.54*
Synthesis	4.06*

** Significant at 0.01 level
* Significant at 0.05 level

F- values obtained for the objective ***Knowledge*** and ***Application*** were not found significant

Scheffe' Test of Post-hoc Comparison was employed to compare the relevant adjusted criterion means of Achievement in Social Science, which shows significant F-ratios. All of these comparisons yielded significant F-values. Results indicated that ***significant difference exists between the***

Experimental and Control groups with regard to criterion variables. F-values obtained in the Scheffe' Test are arranged in the decreasing order of magnitude as follows.

Groups Compared	Dependent Variable	F-value
CLS - CMT (Experimental - Control)	Comprehension	37.83**
CLS -CMT (Experimental - Control)	Evaluation	10.62**
CLS -CMT (Experimental -Control)	Achievement (Total)	9.03**
CLS - CMT (Experimental - Control)	Analysis	5.09*
CLS -CMT (Experimental - Control)	Synthesis	4.55*

** $P < 0.01$, * $P < 0.05$
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

In all of these comparisons as ***high mean Achievement scores*** were associated with the ***Experimental group,*** taught through Cooperative Learning Strategy, revealed the effectiveness of Cooperative Learning Strategy over Conventional lecture Method.

5.2.3.2. Effectiveness of Instructional Strategies on Achievement - Verbal Intelligence Controlled

The Two-way Factorial ANCOVA yielded significant F-values for Instructional Strategies on Achievement (Objectivewise and Total score) except the Objective Knowledge, when ***Verbal Intelligence*** as Covariate was controlled singly. The significant F-values obtained in the Covariance Analysis are presented in the decreasing order of magnitude as follows.

Dependent Variable	F- value
Comprehension	27.17**
Evaluation	22.38**
Achievement (Total)	22.14**
Analysis	10.30**
Synthesis	8.44**
Application	5.43*

**P<0.01 *P<0.05

The F-value for the Objective Knowledge only was not found statistically significant.

Results of the Scheffe' Test to compare the mean Achievement scores of Experimental and Control groups indicated significant difference between the ***Experimental*** and ***Control groups***. The significant F-values are presented in the descending order.

Groups Compared	Dependent Variable	F-value
CLS - CMT (Experimental - Control)	Comprehension	28.25**
CLS -CMT (Experimental - Control)	Evaluation	23.45**
CLS -CMT (Experimental -Control)	Achievement (Total)	23.06**
CLS - CMT (Experimental - Control)	Analysis	10.74**
CLS -CMT (Experimental - Control)	Synthesis	8.33**
CLS - CMT (Experimental - Control)	Application	5.81*

** P< 0.01 * P< 0.05
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching.

From the result of the Scheffe' Test, it is evident that Cooperative Learning Strategy shows ***superiority*** over the Conventional lecture Method of Teaching in all comparisons as the higher mean Achievement scores were associated with the ***Experimental group.***

5.2.3.3. Effectiveness of Instructional Strategies on Achievement - Non - verbal Intelligence Controlled

When Non-verbal Intelligence was controlled separately, significant F-values were obtained for Instructional Strategies on Achievement (Objectivewise and Total score). Significant F-values yielded are arranged in the decreasing order as follows.

Dependent Variable	F- value
Comprehension	33.28**
Achievement (Total)	29.47**
Evaluation	24.60**
Analysis	13.98**
Application	9.00**
Knowledge	8.67**
Synthesis	8.45**

**P<0.01

Significant difference in the adjusted criterion means of the ***Experimental*** and Control groups was obtained when group difference was studied using Scheffe' Test of Post-hoc Comparison. The obtained F-values are arranged in descending order and presented as follows.

Groups Compared	Dependent Variable	F-Value
CLS-CMT (Experimental-Control)	Comprehension	38.28**
CLS-CMT (Experimental-Control)	Achievement (Total)	33.83**
CLS-CMT (Experimental-Control)	Evaluation	28.42**
CLS-CMT (Experimental-Control)	Analysis	15.95**
CLS-CMT (Experimental-Control)	Application	11.00**
CLS-CMT (Experimental-Control)	Knowledge	9.86**
CLS-CMT (Experimental-Control)	Synthesis	9.66**

** P < 0.01 * P < 0.05

CLS - Cooperative Learning Strategy

CMT - Conventional lecture Method of Teaching.

Experimental group in which Cooperative Learning Strategy was applied, seen to excel the Control group where Conventional lecture Method of Teaching was used. As higher mean Achievement scores were found with the Experimental group, which is found advantageous over the Control group.

5.2.3.4. Effectiveness of Instructional Strategies on Achievement-Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence Controlled in Combination of the Three at a Time

Instructional Strategies showed significant F-values on Achievement-Total and for the Objectives Comprehension, Analysis and Evaluation, when the three Covariates were controlled in combination. The F-values are arranged in the decreasing order of magnitude and presented.

Dependent Variable	F- value
Comprehension	14.89**
Achievement (Total)	10.69**
Evaluation	8.53**
Analysis	5.01*

** Significant at 0.01 level
* Significant at 0.05 level

No significant F-values were found for the objectives Knowledge Application and Synthesis.

In all the comparisons between the relevant adjusted means of the Experimental and Control groups, Scheffe' Test of Post-hoc Comparison

yielded significant F-values. Significant F-values obtained are arranged in the descending order and presented in the break up.

Groups Compared	Dependent Variable	F-value
CLS - CMT (Experimental - Control)	Comprehension	22.69**
CLS -CMT (Experimental - Control)	Achievement (Total)	15.42**
CLS -CMT (Experimental -Control)	Evaluation	12.96**
CLS - CMT (Experimental - Control)	Analysis	7.25**

** $p<0.01$
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching.

In all of these comparisons, the ***Experimental group*** taught through ***Cooperative Learning Strategy showed higher mean Achievement than the Control group to which Conventional lecture Method was adhered to.*** It is an indication of the ***effectiveness of Cooperative Learning Strategy*** (CLS) over Conventional lecture Method of Teaching (CMT).

5.2.4. RESULTS OF THE COVARIANCE ANALYSIS FOR RETENTION

Results of the Two-way Factorial ANCOVA employed to study the effectiveness of Cooperative Learning Strategy over Conventional lecture Method of Teaching with regard to Retention in Social Science (Objective wise and Total score) after controlling the Covariates are briefly dealt with in this section of the report.

5.2.4.1. Effectiveness of Instructional Strategies on Retention - Previous Knowledge Controlled

When the effect of Previous Knowledge was controlled singly, the result of the ANCOVA revealed ***significant F-values*** for Instructional Strategies on Retention for the Objective Evaluation. The obtained F-value is presented as follows.

Dependent Variable	F-Value
Evaluation	6.06*

* P <0.05

At the same time, no significant F- values were obtained for Instructional Strategies on Retention (Objectivewise and Total score) except the Objective Evaluation.

Using the Scheffe' Test of Post-hoc Comparison, the relevant adjusted mean scores were compared and significant F-value was obtained. The F-value on Retention in the Objective Evaluation is presented as follows.

Groups Compared	Dependent Variable	F-value
CLS - CMT (Experimental - Control)	Evaluation	7.66**

** P< 0.01
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

Scheffe' Test indicates that the ***Experimental group (Cooperative Learning Strategy) is superior to the Control group (Conventional lecture***

Method of Teaching) as the higher mean Retention scores are associated with the Experimental group.

5.2.4.2. Effectiveness of Instructional Strategies on Retention - Verbal Intelligence Controlled

When Verbal Intelligence of the sample was controlled, results of the Covariance Analysis yielded significant F-values for Instructional Strategies on Retention - Total score and Objectives like Comprehension, Application Analysis and Evaluation. The significant F-values obtained are presented in the descending order as follows.

Dependent Variable	F- value
Evaluation	13.42**
Retention (total)	10.02**
Application	7.45
Analysis	5.34*
Comprehension	4.70*

** Significant at 0.01 level
* Significant at 0.05 level

The F-values obtained for Knowledge and Synthesis are ***not found significant.***

In all the post-hoc comparisons between the relevant adjusted criterion means of the Experimental and Control groups, ***significant difference*** was found. F-ratios obtained in the Scheffe' Test is arranged and presented in the decreasing order of magnitude.

Groups Compared	Dependent Variable	F-value
CLS - CMT (Experimental - Control)	Evaluation	14.08**
CLS -CMT (Experimental - Control)	Retention (Total)	10.43**
CLS -CMT (Experimental -Control)	Application	8.00**
CLS - CMT (Experimental - Control)	Analysis	5.66*
CLS - CMT (Experimental - Control)	Comprehension	5.05*

** P < 0.01 * P< 0.05
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching.

Advantageous nature of the ***Experimental group,*** in which Cooperative Learning Strategy was resorted, over the Control group, in which Conventional lecture Method of Teaching is followed, was revealed from the higher mean Retention scores attached with the ***Experimental group.***

5.2.4.3. Effectiveness of Instructional Strategies on Retention - Non - verbal Intelligence Controlled

Covariance Analysis by controlling the effect of Non-verbal Intelligence of the subjects, obtained significant F-values for Instructional Strategies on Total and Objectivewise Retention except the Objective Synthesis. The significant F-values revealed from the Two-way ANCOVA are arranged in the decreasing order of magnitude as follows.

Dependent Variable	F- value
Evaluation	18.42**
Retention (Total)	13.71**
Application	9.23**
Analysis	8.06**
Comprehension	6.74*
Knowledge	5.35*

** Significant at 0.01 level
* Significant at 0.05 level

No significant F-value is noted for Instructional Strategies on Retention in the Objective Synthesis.

Statistically significant difference between the relevant adjusted criterion means of ***Experimental*** and ***Control group*** is revealed from the results of the Scheffe' Test of Post-hoc Comparison. The obtained F-values are presented in the descending order.

Groups Compared	Dependent Variable	F-value
CLS - CMT (Experimental - Control)	Evaluation	21.76**
CLS -CMT (Experimental - Control)	Retention (Total)	15.74**
CLS -CMT (Experimental -Control)	Application	11.50**
CLS - CMT (Experimental - Control)	Analysis	9.66**
CLS - CMT (Experimental - Control)	Comprehension	7.76**
CLS - CMT (Experimental - Control)	Knowledge	6.00*

** P< 0.01 * P < 0.05
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

In all these comparisons, higher mean Retention Score is seen to attach with the ***Experimental group*** (CLS). Scheffe' Test confirmed that, due to the higher mean Retention scores attached with the Experimental group, ***Cooperative Learning Strategy is effective than Conventional lecture Method of Teaching*** with regard to Retention.

5.2.4.4. Effectiveness of Instructional Strategies on Retention - Previous Knowledge, Verbal Intelligence and Non-verbal Intelligence Controlled in Combination

Two-way Factorial ANCOVA yielded significant F-values for Instructional Strategies on Retention for the Objective Evaluation only, after the combined effect of the three Covariates were controlled at a time. The F-value obtained for Retention (Evaluation) is presented as follows.

Dependent Variable	F- value
Evaluation	8.18**

** Significant at 0.01 level

From the Covariance Analysis, Retention-Total and in the Objectives Knowledge, Comprehension, Application, Analysis and Synthesis are not found ***significant***.

When the mean Retention score in Evaluation of the Experimental and Control groups were compared after ANCOVA, significant F-value was obtained in the Scheffe' Test. The obtained F-value is presented as follows.

Groups Compared	Dependent Variable	F-value
CLS - CMT (Experimental - Control)	Evaluation	11.87**

** Significant at 0.01 level
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

Superiority of the Experimental group (taught through Cooperative Learning Strategy) over the Control group (taught through Conventional lecture Method of Teaching in Retention is evident from the high mean Retention score attached with them.

5.2.5. RESULTS OF THE ANALYSIS OF VARIANCE FOR ACHIEVEMENT

In the present study, Two-Factor ANOVA was utilized to examine whether any change in the levels of the Independent Variables (Instructional Strategies and Achievement Motivation) create variation in Achievement (Objectivewise and Total score) or not. Results of ANOVA have been interpreted with regard to the main and interaction effects of the Independent Variables.

Scheffe' Test of Post-hoc Comparison was used as a follow-up analysis, wherever the Independent Variables have significant main effect on Achievement. Scheffe' Test was employed to determine the group, which caused the group difference in terms of the Dependent Variable. Results of the Analysis of Variance for Achievement for the Total sample, Boys and Girls are presented briefly in the following sub sections.

5.2.5.1. ANOVA for Achievement by Instructional Strategies by Achievement Motivation for Total sample

Results of 7 ANOVA undertaken to investigate the main and interaction effects of Instructional Strategies and Achievement Motivation on Achievement (Objectivewise and Total score) on Achievement in Social Science of the Total sample are discussed briefly in this part.

Main Effect of Instructional Strategies on Achievement

Significant F-values were obtained for the main effect of Instructional Strategies on Achievement (Objectivewise and Total score) except the Objectives, Knowledge and Application for the Total sample. The significant F-values are presented in the descending order as follows.

Dependent Variable	F- value
Comprehension	23.90**
Evaluation	16.72**
Achievement (Total)	15.74**
Analysis	9.50**
Synthesis	7.60**

** Significant at 0.01 level

For the Objectives Knowledge and Application, F-values were not found significant.

Main Effect of Achievement Motivation on Achievement

Only one significant F-value is obtained for the main effect of Achievement Motivation on Achievement, for the Objective Comprehension for Total sample. The obtained F-value is 7.187.

Interaction Effect of Instructional Strategies and Achievement Motivation on Achievement

Interaction effect of Instructional Strategies and Achievement Motivation on Achievement (Objectivewise and Total score) is ***not found significant*** for Total Sample.

Comparison of Achievement Based on Two Groups of Instructional Strategies

Scheffe' Test of Post-hoc Comparison was employed to compare the mean Achievement scores of two groups based on Instructional Strategies (Cooperative Learning Strategy - CLS and Conventional lecture Method of Teaching - CMT). In all the comparisons of mean Achievement scores, for Total Sample, significant difference is noticed. The obtained F-values are arranged and presented in the decreasing order of magnitude as follows:

Dependent Variable	Groups Compared	F-value
Comprehension	CLS - CMT (Experimental - Control)	30.67**
Achievement (Total)		19.00**
Evaluation		18.24**
Analysis		10.55**
Synthesis		7.36**

** Significant at 0.01 level.

From the result of Scheffe' test, the ***Experimental group (in which CLS was used) is found superior*** to the Control group (in which CMT was used), as high mean Achievement score was seen to associate with the Experimental group.

Comparison of Achievement Based on Two Groups of Achievement Motivation

Significant difference in the mean Achievement score of the Total sample was noticed, when Scheffe' Test of Post-hoc Comparison was employed after ANOVA to know the group difference based on two levels of Achievement Motivation. The obtained F-value is 13.89.

Comparison of the Achievement, based on two groups of Achievement Motivation revealed that Above Average Achievement Motivation (AAAM) group was found advantageous over Below Average Achievement Motivation (BAAM), as high mean Achievement score was seen to associate with the former group.

5.2.5.2. ANOVA for Achievement by Instructional Strategies by Achievement Motivation for Boys

The main and interaction effects of Instructional Strategies and Achievement Motivation (Objectivewise and Total score) was studied using seven ANOVA. The results of the ANOVA are discussed in the following subsections.

Main Effect of Instructional Strategies

Significant F-values were obtained for the main effect of Instructional Strategies on Achievement for Boys (Objectivewise and Total score). The F-values obtained for seven ANOVA are presented in the descending order as follows.

Dependent Variables	F-value
Comprehension	22.43**
Achievement (Total)	18.82**
Analysis	13.58**
Evaluation	9.10**
Synthesis	8.13**
Knowledge	6.29*
Application	5.49*

** Significant at 0.01 level.
* Significant at 0.05 level.

Main Effect of Achievement Motivation on Achievement

The F-values obtained for the main effect of Achievement Motivation on Achievement (Objectivewise and Total score) of Boys were ***not found significant***.

Interaction Effect of Instructional Strategies and Achievement Motivation on Achievement

For the interaction effect of Independent Variables on Achievement (Objectivewise and Total score) only one of the F-values were found significant for Boys (for the Objective Knowledge). The significant F-value is 5.005.

Comparison of Achievement Based on Two Groups of Instructional Strategies

All of the F-values obtained in the Scheffe' Test of Post-hoc Comparison were found significant for Boys. The results revealed the ***significant difference*** exists in the mean Achievement scores between the Boys in the ***Experimental*** and ***Control groups***. The obtained F-values are arranged in the decreasing order of magnitude as follows:

Dependent Variable	Groups Compared	F-value
Comprehension	CLS – CMT (Experimental- Control)	27.04**
Achievement (Total)		20.53**
Analysis		12.66**
Evaluation		9.86**
Synthesis		7.50**
Knowledge		7.38**
Application		5.71*

** Significant at 0.01 level.
* Significant at 0.05 level.

The CLS group is found advantageous over the CMT group, as revealed by the high mean Achievement scores held by them.

Comparison of the Achievement based on two levels of Achievement Motivation was not resorted, because ***no significant F-value was obtained*** for the main effect of Achievement Motivation for Boys.

5.2.5.3. ANOVA for Achievement by Instructional Strategies by Achievement Motivation for Girls

Seven ANOVA were done to investigate the main and interaction effects of Instructional Strategies and Achievement Motivation on Achievement (Objectivewise and Total score) for Girls. The result of seven ANOVA are described in this subsection.

Main Effect of Instructional Strategies on Achievement

For the main effect of Instructional Strategies on Achievement (for the Objectives, Comprehension and Evaluation) of Girls, significant F-values were obtained. The F-values are presented in the descending order.

Dependent Variable	F-value
Evaluation	7.93**
Comprehension	6.11*

** Significant at 0.01 level.
* Significant at 0.05 level.

On Total and Objectivewise Achievement in Knowledge, Application, Analysis and Synthesis, the main effect of Instructional Strategies were ***not found significant.***

Main Effect of Achievement Motivation

For the main effect of Achievement Motivation on Achievement (Objectivewise and Total score) of Girls, ***no significant*** F-values were obtained.

Interaction Effect of Instructional Strategies and Achievement Motivation

No significant F-value for the interaction effect of Independent Variables on Achievement (Objectivewise and Total score) for Girls were noticed.

Comparison of Achievement Based on Two Groups of Instructional Strategies

Significant difference in the mean Achievement scores of Girls was observed in all comparisons, when Scheffe' Test of Post-hoc Comparison was employed after ANOVA to know the group difference based on two groups of Instructional Strategies. The obtained F-values are arranged in the descending order and presented.

Dependent Variable	Groups Compared	F-value
Comprehension	CLS - CMT (Experimental Control)	8.19**
Evaluation		7.90**

** Significant at 0.01 level.
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

In all of these comparisons, higher mean Achievement scores were associated with the ***CLS group*** and thus they ***are found superior*** over the CMT group.

Comparison of the Achievement based on two groups of Achievement Motivation (AAAM and BAAM) were not done, since ***no***

significant F-values were found for the main effect of Achievement Motivation on Achievement of Girls.

5.2.6. RESULTS OF THE ANALYSIS OF VARIANCE FOR RETENTION

Two-Factor ANOVA was further utilized to study whether variation in Retention (Objectivewise and Total score) was attributable or not to the variation in the levels of Independent Variables (Instructional Strategies and Achievement Motivation).

Scheffe' Test of Post-hoc Comparison was used wherever necessary, to determine which one of the two levels of the Independent Variable (Cooperative Learning Strategy - CLS and Conventional lecture Method of Teaching - CMT and Above Average Achievement Motivation - AAAM and Below Average Achievement Motivation - BAAM) created variation on Retention. The main and interaction effects of Instructional Strategies and Achievement Motivation on Retention (Objectivewise and Total score) for Total sample, Boys and Girls are discussed briefly in this section.

5.2.6.1. ANOVA for Retention by Instructional Strategies by Achievement Motivation for Total sample

Seven ANOVA were employed to investigate the main and interaction effects of Instructional Strategies and Achievement Motivation on Retention (Objectivewise and Total score) of the Total sample. Results of the ANOVA are briefly discussed.

Main Effect of Instructional Strategies on Retention

Significant main effect of Instructional Strategies on Retention - Total score and for the Objectives Application, Analysis and Evaluation were

found. The significant F-values obtained are presented in the decreasing order of magnitude.

Dependent Variable	F-value
Evaluation	11.58**
Retention (Total)	5.97*
Analysis	4.21*
Application	4.12*

* Significant at 0.05 level.
** Significant at 0.01 level.

The F-values for the Objectives Knowledge, Comprehension and Synthesis were ***not found significant.***

Main effect of Achievement Motivation on Retention

No significant F-value for the main effect of Achievement Motivation on Retention (Objectivewise and Total score) was obtained.

Interaction effect of Instructional Strategies and Achievement Motivation on Retention

Significant interaction effect of Independent Variables on Retention (Objectivewise and Total score) ***were not obtained*** for the Total sample.

Comparison of Retention Based on Two Groups of Instructional Strategies

Results of the Scheffe' Test of Post-hoc Comparison revealed ***significant difference*** in the mean Retention scores based on two levels of Instructional Strategies for Total sample. The F-values obtained in the Scheffe' Test are arranged in the decreasing order of magnitude as follows.

Dependent Variable	Groups Compared	F-value
Evaluation	CLS - CMT (Experimental - Control)	25.00**
Retention (Total)		7.82**
Application		5.44*
Analysis		5.33*

* Significant at 0.05 level.
** Significant at 0.01 level.
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

In all these comparisons, Cooperative Learning Strategy was found ***Superior*** over the Conventional lecture Method of Teaching in terms of Retention, as evident from the higher mean Retention score associated with them.

None of the F-values for the main effect of Achievement Motivation on Retention (Objectivewise and Total score) was significant. Hence comparison of the Retention scores based on two levels of Achievement Motivation was discarded.

5.2.6.2. ANOVA for Retention by Instructional Strategies by Achievement Motivation for Boys

Seven ANOVA were employed to study the main and interaction effects of Instructional Strategies and Achievement Motivation on Retention (Objectivewise and Total score) for Boys. Results of the ANOVA are briefly discussed in the following sub-sections.

Main Effect of Instructional Strategies on Retention

For the main effect of Instructional Strategies on Retention (Objectivewise and Total score) except the Objective Synthesis for Boys, ***significant F-values*** were obtained. The significant F-values are presented in the descending order.

Dependent Variable	F-value
Retention (Total)	13.60**
Comprehension	10.14**
Evaluation	8.50**
Application	6.19*
Analysis	5.69*
Knowledge	5.51*

* Significant at 0.05 level

** Significant at 0.01 level

Significant F-values were ***not obtained*** for the Objective Synthesis.

Main Effect of Achievement Motivation on Retention

No significant main effect of Achievement Motivation on Retention (Objectivewise and Total score) was obtained.

Interaction Effect of Instructional Strategies and Achievement Motivation on Retention

Significant interaction effect was ***not found*** in any ANOVA for Boys.

Comparison of Retention Based on Two Groups of Instructional Strategies

All the post-hoc comparisons employed, yielded ***significant difference*** in the mean Retention score of the ***Experimental*** and ***Control groups*** for Boys. The F-values obtained are arranged in the descending order as follows.

Dependent Variable	Groups Compared	F-value
Retention (Total)	CLS - CMT (Experimental- Control)	14.49**
Comprehension		10.68**
Evaluation		7.40**
Analysis		7.20**
Application		6.38*
Knowledge		4.96*

* Significant at 0.05 level.
** Significant at 0.01 level.
CLS - Cooperative Learning Strategy
CMT - Conventional lecture Method of Teaching

Cooperative Learning Strategy group was found to have higher mean Retention scores in all of the Scheffe' Tests.

Achievement Motivation has ***no significant F-value*** for it's main effect on Retention (Objectivewise and Total score). Thus, comparison between the two levels of Achievement Motivation was not resorted to.

5.2.6.3. ANOVA for Retention by Instructional Strategies by Achievement Motivation for Girls

The results of seven ANOVA employed to study the main and interaction effects of Instructional Strategies and Achievement Motivation

on Retention (Objectivewise and Total score) for Girls is presented in this subsection of the analysis.

Main Effect of Instructional Strategies

No significant F-value is obtained for the main effect of Instructional Strategies on Retention (Objectivewise and Total score).

Main Effect of Achievement Motivation

For the main effect of Achievement Motivation on Retention in Social Science (Objectivewise and Total score) ***none of the F-values*** were found significant for Girls.

Interaction Effect of Instructional Strategies and Achievement Motivation on Retention

No significant F-values were found for the interaction effect of Independent Variables on Retention (Objectivewise and Total score) of Girls.

Since the Instructional Strategies and Achievement Motivation has no significant F-values for the main effect on Retention (Objectivewise and Total score) comparison between the two levels of Instructional Strategies (CLS and CMT) and two levels of Achievement Motivation (AAAM and BAAM) were not performed.

5.3. TENABILITY OF HYPOTHESES

In this section, the tenability of the hypotheses set for the present experimental study are examined in the light of the major findings of the study.

5.3.1. The first hypothesis states that ***there will be no significant difference in the mean Achievement scores (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls***

Significant difference was found in the mean Achievement scores; Total and Objectivewise except the Objective Knowledge for the Total sample, Achievement – Total and Objectivewise for Boys and Achievement in the Objectives Comprehension and Evaluation for Girls, between the Experimental and Control groups. Thus ***six*** out of ***seven*** comparisons done for the Total sample, ***seven*** out of ***seven*** for Boys and ***two*** out of ***seven*** for Girls (Altogether ***15*** out of ***21*** comparisons) yielded ***significant difference*** in the mean Achievement scores between the Experimental and Control groups. Thus the first hypothesis is ***rejected.***

5.3.2. The second hypothesis states that ***there will be no significant difference in the mean Gain score of the Experimental and Control groups for the Total sample, Boys and Girls***

Significant difference in the mean Gain score is obtained between the Experimental and Control groups for the Total sample and Boys. Thus, the second hypothesis is ***rejected.***

5.3.3. The third hypothesis states that ***there will be no significant difference in the mean Retention score (Objectivewise and Total score) of the Experimental and Control groups for the Total sample, Boys and Girls***

Significant difference in the mean Retention scores; Total and Objectivewise namely Comprehension, Application, Analysis and

Evaluation for Total sample, Retention- Total and Objectivewise except the Objective Synthesis for Boys, Retention in the Objective Evaluation for Girls was obtained between the Experimental and Control groups. In short, ***five*** out of ***seven*** comparisons for the Total sample, ***six*** out of ***seven*** comparisons for Boys and ***one*** out of ***seven*** for Girls (Totally ***12*** out of ***21*** comparisons) yielded ***significant difference*** in the mean Retention score of the Experimental and Control groups. Hence, the third hypothesis is ***rejected.***

5.3.4. The fourth hypothesis states that ***pupils taught through Cooperative Learning Strategy will not differ significantly from pupils taught through Conventional lecture Method of Teaching in terms of Achievement in Social Science of standard VII pupils***

To test this hypothesis, 28 ANCOVA followed by Scheffe' Test of Post-hoc Comparison were employed. ***Significant difference*** in Achievement (Relevant Objectives and Total score) between the Experimental and Control groups was found in 23 out of 28 ANCOVA done. In all of the post-hoc comparisons, significant difference in the adjusted criterion means of the two groups ***in favour of the Experimental group*** was revealed. In these comparisons, higher mean Achievement scores were associated with the ***Experimental group*** to which Cooperative Learning Strategy was implemented. Cooperative Learning Strategy proved it's advantage over the Conventional lecture Method of Teaching in case of Achievement. Thus the fourth hypothesis is ***rejected.***

5.3.5. The fifth hypothesis states that ***pupils taught through Cooperative Learning Strategy will not differ significantly from pupils taught through Conventional lecture Method of Teaching in terms of Retention in Social Science of Standard VII pupils***

Significant difference in Retention (Relevant Objectives and Total score) of the Experimental and Control groups was obtained in ***13*** out of ***28*** ANCOVA undertaken for Total sample. In addition, the Scheffe' Test of Post-hoc Comparison done after ANCOVA also confirmed ***significant difference in the adjusted criterion means.*** In all Scheffe' Tests, higher mean Retention scores were associated with the ***Experimental group*** compared with the Control group to which Conventional lecture Method of Teaching was implemented. Thus the advantageous nature of the ***Cooperative Learning Strategy*** over the Conventional lecture Method of Teaching with respect to Retention became evident. Thus the fifth hypothesis is ***rejected.***

5.3.6. The sixth hypothesis states that ***there will be no significant main effects of the Independent Variables (Instructional Strategies and Achievement Motivation) on Achievement in Social Science (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls***

Significant main effect of Instructional Strategies on Achievement was found in ***five*** out of ***seven*** ANOVA undertaken for the Total sample (Achievement – Total and Objectivewise namely Comprehension, Analysis, Synthesis and Evaluation). ***Seven*** out of ***seven*** ANOVA done for Boys showed significant main effect (Achievement – Total and Objectivewise).

For Girls, *two* out of *seven* ANOVA showed significant main effect (Achievement in the Objectives Comprehension and Evaluation). In short, *14* out of *21* ANOVA employed showed ***significant main effect of Instructional Strategies on Achievement.*** For the main effect of Achievement Motivation on Achievement (Objectivewise and Total score), only *one* out of *21* ANOVA yielded significant main effect (for the Objective Comprehension) for Total sample. Hence the sixth, hypothesis is partially *rejected.*

5.3.7. The seventh hypothesis states that ***there will be no significant interaction effect of the Independent Variables (Instructional Strategies and Achievement Motivation) on Achievement in Social Science (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls***

Significant interaction effect of Instructional Strategies and Achievement Motivation on Achievement (Objectivewise namely Knowledge) for Boys is obtained only in *one* out of *21* ANOVA employed. Thus the seventh hypothesis is *accepted.*

5.3.8. The eighth hypothesis states that ***there will be no significant main effects of the Independent Variables (Instructional Strategies and Achievement Motivation) on Retention in Social Science (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls***

Significant main effect of Instructional Strategies on Retention (Total and Objectivewise namely Application, Analysis and Evaluation) for Total sample and Retention - Total and in the Objective Synthesis for Boys was

yielded in ***10*** out of ***21*** ANOVA undertaken (***four*** out of ***seven*** ANOVA in the Total sample and ***six*** out of ***seven*** ANOVA for Boys). But in none of the ***seven*** ANOVA undertaken for Girls found significant for the main effect.

For the main effect of Achievement Motivation on Retention (Objectivewise and Total score) ***none*** of the ANOVA out of ***21*** (seven each for the Total sample, Boys and Girls) yielded significant main effect for the Total sample, Boys and Girls. Thus the eighth hypothesis is ***partially accepted.***

5.3.9. The ninth hypothesis was that ***there will be no significant interaction effect of the Independent Variables (Instructional Strategies and Achievement Motivation) on Retention in Social Science (Objectivewise and Total score) of standard VII pupils for the Total sample, Boys and Girls***

No significant F-value is obtained in ***21*** ANOVA undertaken for Total sample, Boys and Girls (seven each) to study the interaction effect of Instructional Strategies and Achievement Motivation on Retention (Objectivewise and Total score). Hence the ninth hypothesis is fully ***accepted.***

5.4. EDUCATIONAL IMPLICATIONS DERIVED

The intention behind the present investigation was to study the ***effectiveness of Cooperative Learning Strategy*** (Learning Together Model) over Conventional lecture Method of Teaching on ***Achievement*** and ***Retention*** in Social Science of standard VII pupils. The scope of the study also included the ***main*** and ***interaction effects of Instructional Strategies***

and ***Achievement Motivation*** on ***Achievement*** and ***Retention*** in Social Science. Based on the findings of the study, some practical measures are suggested which may be helpful to improve the existing system of education in the primary schools.

Learning Together - A way for Higher Achievement and Retention

As a result of the experiment, it is found that ***Cooperative Learning Strategy (Learning Together model)*** is more effective when compared to the Conventional lecture Method of Teaching in enhancing the Academic Achievement and Retention of the students. This shows that when Cooperative Learning Strategy is applied in the classroom, students get ***ample opportunities*** or exposure to activate their inner potentialities. Since the students were provided with natural opportunities of learning they can make use of their interaction for assessing themselves.

In the Conventional ***whole class system*** the students were ***passive listeners*** and they were condemned to be an ***empty pail*** to be filled in by the teacher. But in the Cooperative Learning situation pupils are very ***active*** in the learning process and the teacher, a passive learning ***facilitator*** or a ***setter*** of the stage. Again, in Cooperative Learning approach, pupils learn through small Cooperative groups in which each member is accountable for the successful completion of the task and through the Cooperative spirit, unknowingly each student get a say in the learning process.

Higher Interaction

Cooperative Learning uses small group interactions. The higher the interaction between the group, among the group and between the teacher

and the pupils the more the development. Higher level classroom interaction (Inter group, Intra-group and Teacher-pupil) was seen in the Cooperative classes when compared with ***competition oriented*** Conventional classroom. Teacher-pupil interaction is maximum in Cooperative Learning Strategy, as the teacher divides the tasks among different groups. Teacher can help the group which is very much in need of his help and the teacher gets a chance to spot the weakest in the group. It will in turn facilitate an increased interaction between such students and the teacher. But in the Conventional classroom system teacher gets no chance to interact with such pupils as it creates disturbances to majority in the class.

Nurturing Effects

Cooperative Learning caters to the ***psychological, social, emotional*** and ***intellectual*** development of the learners than the Conventional classroom system. Through Cooperative Learning Strategy; social skills such as mutual respect, democratic thinking, helping mentality, tolerance, leadership quality, conflict resolution etc. are acquired with Academic excellence. Thus the classroom is converted into a miniature society in which the classroom activities are quiet social and natural to the learners. So in a multi society like India where students of various communities, religions and Socio-Economic background exists, Cooperative Learning will be very much effective in ***materialising the democratic and national objectives of education.*** In Cooperative Classroom, class management becomes easy as the students themselves are actively involved in the learning tasks. They learn self discipline and work Cooperatively for the

successful completion of the assigned task. Thus the teacher's headache connected with the students' discipline is minimised to a greater extent due to the sharing of responsibilities.

Re-design the Curriculum

The currently used syllabus and text books gives no room to make use of Cooperative Learning Strategy in the classroom. Hence, text books should be ***modified and designed*** in such a way as to employ Cooperative Learning methods in large measures in the classroom. In Cooperative classroom no additional set up is needed because the seating arrangement is very flexible and the time duration is as same in the usual classroom situation. The same furniture and other apparatus in the classroom can be made use for this purpose. This type of seating arrangement will make the classroom more spacious for the teacher to interact with the groups and individual learner and for the learners to mingle each other.

Training for Teacher Educators

Cooperative Learning Strategies may be incorporated in the existing curriculum and syllabus of the Pre-Primary Teachers Training Course (PPTTC), Teachers Training Course (TTC), Bachelor of Education (B.Ed.), Master of Education (M.Ed.) etc. Teacher trainees and teacher educators must be trained in such a way to make them familiar with the Cooperative Learning Strategies in the classroom. Moreover, the working teachers are to be made aware of the procedures used in the Cooperative Learning classroom. They may be given special training or in service courses for employing Cooperative Learning methods in the classroom.

Teacher Commitment Needs

Without much effort, Cooperative Learning Strategies can be applied in the present classroom system, if the teacher knows the Cooperative Learning methods well and select suitable topics amenable to the same. Of course it will reduce the monotony of the Conventional classroom for the teacher and the taught as well. Thus it can be suggested that the existing classroom situation may be changed in order to facilitate the implementation of Cooperative Learning Strategies and thereby ensuring high academic performance.

The present study also proved that Achievement Motivation of pupils have a considerable effect on Academic Achievement. But in most cases, the graphical representations revealed that students with Above Average Achievement Motivation (AAAM)and Below Average Achievement Motivation (BAAM) achieved more from Cooperative Learning Strategy. So it is suggested that the Achievement Motivation of the students also can be considered for the higher Academic Achievement.

5.5. SUGGESTIONS FOR FURTHER RESEARCH

Findings of the present study made the investigator to suggest the following areas where further researches are needed.

1. Replication of the study using more classes in different schools and with sophisticated Experimental designs such as Multiple-Group Time Series Design, Post test Only Equivalent Groups Design, The Solomon Four-Group Design, Rotation Group, Nested Group etc.

2. The study can be extended to other disciplines like Language, Mathematics, Science, etc.

3. The study can be extended to investigate the effectiveness of Cooperative Learning Strategy in developing interpersonal relationship and leadership qualities.

4. The study can be extended to investigate the effectiveness of small group instructional methods over whole class methods between the Urban/Rural or educationally backward/forward districts of Kerala state.

5. Replication of the study to higher levels of education such as Secondary or Higher Secondary classes to examine the effectiveness of various Cooperative Learning procedures.

6. The study can be extended to compare the effects of Cooperative Learning Strategy in Primary and Secondary or Higher Secondary classes.

7. The study can be extended to investigate the effect of Instructional Strategies with other student specific variables like Study Habits, Learning Styles, Learning Strategies and Study Approaches on student Achievement.

8. Cooperative Learning Strategy with Affiliation Motivate as the Independent Variables can be used to study the relative effectiveness of the former on Students' Academic Achievement.

9. Investigation of the effectiveness of Cooperative Learning Strategy on Inter-group relations, Self esteem, Main streaming etc.

10. Other Cooperative Learning Strategies like Teams-Games-Tournaments (TGT), Student Teams Achievement Divisions (STAD), Group Investigation (GI), Team Assisted Individualisation (TAI), etc. can be experimented.

11. Cooperative Learning Strategy can be compared with more than one teaching methods.

12. More than the Cognitive outcomes, affective outcomes of Cooperative Learning Strategy can be studied.

13. Teacher effectiveness with Cooperative Learning can be studied.

14. Relative effectiveness of Cooperative Learning with strategies used in District Primary Education Programme (dPEP) class and Sarva Sikshak Abhiyan (SSA) classes can be studied.

15. The study can be extended to find out the relative effectiveness of Cooperative Learning Strategy in homogeneous classrooms.

BIBLIOGRAPHY

BIBLIOGRAPHY

Abu, R.B. & Flowers, J. (1997). The effect of cooperative learning methods on achievement, retention and attitudes of home economic students in north Carolina. ***Journal of Vocational and Technical Education, 13,*** 16-22.

Abouserie, R. (1995). Self esteem and achievement motivation as determinants of students' approaches to studying. ***Studies in Higher Education, 20,*** 19-26.

Acordino, D.B., Acordino, M.P. & Stanely, R.B. (2000). An investigation of perfectionism, mental health, achievement and achievement motivation in adolescents. ***Psychology in the Schools, 37,*** 535-45.

Ahluwalia, I. (1985). ***A study of factors affecting achievement motivation.*** Unpublished doctoral dissertation, Agra University.

Anderman, E.M. (1996, August). ***Classroom influence on the value of reading.*** Paper presented at the annual meeting of the American Educational Research Association, New York.

Anderson, P.N. (2000, April). ***Cost perceptions and the expectancy value model of achievement motivation.*** Paper presented at the annual meeting of the American Educational Research Association, Illinois.

Andrews, J. (1991, August). ***Adolescent substance use and academic achievement and motivation.*** Paper presented at the annual convention of the American Psychological Association, Virginia, U.S.

Andrini, E. (1994). Models that promote cooperative learning. ***Classroom Compass, 1,*** 7-12.

Aronson, E. (1978). ***The jigsaw classroom.*** Beverly Hills, California: Sage.

Aronson, E., Blaney, N., Stephen, C., Sikes, J. & Snapp, M. (1978). ***The jigsaw classroom.*** Baverly Hills, Calif: Sage.

Atkinson, J.W. (1964). ***An introduction to motivation.*** New York: Van Nostrand Reinhold.

Atkinson, J.W. (1964). ***An introduction to motivation.*** Princeton, N.J.: Van Nostrand.

Atkinson, J.W. (1965). The main springs of achievement oriented activity. In J.D. Krumboltz (Ed.), ***Learning and the educational process.*** Skokie III.: Rand Mc Nally, 25-66.

Atkinson, J.W. & Feather, N. (1966). ***A theory of achievement motivation.*** New York: John Wiley.

Atkinson, J.W. & Birch, D.C. (1978). ***An introduction to motivation*** (2nd ed.). New York: D. Van Nostrnd.

Ayishabi, T.C. (1987). Examination anxiety and achievement motivation as predictors of secondary school biology achievement. ***Journal of Institute of Educational Research, 11,*** 22-25.

Bandura, A. & Walters, R.H. (1963). ***Social learning and personality development.*** New York: Holt, Rinehart and Winston.

Bany, M.A. & Johnson, L.V. (1975). ***Educational social psychology.*** New York: Macmillan.

Bartscher, M.A., Lawler, K.E., Ramirez, A.J. & Schinault, K.S. (2001). ***Improving students' writing ability through journal and creative writing exercises.*** Illinois. (ERIC Document Reproduction Service, No. ED 455525).

Bartz, D. & Mathews, G. (2001). Enhancing students' social and psychological development. ***Here's How, 19,*** 32-36.

Belcher, G. & Macari, N. (1999). ***Enhancing student motivation as evidenced by improved academic growth and increased work completion.*** Master's Action Research Project, Saint Xaviers University, Illinois, US.

Berry, J.M. & Michelle, D. (1999). ***Academic performance as a function of achievement motivation, achievement beliefs and affect states.*** Oakland. (ERIC Document Reproduction Service, No. ED 460723).

Billington, R. (1994). Effects of collaborative test taking on retention in eight third-grade mathematics classes. ***Elementary School Journal, 95,*** 23-31.

Bindhu, C.M. (1999). ***Interaction effect of select instructional learning strategies (Cooperative learning and peer teaching) and cognitive entry behaviour of standard VI pupils on achievement in malayalam language skills.*** Unpublished doctoral dissertation, University of Calicut, Calicut.

Birney, R.C., Burdick, H. & Teevan, R.C. (1969). ***Fear of failure.*** New York: Van Nostrand Reinhold.

Bloom, B.S. (1979). ***Taxonomy of educational objectives, Hand Book No.1 Cognitive domain.*** London: Longman Group Ltd.

Brauer, C., Grady, F., Mathews, K. & Wilhite, S. (1997). ***The effect of problem-solving on academic achievement in elementary education.*** Illinois. (ERIC Document Reproduction Service, No. ED 321167).

Brush (1996, April). ***Using an integrated learning system.*** Paper presented at the national convention of the Association for Educational Communication and Technology, Alabama.

Cain, K.M. & Dweck, C.S. (1995, January). The relation between motivational patterns and achievement cognition through the elementary school years. ***Merril Palmer Quarterly,*** pp.25-52.

Calderon, M. (1987, August). ***Cooperative learning.*** Paper presented in the inservice programme of Y selta Independent School District, Elpaso, Texas.

Carroll, L. & Leander, S. (2001). ***Improving student motivation through the use of active learning strategies.*** Illinois. (ERIC Document Reproduction Service, No. ED455961).

Cassidy, T. & Lynn, R. (1989). A multi-dimensional approach to achievement motivation: The development of a comprehensive measure. ***Journal of Occupational Psychology, 62,*** 301-312.

Cassidy, T. & Lynn, R. (1991). Achievement motivation and educational attainment cycles of disadvantage and social competence. ***The British Journal of Educational Psychology, 61,*** 5-11.

Cavallo, A.L. (1992, March). ***Students' meaningful learning orientation and their meaningful understanding of meiosis and genetics.*** Paper presented at the annual conference of the National Association for Research in Science Teaching, Boston, U.S.

Chi-mei, D.L. & Choi-man, C. (1997). Student achievement in an educational technology course as enhanced by cooperative learning. ***Journal of Science Education and Technology, 6,*** 337-43.

Christine, L. (1997, June). ***Cooperative learning in the thinking classroom: Research and theoretical prospectives.*** Paper presented at the International Conference on Thinking, Singapore.

Christison, M.A. (1990). Cooperative learning in the EFL classroom. ***English Teaching Forum, 28,*** 6-9.

Clifford, M.M. (1971). Motivational effects of competition and good-setting in reward and nonreward conditions. ***Journal of Experimental Education,*** 39, 65-76.

Cohen, E. (1986). ***Designing group work: Strategies for the heterogeneous classroom.*** New York: Teachers College Press.

Cohen, E. (1998). Complex instruction. ***New Horizons for Learning.*** Seattle, WA: U.S.A.

Cohen, L., Manion, L. & Morrison, K. (1996). ***A guide to teaching practice*** (4th ed.). New York: Routledge.

Copeland, T., Davis,K., Foley, B., Morley, B. & Nyman, K. (2001). ***Improving middle school students' academic success through motivational***

strategies. Illinois. (ERIC Document Reproduction Service, No. ED455463).

Dai, D.Y. (2000). To be or not to be (challenged), that is the question: Task and ego orientations among high-ability, high-achieving adolescents. ***Journal of Experimental Education, 68,*** 311-30.

Daniels, R. (1994). Motivational variables of cooperative learning. ***Psychological Reports, 74,*** 1011-1022.

Das, S.P.V. (1993). ***The relationship of social studies achievement with achievement motivation and socio-economic status of secondary school pupils.*** Unpublished master's dissertation, University of Calicut, Calicut.

David, B.M. (1990). Computer assisted instruction with small groups of mildly handicapped students. ***Journal of Special Education, 24,*** 51-68.

Deese, J. & Hulse, S.H. (1967). ***The psychology of learning*** (3rd ed.). Tokyo: McGraw-Hill Kogakusha Ltd.

Dekeyrel, A., Dernovish, J., Epperly, A. & McKay, V. (2000). ***Using motivational strategies to improve academic achievement of middle school students***. Illinois. (ERIC Document Reproduction Service, No. ED443550).

Deshpande, A.S. (1984). ***A study of the determinants of achievement of students at the SSC examinations in the Pune division of Maharashtra state.*** Unpublished doctoral dissertation, Pune University.

Deutch, M. (1962). Cooperation and trust: Some theoretical notes. In M.R. Jones (Ed.), ***Nebraska symposium on motivation.*** Lincoln, N.E.: University of Nebraska Press, 275-319.

Devries, D.L., Slavin, R.E., Fennessy, G.M., Edward, K.J. & Lombardo, M.M. (1980). ***Teams-Games-Tournament: The team learning approach.*** Englewood Cliffs, N.J.: Educational Technology Publications.

Dougherty, R.C. (1995). Cooperative learning and enhanced communication: Effects on student performance, retention and attitudes in general chemistry. ***Journal of Chemical Education, 72,*** 793-97.

Dougherty, R.C. (1997). Grade/study performance contracts, enhanced communication, cooperative learning and student performance in undergraduate organic chemistry. ***Journal of Chemical Education, 74,*** 722-26.

Duane, B. (1999). ***Improving academic achievement. What school counselors can do?*** ERIC Digest. U.S. (ERIC Document Reproduction Service, No. ED 435895).

Ebel, L. & Frisbie, A. (1991). ***Essentials of educational measurement.*** U.S.A.: Prentice-Hall Inc.

Eccels, P.J. (1983). Expectancies, values and academic behaviours. In J.T. Spence (Ed.), ***Achievement and achievement motives.*** San Francisco: W.H. Freeman.

Einspruch, E.L. (1998). ***An introductory guide to SPSS for Windows.*** California: Sage Publications.

Elinore, E.L. & Beverly, O. (1995). Using a cooperative classroom climate and experiential learning in teaching evaluation. ***Teaching Sociology, 23,*** 252-58.

Ellette, D.R. (1994). ***Improving academic achievement of eleventh grade basic U.S. history students through the use of cooperative learning.*** Illinois, Saint Xaviers University. (ERIC Document Reproduction Service, No. ED. 384538).

Farnish, A.M. (1998). Bilingual cooperative integrated reading and composition (BRICK). ***New Horizons for Learning,*** Seattle, WA: USA.

Fatmi, S.M.B. (1986). ***A study of achievement related motivation among tribal and non-tribal high school students.*** Unpublished doctoral dissertation, Magatha University.

Feather Stone, H. (Ed.). (1986, September). Cooperative learning. ***Harward Education Letter,*** pp.4-6.

Felder, R.M. (1995). A longitudinal study of engineering student performance and retention. IV. Instructional methods and student responses to them. ***Journal of Engineering Education, 84,*** 361-367.

Feldhusen, J.F., Dai, D.Y. & Clinkenbeard, P.R. (2000). Dimensions of competitive and cooperative learning among gifted learners. ***Journal for the Education of the Gifted, 23,*** 328-42.

Feldman, R.S. (1990). ***Understanding psychology*** (2nd ed.). New York: McGraw Hill Publishing Company.

Ferguson, E.D. (1976). ***Motivation: An experimental approach.*** New York: Hall, Rinehart and Winston.

Ferguson, G.A. (1971). ***Statistical analysis in psychology and education*** (3rd ed.). Tokyo: McGraw Hill.

Ferguson, G.A. & Takane, T. (1989). ***Statistical analysis in psychology and education*** (6th ed.). New York: McGraw-Hill Book Company.

Fiedler-Brand, E., Lange, R.E. & Winebrenner, S. (1992). ***Tracking, ability grouping, and the gifted.*** Pennsylvania. (ERIC Document Reproduction Service, No. ED 427466).

Fontaine, A.M. (1994). Achievement motivation and child rearing in different social contexts. ***European Journal of Psychology of Education,*** 9, 228-40.

Fraser, B.J. & Walberg, H.J. (1984). Cooperative learning environments. Review of Slavin's "Cooperative Learning" and Johnson, *et al*'s "Circle of Learning Cooperation in the Classroom." ***Contemporary Educational Review,*** 3, 253-260.

Fourts, J.T. (1995). ***Schools within a school: Evaluation results of year two of a restructing effort.*** Washington. (ERIC Document Reproduction Service, No. ED 385003).

Fox, J. (1984). ***Linear statistical models and related methods: With application to social research.*** New York: John Wiley & Sons.

Fuller, J.L. (2001). ***Effective strategies for creating change within the educational system: A three-cycle action research study.*** Massachusetts. (ERIC Document Reproduction Service, No. ED453597).

Gandara, P. (1995). ***Over the ivy walls: The educational mobility of low income chicanos. SUNY Series, Social context of Education.*** New York: State University of New York Press.

Gandhi, P. (1985). Academic achievement in relation to achievement motive, affiliation motive and power motive. ***Journal of Educational Psychology, 66.***

Garrett, H.E. (1981). ***Statistics in psychology and education.*** Bombay: Vakils, Feffer and Simons Ltd.

Geen, R.G. (1984). Human motivation: New perspectives on old problems. In A.M. Rogers & C.J. Scheirer (Eds.). ***The G. Stanely Hall lecture series. (Vol.4).*** Washington, D.C.: American Psychological Association.

Geetha, T. (1985). ***The influence of anxiety and achievement motivation on biology achievement of secondary school pupils.*** Unpublished masters dissertation, University of Calicut, Calicut.

Gerlach, V.S. & Ely, D.P. (1980). ***Teaching and media: A systematic approach.*** New Jersey: Prentice-Hall, Inc.

Ghaith, G. (2001). Learners' perceptions of their STAD cooperative experience. ***System, 29,*** 289-301.

Gillies, R.M. & Ashman, A.F. (1996). Teaching collaborative skills to primary school children in classroom-based work groups. ***Journal of Learning and Instruction, 6,*** 187-200.

Ginsburg-Block, M. & Fantuzzo, J.W. (1998). An evaluation of the relative effectiveness of NCTM standard based intervention for low achieving

urban elementary students. ***Journal of Educational Psychology, 90,*** 560-69.

Glass, G.V., Mc Gaw, B. & Smith, M.L. (1981). ***Meta-analysis of social research.*** Calif: Beverly Hills.

Glass, G.V., Cohen, L.S., Smith, M.L. & Filby, N.W. (1982). ***School class size: Research and policy.*** Beverly Hills, Cali.: Sage Publishers.

Golda, C. (1999). Effectivenss of cooperative learning strategy over traditional method of teaching english in standard VIII pupils. Unpublished masters dissertation, Farook Training College, Calicut.

Goldberg, K., Foster, K., Maki, B., Emde, J. & O'Keilly, M. (2001). ***Improving student motivation through cooperative learning and other strategies.*** Illinois. (ERIC Document Reproduction Service, No. ED 390781).

Good, C.V. (Ed.) (1973). ***Dictionary of education.*** New York: McGraw-Hill Book Company.

Gottfried, A.E. (1985). Academic intrinsic motivation in elementary and junior high school students. ***Journal of Educational Psychology, 77,*** 631-634.

Grant, D.F., Battle, D.A., Murphy, S.C. & Heggoy, S.J. (1999). Black female secondary honour graduates: Influences on achievement motivation. ***Journal of Secondary Gifted Education, 10,*** 103-19.

Griffith, S.C. (1990). Cooperative learning techniques in the classroom. ***Journal of Experiential Education, 13,*** 41-44.

Grote, G.F. & James, L.R. (1991). Testing behavioural consistency and coherance with the situation response measure of achievement motivation. ***Multivariate Behavioural Research, 26,*** 655-91.

Guilford, J.P. & Fruchter, B. (1978). ***Fundamental statistics in psychology and education.*** Tokyo: McGraw-Hill Kogakusha, Ltd.

Haines, D.B. & McKeachie, W.J. (1967). Cooperative versus competitive discussion methods in teaching introductory psychology. ***Journal of Educational Psychology.*** *58,* 386-90.

Hameed, A. (1997). ***Effect of instructional learning strategies and achievement motivation on achievement in social science of standard VII pupils.*** Unpublished master's dissertation, University of Calicut, Calicut.

Hare, A.P. (1962). Handbook of small group research. In C.L. Deighton (Ed.), ***The encyclopedia of education. Vol.8.*** USA: The Macmillian Company & The Free Press.

Haynes, N.M., Commer, J.P., Hamilton, L.M. & Boger,J. (1988). Difference among high, average and low high school achievers on the learning and

study strategies inventory. ***Educational and Psychological Research, 8,*** 65-71.

Hays, W.L. (1973). ***Statistics for the social sciences.*** New York: Holt, Rinehart and Winston, Inc.

Higbee, J.L. (1989). Affective variables and success in mathematics: The counsellor's role. ***College Students Affairs Journal, 9,*** 44-50.

Hill, S.S. (1996). ***Cooperative learning: A catalyst for change in the college classroom. Final report.*** Florida. (ERIC Document Reproduction Service, No. ED 413946).

Hinkley, J.W., McInerney, D.M. & Marsh, H.W. (2001, April). ***The multi-faceted structure of school achievement motivation: A case for social goals.*** Paper presented at the annual meeting of the American Educational Research Association, Seattle,U.S.

Hokoda, A. & Fincham, F.D. (1995). Origins of children's helplessness and mastery achievement patterns in the family. ***Journal of Educational Psychology, 87,*** 375-85.

Holland, M.K. (1981). ***Introductory psychology.*** Los Angeles, Lexington: D.C. Heath and Company.

Holliday, D.C. (2001, April). ***Using cooperative learning in a middle school computer lab.*** Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA.

Holt, J. (1964). ***How children fail.*** New York: Random House.

Huang, S.L. & Waxman, H.C. (1996, April). ***Learning environment differnces between high and low achieving minority students in urban middle schools.*** Paper presented at the annual meeting of the American Educational Research Association, Texas, U.S.

Huber, G. (1992, July). ***European perspectives on cooperative learning.*** Paper presented at the biennial meeting of the International Association for the Study of Cooperation in Education, Utrecht, The Netherlands.

Husen, T. & Postlethwaite, T.N. (Eds.). (1985). ***The international encyclopaedia of education. Vol. 5.*** Oxford: Pergamon Press.

Hythecker, V.I., Danserean, D.F., Rockin, T.R., O'Donnell, A.M., Lambiotte, J.G. Larson, C.O. & Young, M.D. (1984). ***Net working: Development and evaluation of a CACL module.*** Unpublished manuscript, Johns Hopkins University.

Isaacs, M.L. & Duffus, L.R. (1995, January). Scholar's club: A culture of achievement among minority gifted students. ***School Counsellor,*** pp.204-10.

Jackson, S.A. (1990, November). ***Accelerating academic achievement for poor black students: Transforming the teaching - learning environment and behaviours to accommodate the preferred learning styles of African-American children.*** Paper presented at the conference of National Alliance of Black School Educators, Dallas, U.S.

Janes, L.M., Koutsopanagos, C.L., Mason, D.S. & Villaranda, I. (2000). ***Improving student motivation through the use of engaged learning, cooperative learning and multiple intelligence.*** Illinois. (ERIC Document Reproduction Service, No. ED443559).

Jayaseelan, M. (1992). ***The influence of achievement motivation and science studying approach on science achievement of secondary school pupils.*** Unpublished masters dissertation, University of Calicut, Calicut.

Jegede, J.D. (1994). Influence of motivation and gender on secondary student's academic performance in Nigeria. ***Journal of Social Psychology,*** ***134,*** 695-97.

Johnson, D.W. (1979). ***Educational Psychology.*** Englewood Cliffs, N.J.: Prentice Hall, Inc.

Johnson, D.W. & Johnson, R.T. (1975). ***Learning together and alone.*** Englewood Cliffs, N.J.: Prentice Hall, Inc.

Johnson, D.W. & Johnson, R.T. (1981). Effects of cooperative and individualistic learning experiences on inter-ethnic interaction. ***Journal of Educational Psychology, 68,*** 446-452.

Johnson, D.W. & Johnson, R.T. (1981a). Effect of cooperative and individualistic learning experiences on inter-ethnic interaction. ***Journal of Educational Psychology,*** 73, 444-449.

Johnson, D.W. & Johnson, R.T. (1987). ***Learning together and alone (2nd ed.).*** Englewood Cliffs, N.J.: Prentice-Hall.

Johnson, D.W. & Johnson, R.T. (1989). ***Cooperation and competition: Theory and research.*** Edina, M.N.: Interaction Book Company.

Johnson, D.W. & Johnson, R.T. (1995). ***Teaching students to be peacemakers*** (3rd ed.). Edina, MN: Interaction Book Company.

Johnson, D.W. & Johnson, R.T. & Holubec, E.J. (1993). ***Cooperation in the classroom*** (6th ed.). Edina, M.N: Interaction Book Company.

Johnson, D.W., Johnson, R.T. & Stanne, M.B. (2000). ***Cooperative learning methods: A meta analysis.*** Minnepolis, S.E.: University of Minnesota.

Johnson, D.W., Maruyama, G., Johnson, R.T., Nelson, D. & Skon, L. (1981). The effects of cooperative, competitive and individualistic goal

structures on achievement: A meta analysis. ***Psychological Bullettin, 89,*** 47-62.

Joyce, W.B. (1999). Cooperative learning in accounting classes: A case study. ***Business Education Forum, 54,*** 28-30.

Joyce. B. & Weil, M. (1985). ***Models of teaching*** (2nd ed.). Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Joyce, B., Weil, M. & Showers, B. (1992). ***Models of teaching (4th ed.).*** Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Julian, J.W. & Perry, F.A. (1967). Cooperation contrasted with intra-group and inter-group competition. ***Sociometry, 30,*** 79-90.

Kahl, J.A. (1953). Educational and occupational aspirations of common man boys. ***Harward Educational Review, 23,*** 186-203.

Kaushik, V.K. & Sharma, S.R. (Eds.). (1997). ***Essentials of teaching and learning*** (1st ed.). New Delhi: Anmol Publication Pvt. Ltd.

Keeler, C.M. (1994). Cooperative learning in statistics. ***Teaching Statistics, 16,*** 81-84.

Keeler, C.M. & Anson, R. (1995). An assessment of cooperative learning used for basic computer skills instruction in college classroom. ***Journal of Educational Computing Research, 12,*** 379-93.

Kember, D. (2000). Misconceptions about the learning approaches, motivation and study practices of Asian students. ***Higher Education, 40,*** 99-121.

Kestenbaum, J.M. (1970). Achievement performance related to achievement motivation and test anxiety. ***Journal of consulting and clinical psychology, 34,*** 815-820.

Klein, C., Pfledereo, B. & Truckenmiller, M.A. (1998). ***Increasing student motivation through cooperative learning, writing in mathematics and multiple intelligences.*** Illinois. (ERIC Document Reproduction Service, No. ED 436351).

Krank, H.M. & Moon, C.E. (2001). Can a combined mastery/cooperative learning environment positively impact undergraduate academic and affective outcomes? ***Journal of College Reading and Learning, 31,*** 195-208.

Kumar, S.C.S. (1994). ***The interaction of approaches to studying and achievement motivation on achievement in biology of secondary school pupils.*** Unpublished doctoral dissertation, University of Calicut, Calicut.

Kumar, S.P.K. & Bindhu, C.M. (2002). ***Instructional learning strategies and cognitive entry behaviour: An experimental analysis.*** New Delhi: Kanishka Publishers & Distributors.

Kumar, S.P.K. & Bindhu, C.M. (2002a). Learning together - Classroom as a community of learners. ***New Frontiers in Education. International Journal of Education,*** 32, 27-32.

Kumar, S.P.K. & Hameed, A. (2000). Effectiveness of instructional learning strategies on achievement in social science. ***Calicut University Research Journal, 1,*** 136-143.

Kumar, S.P.K. & Hameed, A. (2001). ***Achievement test in social science.*** Calicut: Department of Education, University of Calicut.

Kumar, S.P.K. & Hameed, A. (2001). ***Lesson plan for conventional method of teaching.*** Calicut: Department of Education, University of Calicut.

Kumar, S.P.K. & Hameed, A. (2001). ***Lesson transcript for cooperative learning strategy.*** Calicut: Department of Education, University of Calicut.

Kumar, S.P.K., Hameed, A. & Prasanna, A. (1997). ***Verbal group test of intelligence.*** Calicut: Department of Education, University of Calicut.

Kumar, S. & Rai, K. (1994). Cooperative learning and teachers: The problem of dissemination. ***The Progress of Education, 49,*** 6-9.

Kutnick, P.J. (1988). ***Relationships in the primary classroom.*** London: Paul Chapman Publishing Ltd.

Laney, J.D. (1996). The effect of cooperative and mastery learning methods on primary grade students' learning and retention of economic concepts. ***Early Education and Development, 7,*** 253-74.

Lee, C.K.E., Maureon, N. & Phang, R. (1999). ***A school - based study of cooperative learning and its effects on social studies achievement, attitude towards the subject and classroom climate in four social studies classrooms.*** Singapore. (ERIC Document Reproduction Service, No. ED 323096).

Leondari, A., Syngollitou, E. and Kiosseoglou, G. (1998). Academic achievement motivation and possible selves. ***Journal of Adolescence,*** 21, 219-22.

Leung, J.J. (1993). ***Gender difference in students' and students' percieved parents academic motivational orientation.*** Wisconsin, U.S. (ERIC Document Reproduction Service, No. ED 358214).

Lewis, L.C. (1991). Carribean immigrants in higher education: A study of the relationship among the learning styles and strategies, achievement motivation and academic performance. ***Dissertation Abstract International, 52,*** 11-16.

Lowman, J. (1990). Promoting motivation and learning. ***College Teaching, 38,*** 136-39.

Luebbe, B. (1992, June). Cooperative learning. ***Education Consumer Guide,*** pp.3-6.

Lyman, L. & Foyle, H.C. (1988). ***Cooperative learning strategies and children: ERIC digest.*** U.S.: Department of Education (ERIC Document Reproduction Service, No. ED 306003).

Madden, N.A., Slavn, R.E. & Stevens, R.J. (1986). ***Cooperative integrated reading and composition. Teachers manual.*** Baltimore, Md.: Johns Hopkins University.

Mahenthiran, S. & Rouse, P.J. (2000). The impact of group selection on student performance and satisfaction. ***International Journal of Educational Management, 14,*** 225-64.

Malouf, D.B. (1990). Computer-assisted instruction with small groups of mildly handicapped students. ***Journal of Special Education, 24,*** 51-68.

McClelland, D.C. (1961). ***The achieving society.*** New Jersey: Van Nostrand.

Mc Clelland, D.C. (1972). What is the effect of achievement motivation training in the schools? ***Teachers College Record, 74,*** 129-145.

Mc Clelland, D.C. (1985). How motives, skills, and values determine what peoples do? ***American Psychologist, 40,*** 812-825.

McClelland, D.C. & Atkinson, J.W. (1948). The projective expression of needs: II. The effect of different intensities of the hunger drive on thematic apperception. ***Journal of Experimental Psychology, 38,*** 643-658.

McClelland, D.C., Atkinson, J.W., Clark, R.A. & Lowell, E.L. (1953). ***The achievement motive.*** New York: Appleton-Century Crofts.

Mc Donald, B.A., Larson, C.O., Danserean, D.F. & Spurlin, J.E. (1987). Cooperative learning: Impact on text learning and transfer. ***Contemporary Educational Psychology, 24,*** 41-49.

McEwan, L. & Goldenberg, D. (1999, July). Achievement motivation, anxiety and academic success in first year master of nursing students. ***Nurse Education Today,,*** pp.419-30.

McInerney, D.M. (1998, April). ***Multi-dimensional aspects of motivation in cross-cultural settings and ways of researching this.*** Paper presented at the annual meeting of the American Educational Research Association. San Diego, Australia.

Mc Lean, R. (1997). Selected attitudinal factors related to students success in high school. ***Alberta Journal of Educational Research, 43,***165-168.

Mehta, C.P. (1987). ***An investigation into the effect of psychological factors on school achievement of scheduled caste and scheduled tribe students and the students as identified by the Basu Commission in Saurashtra.*** Unpublished doctoral dissertation, Sardar Patel University.

Millen-Penn, K. (1997). We are not alone: A classroom full of teachers. ***Teaching History: A Journal of Methods,*** 22, 26-32.

Miller, R.H. (1992). A lesson in action research: Cooperative learning and achievement. ***Schools in the Middle, 2,*** 11-13.

Miller, L.K. & Hamblin, R.L. (1963). Independence, differential rewarding and productivity. ***American Sociology Review,*** 28, 768-778.

Millis, B.J. (1996, May). ***Cooperative learning.*** Paper presented at Chattanooge Instructional Excellence Retreat, Tennesie, University of Tennesie.

Ministry of Human Resource Development (1952-53). ***Report of secondary education commission.*** New Delhi: Manager of Publications, Government of India.

Ministry of Human Resource Development (1964-66). ***Report of education commission.*** New Delhi: Manager of Publications, Government of India.

Morgan, C.T., King, R.A., Weisz, J.R. & Schopler, J. (1993). ***Introduction to psychology*** (7th ed.). New Delhi: Tata McGraw-Hill Publishing Company Limited.

Morrison, K.R.B. & Ridely, K. (1988). ***Curriculum planning and the primary school.*** London: Paul Chapman Publishing.

Murray, H.A. (1938). ***Explorations in personality.*** Oxford: Oxford University Press.

Nair, A.S. (1972). ***A non-verbal group test of intelligence for secondary schools.*** Unpublished doctoral dissertation, University of Kerala, Trivandrum.

Nair, A.S., Pillai, N.P. & Amma, J.G. (1968). ***Kerala university verbal group test of intelligence.*** Trivandrum: Department of Education, University of Kerala.

Narayanan, Parachottil (1987). ***The relationship of achievement motivation and achievement in hindi of socially advantaged and disadvantaged secondary school pupils.*** Unpublished masters dissertation, University of Calicut, Calicut.

Newmann, F.M. & Thompson, S.J. (1987). ***Effects of cooperative learning on achievement in secondary schools: A summary of research.*** Madison, Wisc: University of Wisconsin, National Centre on effective secondary schools.

Nicholas, J.D. & Miller, R.B. (1993). ***Cooperative learning and student motivation.*** New York. (ERIC Document Reproduction Service, No. ED 359254).

Niebuhr, K. (1995, November). ***The effect of motivation on the relationship of school climate, family environment and student characteristics to academic achievement.*** Paper presented at the annual meeting of the Mid-South Educational Research Association, Alabama, U.S.

Nunnally, J.C. (1972). ***Educational measurement and evaluation.*** New York: McGraw-Hill Book Company.

O'Donnell, A.M. (1990). Learning concrete procedures: Effects of processing strategies and cooperative learning. ***Journal of Educational Psychology, 82,*** 171-77.

Ojah, H. (1973). ***Relation of achievement motivation to parental behaviours and certain socio-economic variables.*** Unpublished doctoral dissertation, Bhagalpur University.

Okebukola, P.A. (1984). ***On eco-culture and cooperative learning in science classes.*** Unpublished paper, University of Ibadan, Nigeria.

Olsen, R.W. B. & Kagan, S. (1992). About cooperative learning: In C. Kessler (Ed.), ***Cooperative language learning: A teacher's resource book.*** Englewood Cliffs, N.J.: Prentice Hall.

Optow, S. & Deutsch, M. (1999). Learning to cope with conflict and violence: How schools can help youth. In E. Frydenberg (Ed.), ***Learning to cope: Developing as a person in complex societies.*** New York: Oxford University.

Petersen, R.P. (1991). Effects of cooperative learning on perceived status of male and female pupils. ***Journal of Social Psychology, 31,*** 717-35.

Peterson, P.L., Janicki, T.C. & Swing, S. (1980). ***Individual characteristics and children's learning in large-group and small-group approaches: study II.*** Wisconsin Research and Development Centre for Individual Schooling Report No.561.

Petty, P. (1997). Increasing student engagement and retention through the use of cooperative groups and authentic assessment. ***Educational Psychologist, 22,*** 325-332.

Philip, S.L. & Steinkamp, M. (1995). ***Improving academic motivation.*** Action Research Project, 97, Saint Xavier University, Illinois, U.S. (ERIC Document Reproduction Service,No. ED 407056).

Pillai, K.S. & Kumar, S.C.S. (1993). ***Scale of achievement motivation.*** Calicut: Department of Education, University of Calicut.

Pisani, A.M. (1994, November). ***Involvemnt through cooperative learning: An attempt to increase persistance in the biological sciences.*** Paper presented at the annual meeting of the Association for the Study of Higher Education, Tucson, AZ.

Plucker, J. (1996, October). ***Aspirations of students attending a science and mathematics residential magnet school.*** Paper presented at the annual meeting of the National Rural Education Association, San Antonio, U.S.

Pollalis, Y.A. (1995). ***Integration of information management and organisational behaviour. Lesson from group based teaching experience.*** New York. (ERIC Document Reproduction Service, No.ED 382184).

Portes, P.R. & Zady, M.F. (2001, April). ***Determinants of reading achievement of immigrant adolescents: The role of demographic and psycho-cultural factors in school adaptation.*** Paper presented at the annual meeting of the American Educational Research Association, Seattle, U.S.

Prasad, M.V. (1995). ***Interaction effect of approaches to studying and achievement motivation process outcomes in physics of secondary school pupils.*** Unpublished master's dissertation, University of Calicut, Calicut.

Preetha, S. (1996). ***Influence of learning style and achievement motivation on achievement in biology of secondary school pupils.*** Unpublished master's dissertation, University of Calicut, Calicut.

Rajani, P.V. (1991). ***Relationship of attitude towards education and achievement motivation with social studies achievement of high school pupils.*** Unpublished master's dissertation, University of Calicut, Calicut.

Raven, J.C. (1958). ***Standard Progressive Matrices Sets A, B, C and E.*** London: M.K. Lewis and Coll. Ltd.

Reddy, O.R. (1983). ***A study of the n-achievement and intellectual capacity of high school students.*** Unpublished doctoral dissertation, Andhra University.

Randon, M.J. (1995). Learner autonomy and cooperative learning. ***English Teaching Forum, 33,*** 41-43.

Rhoneck, C.V. & Grob, K. (1991). Psychological aspects of learning about basic electricity in rural and urban classes. ***International Journal of Science Education, 13,*** 87-95.

Robyn, M.G. & Adrian, F.A. (1996). Teaching collaborative skills to primary school children in classroom-based work groups. ***Learning and Instruction, 6,*** 187-200.

Rohs, F.R. & Anderson, K.S. (2001). Motivational needs of middle grade students enrolled in agricultural education in Georgia. ***Journal of Agricultural Education,*** 2, 43-53.

Ross, J.A. (1997, August). ***Teaching students how to evaluate their work in cooperative learning. Results of a collaborative action research: In service.*** Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Sasidharan, P. (1997). ***Influence of instructional learning strategies and classroom environment on achievement in malayalam language of standard VII pupils.*** Unpublished masters dissertation, University of Calicut, Calicut.

Scheffé, H. (1959). ***The analysis of variance.*** New York: John Wiley & Sons, Inc.

Scheffer, L.C.P. (1995). ***SHELCOM: Going hightech with the homeless.*** Pennsylvania. (ERIC Document Reproduction Service, No. ED 379450).

Schonwetter, D.J. (1994, April). ***Implications for higher education in the linkage of student differences and effective teaching.*** Paper presented at the annual meeting of the American Educational Research Association, Canada, British Columbia.

Schultz, G.F. (1993). Socio-economic advantage and achievement motivation: Important mediators of academic performance in minority children in urban schools. ***Urban Review, 5,*** 221-32.

Seaman, T. (1990). ***On the high road to achievement: Cooperative concept mapping.*** Virginia, U.S. (ERIC Document Reproduction Service, No. ED 335140).

Sharan, S. (1980). Cooporative learning in small groups: Recent methods and effects on achievement, attitudes and ethnic relations. ***Review of Educational Research, 50,*** 241-271.

Sharan, S. (1980a). Learning in teams: A critical review of recent methods and effects on achievement, attitude and race, ethnic relations. ***Review of Educational Research, 50,*** 241-73.

Sharan, S. (1990). ***Cooperative learning: Theory and research.*** New York: Praeger.

Sharan, S. & Hertz-Lazarowitz, R. (1980). Academic achievement of elementary school children in small-group versus whole-class instruction. ***Journal of Experimental Education, 48,*** 120-129.

Sharan, S. & Schachar, C. (1988). ***Language and learning in the cooperative classroom.*** New York: Springer-Verlag.

Sharan, S. & Sharan, Y. (1976). ***Small group teaching.*** Englewood Cliffs, N.J.: Educational Technology Publications.

Sharan, S. & Sharan, Y. (1989/90). Group investigation expands cooperative learning. ***Educational Leadership, 47,*** 17-21.

Sherril, C.D. (1988). Achievement, attitudes and achievement motivation in an elementary school science program: Grade three to six. ***Dissertation Abstracts International, 49,*** 25-33.

Shu-fong, L., Pui-Shan, Y., Josephine, S.T.L. & Rabecca, W.Y.C. (2001, August). ***The effects of classroom competition on achievement motivation.*** Paper presented at the annual conference of the American Psychological Association, San Francisco.

Sloane-Seale, A., Wallace, L. & Levin, B. (2001). Life paths and educational and employment outcomes of disadvantaged aboriginal learners. ***Canadian Journal of University Continuing Education, 27,*** 5-31.

Simons, H.D., Van Rheenen, D. & Cornington, M.V. (1999). Academic motivation and student athlete. ***Journal of College Student Development, 40,*** 151-62.

Singer, R.D. & Singer, A. (1969). ***Psychological development in children.*** Philadelphia: W.B. Sanders.

Singh, R. & Singh, P. (1995). Prediction of performance using motivation and ability information: New light on integrational capacity and weighting strategies. ***Psychological Abstracts, 82,*** 454-75.

Slavin, R.E. (1980). Cooperative learning. ***Review of Educational Research, 50,*** 315-342.

Slavin, R.E. (1980a). ***Using student team learning.*** Baltimore: Maryland, John Hopkins University. Center for Social Organisation of School.

Slavin, R.E. (1983). ***Cooperative learning.*** New York: Longman.

Slavin, R.E. (1983a). When does cooperative learning increase student achievement? ***Psychological Bullettin, 94,*** 429-445.

Slavin, R.E. (1985). Small group instruction. In T. Husen & Postlethwaite, T.N. (Eds.). ***The international encyclopedia of education. Vol.8,*** Oxford: Pergamon Press, 4596-4602.

Slavin, R.E. (1987). Cooperative learning: Can students help students learn. ***Instructor, 3,*** 74-78.

Slavin, R.E. (1988). Synthesis of research on grouping in elementary and secondary schools. ***Educational Leadership, 43,*** 67-77.

Slavin, R.E. (1990). Achievement effects of ability grouping in secondary schools. ***Review of Educational Research, 60,*** 471-500.

Slavin, R.E. (1990a, December). ***Educational Leadership,*** pp.52-54.

Slavin, R.E. (1992). When and why does cooperative learning increase achievement? Theoretical and empirical perspectives. In R. Hertz-Lazarowitz & N. Miller (Eds.), ***Interaction in cooperative groups: The***

theoretical anatomy of group learning. New York: Cambridge University Press.

Slavin, R.E. (1995). ***Cooperative learning: Theory, research and practice*** (2nd ed.). Boston: Allyn & Bacon.

Slavin, R.E., Leavey, M., & Madden, N.A. (1984). Combining cooperative learning and individualised instruction on mainstreamed students. ***Exceptional children, 50,*** 434-43.

Smith, M.L. & Glass, G.V. (1990). The effects of class size on what happens in classrooms. In D. Hamachak (Ed.), ***Educational psychology reader: Towards the improvement of schooling***. New York: Macmillan, 151-153.

Spence, J.T. (1983). ***Achievement and achievement motives***. (Ed.). San Francisco: W.H. Freeman.

Starr, R. & Schuermen, C. (1974). An experiment in small group learning. ***The American Biology Teacher***. pp.173-75.

Stendler, C., Damrin, D. & Haines, A.C. (1951). Studies in cooperation and competition: I. The effects of working for group and individual rewards on the social climate of children's groups. ***Journal of Genetic Psychology, 79,*** 173-97.

Stipek, D. (1995). Effects of different instructional approaches on young children's achievement and motivation. ***Child Development, 66,*** 209-23.

Stones, E. & Morris, S. (1977). ***Teaching practice: Problems and prospectives***. London: Co. Ltd.

Sudzina, M.R. (1993). Audiotapes: The overlooked technology in teacher education. ***Teacher Education and Practice, 9,*** 49-53.

Sullivan, A.M. & King, L. (1999, May). ***An investigation into empowering students through cooperative learning.*** Paper presented at the annual conference of the American Educational Research Association, Montreal, Canada.

Swisher, K. (1990). Cooperative learning and the education of American Indian/Alaskan native students: A review of the literature and suggestions for implementation. ***Journal of American Indian Education, 29,*** 36-43.

Taylor, E.D. (1999, April). ***How peer support relate to African-American adolescents' academic outcomes? Testing a conceptual model.*** Paper presented at the biennial meeting of the Society for Research in Child Development, Albequerque, NM.

Thorndike, E.L. (1938). On what type of task will a group do well? ***Journal of Abnormal and Social Psychology, 33,*** 409-413.

Urion, D.K. & Davidson, N.A. (1992). Student achievement in small-group instruction versus teacher-centered instruction in mathematics. ***Primus,*** 2, 257-64.

Unnikrishnan, N.V. (1995). ***A study of the effect of social adjustment and achievement motivation on achievement in Biology of standard IX pupils.*** Unpublished masters dissertation, University of Calicut, Calicut.

Waxman, H.C. (1997). Motivation and learning environment difference between resilient and non-resilient Latino-middle school students. ***Hispanic Journal of Behavioural Sciences, 19,*** 137-55.

Wildt, A.K. & Ahtola, O.T. (1978). ***Analysis of covariance.*** London: Sage Publications.

Weiner, B. (1980). ***Human Motivation.*** New York: Holt, Rinehart and Winston.

Wheeler, R. (1977, March). ***Pre disposition toward cooperation and competition: Cooperative and competitive classroom effects.*** Paper presented at the annual convention of American Psychological Association, Sanfransisco, California.

Wheeler, R. & Ryan, F.L. (1973). Effects of cooperative and competitive classroom environments on the attitudes and achievement of elementary school students engaged in social studies inquiry activities. ***Journal of Educational Psychology,*** 65, 402-407.

Winer, B.J. (1977). ***Statistical principles in experimental design*** (2nd ed.). Tokyo: McGraw-Hill Kogakush, Ltd.

Xin, F. (1996). ***The effects of computer assisted cooperative learning in mathematics in integrated classroom for students with and without disabilities. Final Report.*** New Jersey, U.S. (ERIC Document Reproduction Service, No. ED 412696).

Zargar, A.H. (1980). ***A study of expression neuroticism and n-achievement in relation to intelligence, creativity and scholastic achievement.*** Unpublished doctoral dissertation, Kashmir University.

APPENDICES

Appendix I

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

LESSON TRANSCRIPT FOR CO-OPERATIVE LEARNING STRATEGY

(LEARNING TOGETHER MODEL)

Dr. P.K. SUDHEESH KUMAR HAMEED,A.

അദ്ധ്യാപകൻ ക്ലാസ്സിലേക്ക് പ്രവേശിച്ച് കുട്ടികളെ അഭിവാദ്യം ചെയ്യുന്നു. കുട്ടികൾ പ്രത്യഭിവാദ്യം ചെയ്യുന്നു.

അദ്ധ്യാപകൻ : നിലവിലുള്ള പഠനരീതി നിങ്ങൾക്കിഷ്ടമാണോ?

കുട്ടി : അതെ

അദ്ധ്യാപകൻ : അതിലും രസകരമായ പുതിയ പഠനരീതികളെക്കുറിച്ച് നിങ്ങൾക്ക് അറിവുണ്ടോ?

കുട്ടി : ഇല്ല

അദ്ധ്യാപകൻ : അവയെക്കുറിച്ചറിയാൻ താല്പര്യമുണ്ടോ?

കുട്ടി : അതെ

അദ്ധ്യാപകൻ : എങ്കിൽ കളികളും പരസ്പര സഹകരണവും ഒത്തുചേർന്ന രസകരവും പുതുമയാർന്നതുമായ പഠനരീതിയിലൂടെ നമുക്കു പഠിച്ചുതുടങ്ങാം.

(കുട്ടികൾ തയ്യാറാവുന്നു)

അദ്ധ്യാപകൻ : പുതിയ പഠനരീതിയുടെ പ്രത്യേകതകളും ഗുണങ്ങളും അറിയാൻ നിങ്ങൾക്ക് താല്പര്യമില്ലേ?

കുട്ടി : ഉണ്ട്

അദ്ധ്യാപകൻ : ശരി, നമുക്കാരംഭിക്കാം.

(പുതുതായി പഠിക്കാൻ പോകുന്ന പഠനരീതിയുടെ പേര് **Cooperative Learning Method (*Learning Together*)** എന്നാണെന്നും അതിന്റെ നല്ല വശങ്ങളും പ്രത്യേകതകളും എന്തൊക്കെയാണെന്നും അദ്ധ്യാപകൻ ആമുഖമായി കുട്ടികളെ പറഞ്ഞു മനസ്സിലാക്കുന്നു.)

അദ്ധ്യാപകൻ : ○ ഈ രീതിക്കുവേണ്ടി ക്ലാസ്സിലെ വിദ്യാർത്ഥികളെ ഗ്രൂപ്പുകളായി തിരിക്കേണ്ടതുണ്ട്.

○ ഇതു വളരെ എളുപ്പത്തിൽ പഠനം സാദ്ധ്യമാക്കുന്നു.

○ ഈ രീതിയിലൂടെ പഠനം വളരെ ലളിതവും രസകരവുമാവുന്നു.

○ ഗ്രൂപ്പംഗങ്ങൾ അന്യോന്യം ചർച്ച ചെയ്ത് കാര്യങ്ങൾ തീരുമാനിക്കുന്നതിനാൽ എല്ലാവരുടെയും അഭിപ്രായങ്ങൾ ഇവിടെ മാനിക്കപ്പെടുന്നു.

൧ ഓർമ്മശക്തിവർദ്ധിക്കുന്നതിന് ഈ രീതി ഉപകാരപ്രദമാണ്.

൧ പരസ്പരം സഹായിച്ചും സഹകരിച്ചും പഠിക്കുന്ന രീതിയായതിനാൽ എല്ലാവർക്കും ഒരേപോലെ ഇത് ഗുണ പ്രദമാണ്.

(വിദ്യാർത്ഥികൾ ശ്രദ്ധയോടെ ശ്രവിക്കുന്നു)

അദ്ധ്യാപകൻ : വിദ്യാർത്ഥികൾ തമ്മിൽ പഠനത്തിൽ ഒരു സഹകരണവുമില്ലാത്ത പഴയ രീതിയിലുള്ള മത്സര പഠനം നിങ്ങൾ ഇഷ്ടപ്പെടുന്നുണ്ടോ?

കുട്ടി : ഇല്ല.

അദ്ധ്യാപകൻ : പഴയതിൽ നിന്നും വിഭിന്നമായി ഇവിടെ ഒരു ഭയവുമില്ലാതെ നിങ്ങളുടെ അഭിപ്രായങ്ങൾ തുറന്നു പറയാനും ചോദ്യങ്ങൾ ചോദിക്കാനും സ്വാതന്ത്ര്യമുണ്ട്.

: നേതൃത്വ പരിശീലനത്തിന് ഈ രീതി വളരെയേറെ പ്രയോജനപ്രദമാണ്.

(വിദ്യാർത്ഥികൾ പഠനത്തിന് തയ്യാറാവുന്നു)

അദ്ധ്യാപകൻ : നിങ്ങൾ പഠിക്കാൻ തയ്യാറായെന്നു തോന്നുന്നു?

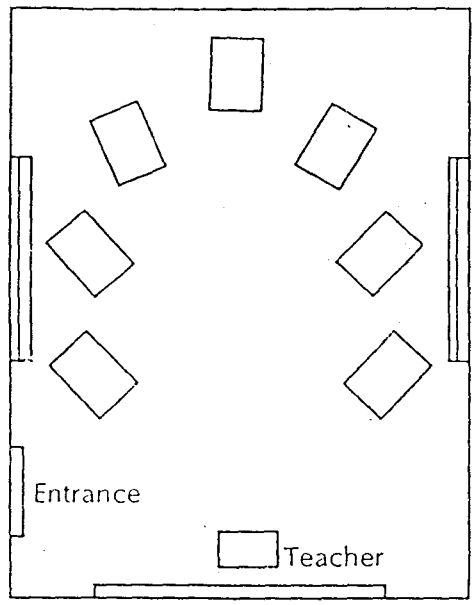
കുട്ടി : അതെ

അദ്ധ്യാപകൻ : അതിനു മുമ്പ് നമുക്ക് അന്യോന്യം പരിചയപ്പെടുകയും Co-operative Learning-ന് ആവശ്യമായ രീതിയിൽ ഇരിപ്പിട സൗകര്യം ക്രമീകരിക്കുകയും വേണം.

(അദ്ധ്യാപകൻ സ്വയം പരിചയപ്പെടുത്തുന്നു. **Four-step Interview** എന്ന ഗ്രൂപ്പിംഗ് രീതിയെക്കുറിച്ച് അദ്ധ്യാപകൻ വിദ്യാർത്ഥികൾക്ക് വിശദീകരിച്ചു കൊടുക്കുകയും അങ്ങിനെ പരിചയപ്പെടുത്താനും ഗ്രൂപ്പുകളായി തിരിയാനും ആരംഭിക്കുകയും ചെയ്യുന്നു. ഇതു പ്രകാരം നിശ്ചിതസമയത്തിനുള്ളിൽ A എന്ന വിദ്യാർത്ഥി Bഎന്ന വിദ്യാർത്ഥിയെയും, തുടർന്ന് B തിരിച്ച് A യെയും നിശ്ചിത സമയം ഇന്റർവ്യൂ ചെയ്യുകയും പ്രധാന വിവരങ്ങൾ മനസ്സിലാക്കുകയും ചെയ്യുന്നു. അതിനുശേഷം, A,Bഎന്നിവർ ഒന്നിച്ച് മറ്റു രണ്ടുപേരെ അഭിമുഖീകരിക്കുകയും 4 പേർ അടങ്ങുന്ന ഒരു ഗ്രൂപ്പായി മാറുകയും ചെയ്തതിനുശേഷം A,B,C,D എന്നിവർ അടങ്ങുന്ന ഗ്രൂപ്പ് മറ്റു രണ്ടുപേരെ(E,F)കൂടി അഭിമുഖീകരിക്കുകയും അങ്ങിനെ 6 പേർ ഉൾക്കൊള്ളുന്ന ഒരു ഗ്രൂപ്പ് രൂപീകരിക്കുകയും ചെയ്യുന്നു. അൽപം നാണത്തോടെയാണെങ്കിലും കുട്ടികൾ പരിചയപ്പെടൽ ആരംഭിക്കുന്നു. കുട്ടികൾ തമ്മിലുള്ള സംസാരം വർദ്ധിപ്പിച്ച് ജാള്യതമാറ്റാൻ അദ്ധ്യാപകൻ പ്രോത്സാഹിപ്പിക്കുന്നു)

(Four Step Interview രീതിയിലൂടെ വിദ്യാർത്ഥികളെ ഗ്രൂപ്പുകളാക്കിയ ശേഷം ഓരോ ഗ്രൂപ്പിനുംവേണ്ടി ഓരോ ലീഡർമാരെ തിരഞ്ഞെടുക്കാനും ഓരോ ഗ്രൂപ്പിനും, ഇഷ്ടപ്പെട്ട പേരുകൾ നൽകാനും അദ്ധ്യാപകൻ നിർദ്ദേശിക്കുന്നു. ഗ്രൂപ്പുകൾ അനുസരിക്കുന്നു. ഗ്രൂപ്പ് ലീഡർമാരും ഗ്രൂപ്പിന്റെ പേരുകളും ഇടക്കിടെ മാറുന്ന രീതിയാണ് സ്വീകരിക്കുന്നതെന്നതിനാൽ എല്ലാവർക്കും പഠനത്തിലും നേതൃത്വപരിശീലനത്തിലും തുല്യ പങ്കാളിത്തം ഉണ്ടാവുന്നു.)

(ക്ലാസ്സിലെ ഇരിപ്പിട സൗകര്യം ക്രമീകരിക്കുന്നതിനായി കുതിരലാട(Horse shoe)ത്തിന്റെ ആകൃതിയിൽ ഇരിക്കാൻ അദ്ധ്യാപകൻ കുട്ടികളോട് നിർദ്ദേശിക്കുന്നു. കുതിരലാടത്തിന്റെ ആകൃതിയിൽ ഇരിക്കേണ്ടത് എങ്ങിനെയെന്ന് ബ്ലാക്ക് ബോർഡിന്റെ സഹായത്തോടെ അദ്ധ്യപകൻ വിശദീകരിക്കുന്നു, കുട്ടികൾ ഇരിക്കുന്നു)



(സഹകരണരീതിയിൽ നടക്കുന്ന പഠന രീതിയുടെ ചിത്രങ്ങളും സഹകരണ പ്രവർത്തനങ്ങളുടെ ചിത്രങ്ങളുൾക്കൊള്ളുന്ന പോസ്റ്ററുകളും അദ്ധ്യാപകൻ ഓരോ ഗ്രൂപ്പിനും നൽകുകയും അടുത്ത ദിവസം അവ ക്ലാസ്സിന്റെ വിവിധ വശങ്ങളിൽ തൂക്കിയിടാൻ നിർദ്ദേശിക്കുകയും ചെയ്യുന്നു. പഠനത്തിൽ താൽപര്യം ജനിപ്പിക്കുന്നതിനുതകുന്ന ചില കളികൾ കളിക്കാൻ അദ്ധ്യാപകൻ വിദ്യാർത്ഥികളെ സഹായിക്കുന്നു.)

Phase I

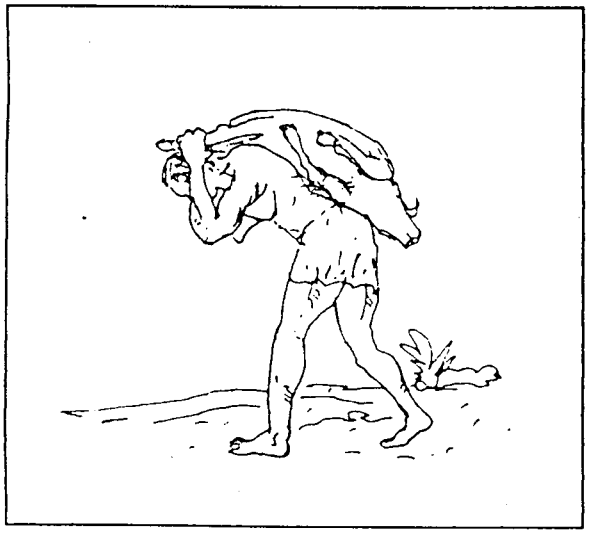
(ഗതാഗതരംഗത്തുണ്ടായ പുരോഗതി കൃഷിയുടെയും വ്യവസായത്തിന്റെയും വളർച്ചയുമായും ചരക്കുകടത്തലിന്റെ വളർച്ചയുമായും എങ്ങിനെ ബന്ധപ്പെട്ടിരിക്കുന്നു എന്ന് കുട്ടികളിൽ അവബോധമുണ്ടാക്കാൻ ചരക്കുകടത്തലിന്റെ വളർച്ചയെ സൂചിപ്പിക്കുന്ന 7 ചിത്രങ്ങളും അഭ്യാസപത്രവും (Assignment sheet) അദ്ധ്യാപകൻ ഓരോ ഗ്രൂപ്പിനും നൽകുന്നു. ഗ്രൂപ്പുകളുടെ പേരുകളും റോളുകളും മാറ്റാൻ അദ്ധ്യാപകൻ നിർദ്ദേശിക്കുന്നു.)

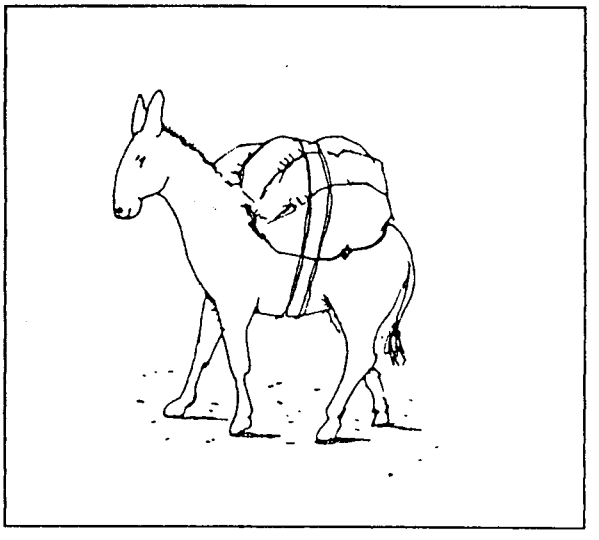
അദ്ധ്യാപകൻ : മുമ്പത്തെതിൽ നിന്നും വ്യത്യസ്തമായി, പുതിയ രീതിയിലാണ് ഇപ്പോൾ പാഠ്യപ്രവർത്തനം ക്രമീകരിക്കേണ്ടത്. ഇതിനായി ഗതാഗതരംഗത്തുണ്ടായ വളർച്ച ചരക്കുകടത്തിന്റെ വളർച്ചയുമായി എങ്ങിനെ ബന്ധപ്പെട്ടിരിക്കുന്നു എന്നു സൂചിപ്പിക്കുന്ന 7 ചിത്ര ങ്ങളും ഒപ്പം ചെയ്യേണ്ടുന്ന പാഠ്യപ്രവർത്തനം ഉൾക്കൊള്ളുന്ന അഭ്യാസപത്രവും നിങ്ങൾക്കു നൽകിയിട്ടുണ്ട്. തന്നിരിക്കുന്ന പാഠ്യോപകരണങ്ങൾ ഉപയോഗിച്ച് ആവശ്യമായ ചോദ്യങ്ങളും ആശയസമ്പുഷ്ടമായ ഉത്തരങ്ങളും കണ്ടെത്തുകയാണ് വേണ്ടത്.

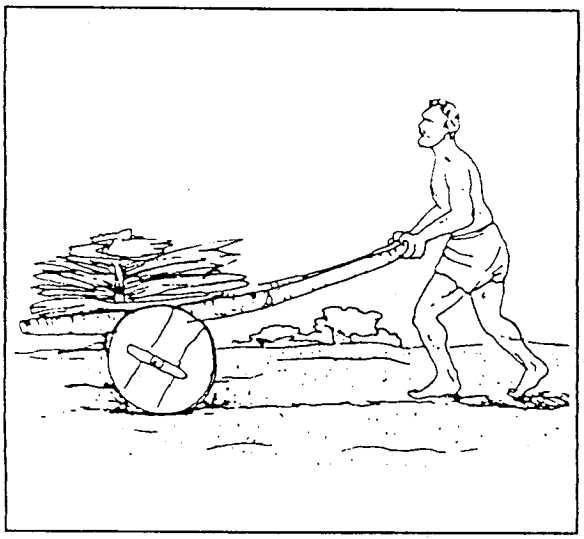
ഉദാഹരണമായി

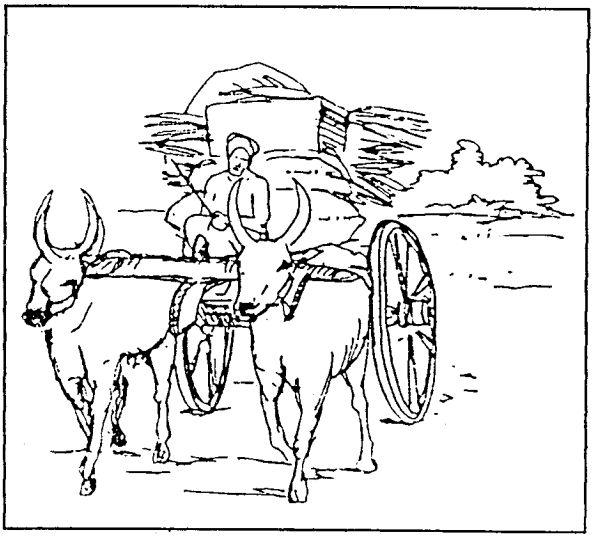
ചരക്കു ഗതാഗതത്തിന്റെ ചരിത്രത്തിലെ ആദ്യഘട്ടം ഏതായിരുന്നു?

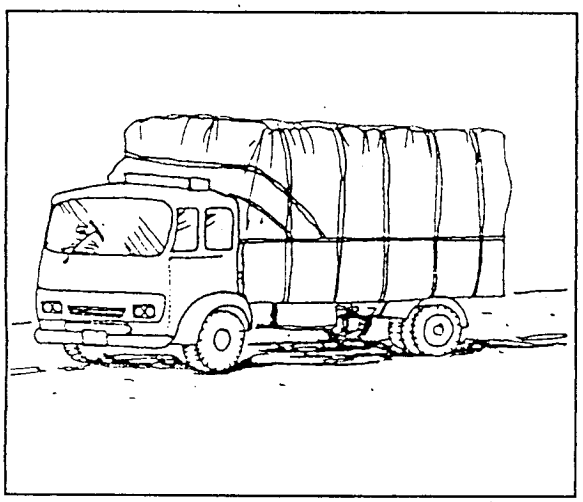
ചിത്രങ്ങൾ

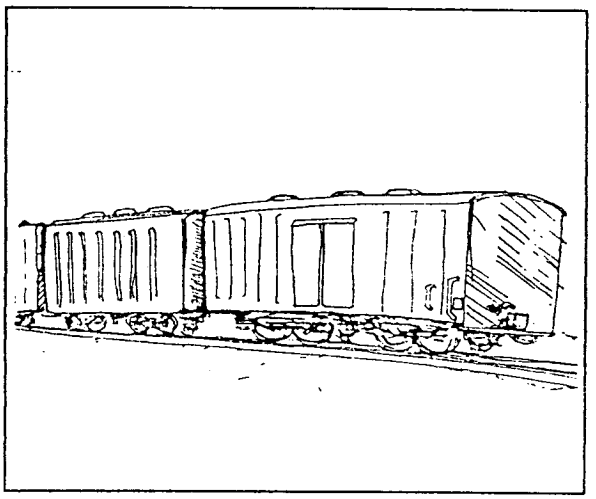


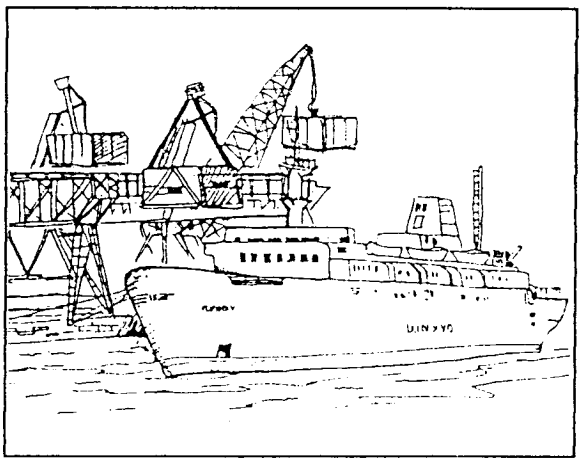












അഭ്യാസപത്രം (Assignment Sheet)

നിർദ്ദേശങ്ങൾ : എല്ലാ ഗ്രൂപ്പംഗങ്ങളും ഇത് പരസ്പരം കൈമാറുക.

: നിശ്ചിത സമയത്തിനുള്ളിൽ തന്നെ പാഠ്യപ്രവർത്തനം പൂർത്തീകരിക്കുക.

I. ഗതാഗതത്തിന്റെ വളർച്ച കൃഷിയുടെയും വ്യവസായത്തിന്റെയും വളർച്ചയുമായി എങ്ങിനെ ബന്ധപ്പെട്ടിരിക്കുന്നു എന്ന് കണ്ടെത്തുക. (സൂചന: മൺവെട്ടി - കലപ്പ - നിലമുഴൽ-ട്രാക്ടർ)

II. കൃഷിയുടെ വളർച്ച ചരക്കുഗതാഗതത്തിന്റെ വളർച്ചയുമായി എങ്ങിനെ ബന്ധപ്പെട്ടിരിക്കുന്നുവെന്ന് വ്യക്തമാക്കുക. (സൂചന-തലച്ചുമട്-കഴുത-ഉന്തുവണ്ടി- ലോറി. തീവണ്ടി- കപ്പൽ)

അദ്ധ്യാപകൻ : തന്നിരിക്കുന്ന പ്രവർത്തനം എല്ലാ ഗ്രൂപ്പംഗങ്ങളും ഒരുമിച്ച് ചെയ്തു തീർക്കേണ്ടതാണ്. ലീഡർ ശ്രദ്ധിക്കുമല്ലോ.

(ഗ്രൂപ്പംഗങ്ങൾ പ്രവർത്തനം ആരംഭിക്കുന്നു)

Phase II

(കുട്ടികൾ പാഠ്യപ്രവർത്തനത്തിൽ സജീവമായി പങ്കെടുക്കുന്നുണ്ടോ എന്നറിയുവാനും പഠനോപകരണങ്ങളും ആശയങ്ങളും പരസ്പരം കൈമാറുന്നുണ്ടോ എന്നറിയുവാനും അദ്ധ്യാപകൻ ക്ലാസ്സിലൂടെ നടക്കുന്നു)

അദ്ധ്യാപകൻ : ഗ്രൂപ്പംഗങ്ങൾ പരസ്പരം ചർച്ച ചെയ്തുവേണം ചോദ്യങ്ങളും ഉത്തരങ്ങളും കണ്ടെത്തുന്നത്. പാഠ്യപ്രവർത്തനത്തിൽ പിന്നോക്കം നിൽക്കുന്നവരെ മറ്റു ഗ്രൂപ്പംഗങ്ങൾ സഹായിക്കണം. പഠനോപകരണങ്ങൾ ഗ്രൂപ്പംഗങ്ങൾ അന്യോന്യവും ഗ്രൂപ്പുകൾ തമ്മിലും കൈമാറ്റം ചെയ്യാൻ ശ്രദ്ധിക്കുമല്ലോ?

(ഗ്രൂപ്പംഗങ്ങൾ അഭ്യാസപത്രം വായിച്ച് മനസ്സിലാക്കുന്നു. ചിത്രങ്ങൾ കൈമാറുന്നു. പരസ്പരം ചർച്ച ചെയ്ത് ഉത്തരങ്ങൾ കണ്ടെത്തുന്നു. രേഖപ്പെടുത്തുന്നു. ഗ്രൂപ്പംഗങ്ങൾ തമ്മിൽ സംശയനിവൃത്തി വരുത്തുന്നു. വിദ്യാർത്ഥികളുടെ പ്രവർത്തനം അദ്ധ്യാപകൻ വീക്ഷിക്കുന്നു)

Phase III

(ഗ്രൂപ്പുകളുടെ പ്രവർത്തനങ്ങളിൽ പ്രവർത്തി വിഭജനം പരമാവധി സാദ്ധ്യമാക്കാൻ അദ്ധ്യാപകൻ പ്രോത്സാഹിപ്പിക്കുന്നു. അതിനുതകുന്ന ചില മാർഗ്ഗനിർദ്ദേശങ്ങൾ നൽകുന്നു)

അദ്ധ്യാപകൻ : എല്ലാ ഗ്രൂപ്പംഗങ്ങളും ചർച്ചയിൽ പങ്കെടുക്കുന്നുണ്ടല്ലോ? കുറച്ചു ഗ്രൂപ്പംഗങ്ങൾ കണ്ടെത്തുന്ന ഉത്തരങ്ങൾ ഒരു ഗ്രൂപ്പംഗം രേഖപ്പെടുത്തുകയും മറ്റൊരാൾ റിപ്പോർട്ട് ചെയ്യുകയും വേണം. ലീഡർ ശ്രദ്ധിക്കുമല്ലോ?

(പാഠ്യപ്രവർത്തനത്തിനുള്ള സമയം കഴിഞ്ഞു എന്ന് അദ്ധ്യാപകൻ സൂചന നൽകുന്നു. ഗ്രൂപ്പുകൾ പ്രവർത്തനം അവസാനിപ്പിക്കുന്നു. ചോദ്യങ്ങളും ഉത്തരങ്ങളും അവതരിപ്പിക്കാൻ ഗ്രൂപ്പുകളെ ക്ഷണിക്കുന്നു. ഗ്രൂപ്പുകൾ ഓരോന്നായി വന്ന് ചോദ്യോത്തരങ്ങൾ അവതരിപ്പിക്കുന്നു)

അദ്ധ്യാപകൻ : എല്ലാ ഗൂപ്പുകളും ആവശ്യമായ ചോദ്യങ്ങളും അതിനനുകുലമായ ഉത്തരങ്ങളും കണ്ടെത്തിയിരിക്കുമല്ലോ? ഇനി ഓരോ ഗ്രൂപ്പിനും രണ്ടു ചോദ്യങ്ങൾ വീതം അടുത്ത ഗ്രൂപ്പിനോട് ചോദിക്കാം. ഓരോ ശരിയുത്തരത്തിനും 2 മാർക്ക് വീതമാണ് ലഭിക്കുക. ഏറ്റവും കൂടുതൽ പോയിന്റ് നേടുന്ന ഗ്രൂപ്പായിരിക്കും ഒന്നാമതെത്തുക. ഉത്തരങ്ങൾ പറയുമ്പോൾ, അറിയാത്ത ഗ്രൂപ്പംഗങ്ങൾ അവ രേഖപ്പെടുത്തുവാൻ ശ്രദ്ധിക്കുമല്ലോ. ശരി. ഇനി ആരംഭിക്കാം.

(കുട്ടികൾ ചോദ്യോത്തരപ്പയറ്റ് ആരംഭിക്കുന്നു. ഗ്രൂപ്പംഗങ്ങൾ നൽകുന്ന ഉത്തരങ്ങളിൽ അദ്ധ്യാപകൻ ആവശ്യമായ മാറ്റങ്ങൾ നിർദ്ദേശിക്കുന്നു)

Phase IV

(എല്ലാ ഗ്രൂപ്പുകളും ചോദ്യോത്തരപ്പയറ്റിൽ ഏർപ്പെട്ടിരിക്കുന്ന സമയത്ത് അദ്ധ്യാപകൻ ഗ്രൂപ്പുകളുടെ പ്രവർത്തനം വിലയിരുത്തുന്നു. ഏറ്റവും നന്നായി പാഠ്യപ്രവർത്തനം പൂർത്തിയാക്കിയ ഗ്രൂപ്പിനെ അദ്ധ്യാപകൻ അഭിനന്ദിക്കുന്നു. മറ്റു ഗ്രൂപ്പുകളെയും പ്രോത്സാഹിപ്പിക്കുന്നു)

അദ്ധ്യാപകൻ : എല്ലാ ഗ്രൂപ്പുകളും ഒന്നിനൊന്നു മെച്ചമായി പ്രവർത്തിച്ചിട്ടുണ്ട്. പക്ഷെ ഏറ്റവും നന്നായി ഉത്തരങ്ങൾ നൽകിയത് 'ചർക്ക' ഗ്രൂപ്പാണ്. അഭിനന്ദനങ്ങൾ. ശ്രമിച്ചാൽ എല്ലാ ഗ്രൂപ്പുകൾക്കും അവരവരുടെ പ്രവർത്തനം മെച്ചപ്പെടുത്താവുന്നതാണ്. (ക്ലാസ് അവസാനിക്കുന്നു. ഗ്രൂപ്പംഗങ്ങൾ പഠനവസ്തുക്കളും മറ്റും യഥാസ്ഥാനത്ത് തിരിച്ചുവെക്കുന്നു)

Appendix I A

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

LESSON TRANSCRIPT FOR COOPERATIVE LEARNING STRATEGY
(Learning Together Model)

Dr. P.K. SUDHEESH KUMAR **HAMEED, A.**

(Teacher enters the class and wish the students. Students welcome the wishing)

Teacher : Do you like the existing methods of learning?

Student : Yes

Teacher : Have you heard about the more interesting learning methods than the existing one?

Student : No

Teacher : Are you interested to know about them?

Student : Yes

Teacher : Well, let us begin to study through a novel and interesting method which includes games and mutual cooperation. Are you interested to know the features and merits of the new learning method?

Student : Yes

(Students are getting prepared for the new method)

Teacher : Yes, let us start.

(The teacher then tries to make the students understand about the new method and some of the important features and merits of it)

Teacher : The new method of learning is known as the ***Cooperative Learning Method (Learning Together).*** For this method, the class have to be divided into groups and the method is of with some important features and merits.

: It makes learning possible, very easily.
: Through this method, learning becomes too simple and interesting.

: The opinions of each and every group member are considered, as the decision comes from the discussion among group members.

: It is helpful in enhancing academic achievement and retention.

: This method is useful to every student as there is mutual help and cooperation in learning.

(Students hear the teacher attentively).

Teacher : Do you like the traditional method of competition in which students have no cooperation in learning?

Student : No

Teacher : Different from the traditional method, here you have the freedom to ask questions and give your opinion openly, without any fear.

: It is very useful in leadership training.

(Students prepare for learning).

Teacher : It seems that you are ready to learn.

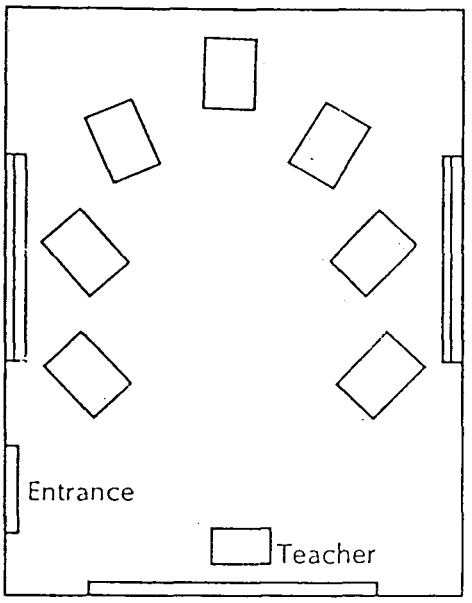
Student : Yes.

Teacher : Before that we have to introduce ourselves and structure the seating arrangement required for the cooperative learning strategy.

(Teacher introduces himself. The teacher describes about the ***Four Step Interview method*** of grouping students and the students begins to form groups and introduces themselves to others. In this technique the subject **A** interviews **B** for a specific number of minutes. At a signal, subjects reverse their roles and **B** interviews **A** for the same number of minutes. At another signal by the teacher, the pair consisting of **A** and **B** turns to another pair, forming a group of four. At the next signal, the group consists of **A, B, C** and **D** turns to another pair, **E** and **F** and form a group of six members. Each member of the group introduces his or her partner).

(After the groups were formed through the Four-step interview technique, the teacher suggest the teams to select a leader to the group and give suitable names to group, they like. As the new method is made use of frequently changing the roles and team names, all group members have equal opportunity in learning and leadership training).

(For structuring the seating arrangement in the classroom, the teacher tells the students to get seated in the shape of a ***horse shoe***. The teacher demonstrates the procedure for sitting in the horse-shoe model with the help of blackboard. The students are getting seated.)



(Teacher gives each of the group some pictures of learning tasks through Cooperative Learning Method and posters pertaining to the Cooperative activities, and instructs them to display the same on different sides of the classroom walls in the next day. Teacher helps the students to play some games which makes them interested in learning).

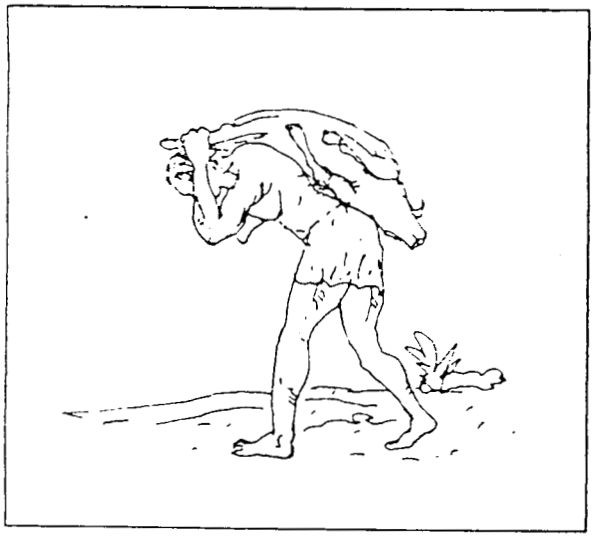
PHASE I

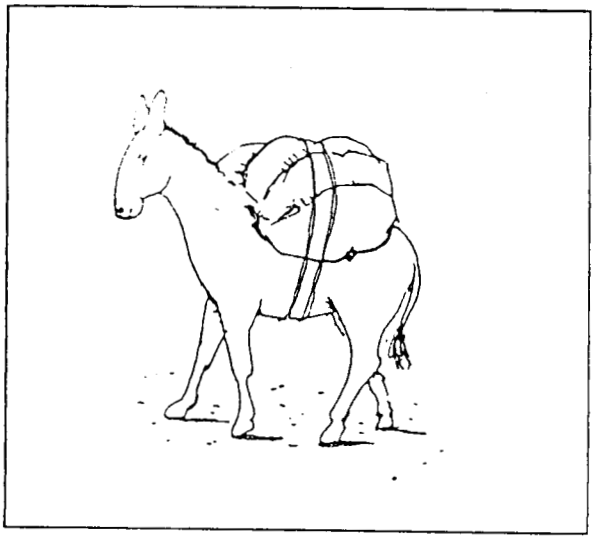
(Teacher gives each group an ***assignment sheet*** and seven pictures which signifies the various stages in the development of goods transportation. It is given to make the students understand the relationships in the development of transportation with the growth in agriculture, industry and transportation of goods. Teacher instruct the students to change the roles and names of the groups).

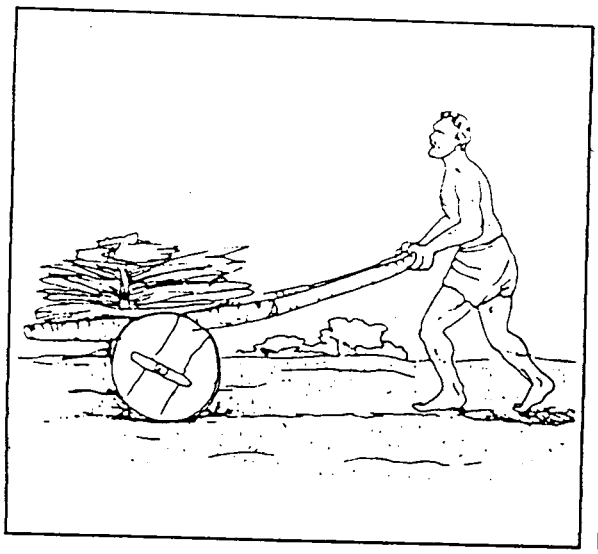
Teacher : Now the learning task have to be arranged in a novel style, different from the earlier one. For this, an assignment sheet and seven pictures are given to you to show the relationship between transportation and transportation of goods. It is your duty to formulate good questions and find out the fruitful answers. For example:

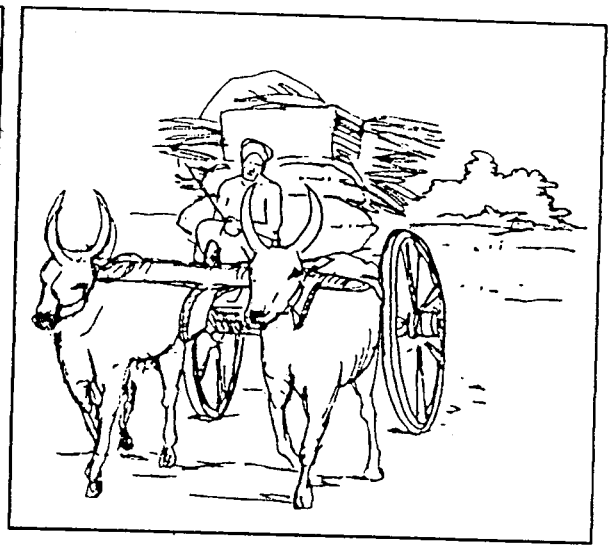
Which was the first step in the history of the transportation of goods?

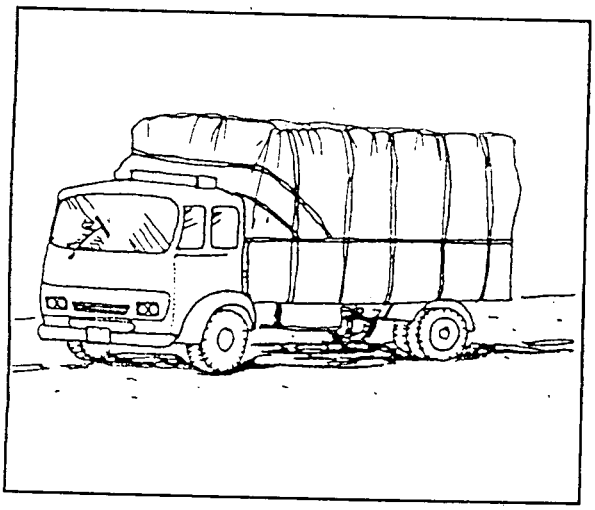
Pictures

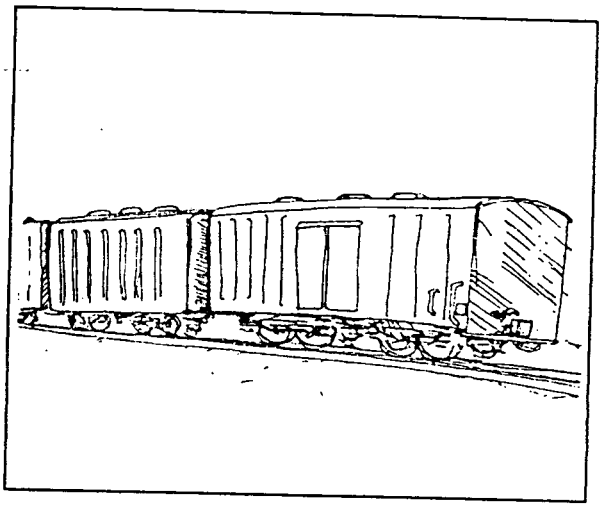


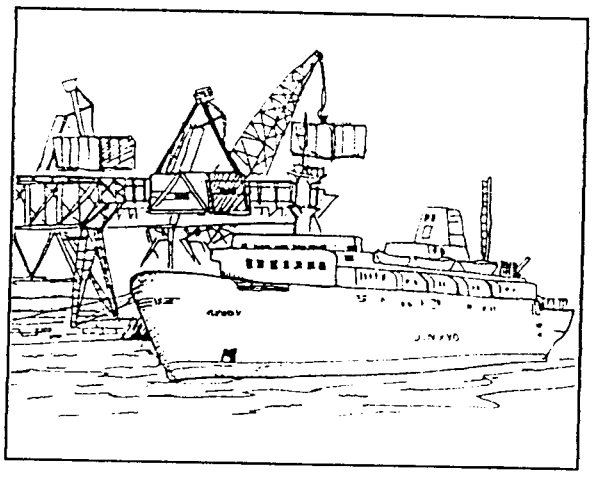












Assignment Sheet

Instructions: All group members have to exchange it.
: Complete the learning tasks within the stipulated time.

I. Find out how the growth in transportation have related with the growth in agriculture and industry (Hints: Muttock-Plough-Tractor).

II. Explain the relationship between the growth in agriculture with that of growth in the transportation of goods (Hints: Headload - Ass - Trolly - Bullock cart - Lorry - Train - Ship).

Teacher : The given task have to be completed by all the group members. Leader may notice it (Group members begins the work).

PHASE II

(Teacher walks through the class to observe whether the students are actively participating in the learning task and share the learning materials and ideas among them).

Teacher : Questions and it's answers should be found out by the group members through discussion. Low achieving students should be helped in the learning task by other group members. It is better to exchange the learning materials among the groups and within the group members of each group.

(Group members understand, the learning task from the assignment sheet. They exchange the pictures and find out and record the relevant things through discussion. Group members clears their doubts. Teacher observes the work of the groups).

PHASE III

(Teacher encourages the group members for the facilitation of utmost division of labour among them. Teacher provides some guidelines for the same).

Teacher : Do all the members participate in the discussion? One group member have to record and another one have to report the answers to be found out by the other group members. Leader have to observe it.

(Teacher gives a signal to stop the learning task. Groups do the same. Teacher invites the groups to ask the questions and present the answers. Groups do the same, one by one).

Teacher : Have you find out the required number of questions and suitable answers to them? Now each group have to ask two questions to the next group. Two marks will be given to each right answer. The group, which scores the highest marks will attain the first place. While the answers are presented, the group members may note down the relevant things. Yes, let us start.

(Students begins the 'question fight'. Teacher suggests some modifications in the answers given by the group members).

PHASE IV

(Teacher evaluate the work of groups, when groups are engaged in the 'question fight'. Teacher congratulate the group which completed the learning task more successfully. Teacher also encourages the other groups).

Teacher : Each and every group have tried to make the task successful. But group 'Lorry' have presented the best answers. Congratulations. Every group can improve their performance, if they try their level best (Teacher concludes the class. Group members puts the learning materials in the proper place).

Appendix II

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

LESSON TRANSCRIPT FOR CONVENTIONAL LECTURE METHOD OF TEACHING(SOCIAL SCIENCE)

Dr. P.K. SUDHEESH KUMAR — HAMEED,A.

CONTENT ANALYSIS

Terms and Concepts

ദൂരം, മോട്ടാർ വാഹനം, ആവിവണ്ടി, ബസ്സ്, ഗതാഗതരംഗം, പറക്കും തീവണ്ടി, തൂങ്ങിപ്പായും തീവണ്ടി, എക്സ്പ്രസ്സ് ഹൈവെ, ഭൂപടം, റെയിൽവെ.

Facts

1. 1770-ൽ ആവിവണ്ടി ആദ്യമായി ഉപയോഗിച്ചു തുടങ്ങിയത് ഫ്രാൻസിലായിരുന്നു.
2. നമ്മുടെ നാട്ടിലൂടെ പോകുന്ന ബസ്സും പഴയകാലത്തെ ബസ്സും തമ്മിൽ ആകൃതിയിൽ പ്രകടമായ വ്യത്യാസങ്ങൾ ദർശിക്കാവുന്നതാണ്.
3. ഇന്ത്യയെ തെക്കു വടക്കും കിഴക്കു പടിഞ്ഞാറും തമ്മിൽ ബന്ധിപ്പിച്ചുകൊണ്ട് സർക്കാർ ഉണ്ടാക്കാനുദ്ദേശിക്കുന്ന ഹൈവെയാണ് എക്സ്പ്രസ്സ് ഹൈവെ.
4. 1853-ൽ ബോംബെ മുതൽ താനെ വരെയാണ് ഇന്ത്യയിൽ ആദ്യമായി തീവണ്ടി ഓടിയത്.

Generalisation

1. മനുഷ്യൻ ദൂരവും സമയവും കീഴടക്കിക്കൊണ്ടിരിക്കുകയാണ്.
2. മോട്ടോർ വാഹനത്തിന്റെ വളർച്ചയിൽ ധാരാളം ഘട്ടങ്ങളുണ്ട്.
3. ഗതാഗതരംഗം ഇന്ന് വളരെയേറെ പുരോഗതി പ്രാപിച്ചിട്ടുണ്ട്.
4. കഴിഞ്ഞ 40 വർഷത്തിനുള്ളിൽ ഇന്ത്യയിൽ തീവണ്ടിപ്പാതയുടെ നീളത്തിൽ ഗണ്യമായ വളർച്ചയുണ്ടായിട്ടുണ്ട്.
5. നമ്മുടെ നാട്ടിലെ ചരക്കു ഗതാഗതത്തിൽ തീവണ്ടിക്ക് മുഖ്യസ്ഥാനമാണുള്ളത്.

Major Ideas

- ഗതാഗതരംഗത്തെ വളർച്ച
- വിവിധ തരം ഗതാഗതമാർഗ്ഗങ്ങൾ

	INSTRUCTIONAL OBJECTIVES
Acquisition of Knowledge	കുട്ടി പാഠഭാഗത്തിലെ താഴെ പറയുന്ന പദങ്ങൾ, ആശയങ്ങൾ, വസ്തുതകൾ എന്നിവ അറിയുന്നു. തൽഫലമായി, 1. 1770-ൽ ഫ്രാൻസിലാണ് ആദ്യമായി ആവിവണ്ടി ഉപയോഗത്തിൽ വന്നത് എന്നു കുട്ടി അറിയുന്നു. 2. ഇന്ത്യയിൽ ഭൂഗർഭ റെയിൽവെ ആദ്യമായി നിലവിൽ വന്നത് കൽക്കത്തയിലാണെന്ന് കുട്ടി അറിയുന്നു.
Development of Understanding	കുട്ടി, താഴെ പറയുന്ന ആശയങ്ങൾ, വസ്തുതകൾ, സാമാന്യവൽക്കരണങ്ങൾ എന്നിവ മനസ്സിലാക്കുന്നു. തൽഫലമായി, 1. ഗതാഗതരംഗത്ത് ഇന്ത്യയിലുണ്ടായ പുരോഗതി കുട്ടി മനസ്സിലാക്കുന്നു. 2. എക്സ്പ്രസ്സ് ഹൈവെ എന്നതുകൊണ്ട് എന്താണുദ്ദേശിക്കുന്നതെന്ന് കുട്ടി ഗ്രഹിക്കുന്നു. 3. ഇന്ന് നിലവിലുള്ള വിവിധതരം തീവണ്ടികളെക്കുറിച്ച് കുട്ടി മനസ്സിലാക്കുന്നു.
Application	പാഠഭാഗത്തുനിന്നും സ്വായത്തമാക്കിയ അറിവുകൾ കുട്ടി നൂതന സാഹചര്യത്തിൽ പ്രയോഗിക്കുന്നു, തൽഫലമായി, 1. ചരക്കു ഗതാഗതത്തിൽ തീവണ്ടിക്കുള്ള സ്ഥാനം സ്വന്തം ജീവിതസാഹചര്യവുമായി ബന്ധപ്പെടുത്തി കുട്ടി പറയുന്നു. 2. ഗതാഗതരംഗത്ത് ഇന്ത്യയിലുണ്ടായ പുരോഗതി, മറ്റുരാജ്യങ്ങളുമായി താരതമ്യപ്പെടുത്തിപ്പറയാൻ കുട്ടിക്ക് കഴിയുന്നു.
Skill	- പഴയകാലത്ത് നിലവിലുണ്ടായിരുന്ന ഗതാഗതോപാധികളുടെ ചിത്രങ്ങൾ ശേഖരിച്ച് ചുമർ പത്രിക-യുണ്ടാക്കുന്നതിൽ കുട്ടി നൈപുണ്യം നേടുന്നു.
Attitude	- പഴയകാലത്തെ ബസ്സിന്റെ മാതൃക നിർമ്മിക്കുന്നതിൽ കുട്ടി നൈപുണ്യം നേടുന്നു. - ഗതാഗത സംവിധാനത്തിലുണ്ടായ പുരോഗതി നല്ലതാണെങ്കിലും അതു മൂലമുണ്ടാകുന്ന അന്തരീക്ഷ മലിനീകരണം നിയന്ത്രിക്കേണ്ടതാണെന്ന മനോഭാവം കുട്ടിയിൽ ഉണ്ടാവുന്നു.
Teaching Aids	- മോട്ടോർ വാഹനങ്ങളുടെ പുരോഗതി ചിത്രീകരിക്കുന്ന ചാർട്ട്. - ഇന്ത്യയുടെ ഭൂപടത്തിൽ എക്സ്പ്രസ്സ് ഹൈവെയുടെ ദിശ അടയാളപ്പെടുത്തിയത്.
Previous knowledge	- നമ്മുടെ റോഡുകളിലൂടെ കടന്നു പോവുന്ന വിവിധതരം വാഹനങ്ങൾ കുട്ടി കാണുകയും യാത്ര ചെയ്യുകയും ചെയ്തിട്ടുണ്ട്.

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Content	Objectives & Specifications	Learning Experiences	Evaluation
Introduction	K/Recalls	കുട്ടിയുടെ മുന്നറിവു പരിശോധിക്കുന്നതിനായി അദ്ധ്യാപകൻ ചില ചോദ്യങ്ങൾ ചോദിക്കുന്നു. കുട്ടി ഉത്തരം പറയുന്നു. -നിങ്ങളിന്ന് ഏത് വാഹനത്തിലാണ് സ്ക്കൂളിൽ എത്തിയത്? -നിങ്ങൾ തീവണ്ടിയിൽ സഞ്ചരിച്ചിട്ടുണ്ടോ? -തീവണ്ടി ഇവിടെ നിലവിൽ വന്നത് ആരുടെ ഭരണ കാലത്താണെന്നറിയുമോ? (അദ്ധ്യാപകന്റെ ചോദ്യങ്ങൾക്ക് കുട്ടി മറുപടി പറയുന്നു)	
Development	U/Explains	ഗതാഗത-വാർത്താവിനിമയ രംഗത്തെ പുത്തൻ കണ്ടു പിടുത്തങ്ങളിലൂടെ മനുഷ്യൻ ദൂരത്തെയും സമയത്തെയും പോലും കീഴടക്കിക്കൊണ്ടിരിക്കുകയാണെന്നും അതു വഴി ലോകം ദിനംപ്രതി "ചെറുതായി" കൊണ്ടിരിക്കുകയാണെന്നും അദ്ധ്യാപകൻ ഉദാഹരണസഹിതം വിശദീകരിക്കുന്നു.	ഗതാഗതരംഗത്തെ പുത്തൻ കണ്ടു പിടുങ്ങൾ എന്തെല്ലാമാണ്? എങ്ങിനെയാണ് മനുഷ്യൻ സമയത്തെയും ദൂരത്തെയും കീഴടക്കിയതെന്നു പറയുന്നത്?
	U/Explains	നമുക്കിന്ന് **വലിയ മനുഷ്യരും ചെറിയ ലോകവും** എന്ന പാഠഭാഗത്തെക്കുറിച്ച് പഠിച്ചു തുടങ്ങാം.	
മോട്ടോർ വാഹനങ്ങളുടെ ചരിത്രം	K/Recalls	മനുഷ്യപുരോഗതിയിലെ ഒരു സുപ്രധാന നാഴികക്കല്ലാണ് മോട്ടോർ വാഹനങ്ങളുടെ കണ്ടുപിടുത്തമെന്നും **1770**-ൽ ആദ്യത്തെ ആവിവണ്ടി **ഫ്രാൻസിലാണ്** കണ്ടുപിടിക്കപ്പെട്ടതെന്നും അദ്ധ്യാപകൻ പറഞ്ഞുകൊടുക്കുന്നു.	1770-ൽ ആദ്യത്തെ ആവിവണ്ടി എവിടെയാണ് കണ്ടുപിടിക്കപ്പെട്ടത്?

Content	Objectives & Specifications	Learning Experiences	Evaluation
പഴയകാലത്തെ ബസ്സ്	U/Identifies K/Recalls U/Identifies U/Illustrate with examples	(ആവിവണ്ടിയുടെ ചിത്രം അദ്ധ്യാപകൻ പ്രദർശിപ്പിക്കുന്നു. കുട്ടി കാണുന്നു.) ബസ്സിൽ യാത്ര ചെയ്യാത്ത ആരെങ്കിലും ക്ലാസ്സിലുണ്ടോ? (കുട്ടി ഉത്തരം പറയുന്നു) പഴയകാലത്തെ ബസ്സിന്റെ ചിത്രം കാണിച്ചതിനുശേഷം അദ്ധ്യാപകൻ നിലവിലുള്ള ബസ്സുകളുടെ പ്രത്യേകതകൾ വിശദീകരിക്കുന്നു.	പഴയകാലത്തെ ബസ്സുകളെ അപേക്ഷിച്ച് പുതിയവയ്ക്കുള്ള പ്രത്യേകതകളെന്തെന്ന് ഉദാഹരണസഹിതം വിശദീകരിക്കുക.
തീവണ്ടി വിവിധതരം തീവണ്ടികൾ	K/Recalls K/Recalls	തുടർന്നു തീവണ്ടിയുടെ പ്രത്യേകതകളെക്കുറിച്ചും **പറക്കും തീവണ്ടി, തൂങ്ങിഷായും തീവണ്ടി** എന്നിങ്ങനെ വിവിധതരം തീവണ്ടികളെക്കുറിച്ചും ബ്രിട്ടീഷുകാരുടെ കാലത്താണ് **ഇന്ത്യയിൽ റെയിൽവെ നിലവിൽ വന്നതെന്നും അദ്ധ്യാപകൻ** വിശദീകരിക്കുന്നു.	വിവിധതരം തീവണ്ടികളുടെ പേർ പറയുക ആരുടെ കാലത്താണ് ഇന്ത്യയിൽ റെയിൽവെ നിലവിൽ വന്നത്?
റോഡുകൾ എക്സ്പ്രസ്സ് ഹൈവെ	S/Points out U/Explains	ഭൂപടത്തിന്റെ സഹായത്താൽ ഇന്ത്യയിലെ പ്രധാന റോഡുകൾ അദ്ധ്യാപകൻ കുട്ടികൾക്ക് കാണിക്കുന്നു. കുട്ടി അടയാളപ്പെടുത്തുന്നു. ഇന്ത്യയെ തെക്കുവടക്കും കിഴക്ക് പടിഞ്ഞാറും ബന്ധിപ്പിച്ചു കൊണ്ട് ഒരു ഹൈവെ നിർമ്മിക്കാൻ സർക്കാർ ഉദ്ദേശിക്കുന്നുണ്ടെന്നും ഇത് **എക്സ്പ്രസ്സ് ഹൈവെ** എന്ന പേരിലാണ് വിശേഷിപ്പിക്കപ്പെടുന്നതെന്നും അദ്ധ്യാപകൻ വ്യക്തമാക്കുന്നു. ചിത്രം കാണിക്കുന്നു.	ഇന്ത്യയിലെ പ്രധാന റോഡുകൾ ഏതെല്ലാമാണെന്ന് ഭൂപടത്തിൽ അടയാളപ്പെടുത്തുക?

Content	Objectives & Specifications	Learning Experiences	Evaluation
റെയിൽവെ പുരോഗതി	U/Explains	കഴിഞ്ഞ 40 വർഷത്തിനുള്ളിൽ ഇന്ത്യയിൽ തീവണ്ടിപ്പാതയുടെ നീളത്തിൽ ഗണ്യമായ പുരോഗതിയുണ്ടായിട്ടുണ്ടെന്നും 1950-51 കാലഘട്ടത്തിൽ 54845 കി.മീ.നീളമുണ്ടായത് 1990-91 കാലഘട്ടത്തിൽ 62367 കി.മീ. ആയി വർദ്ധിച്ചിട്ടുണ്ടെന്നും പട്ടികയുടെ സഹായത്തോടെ അദ്ധ്യാപകൻ വിശദീകരിക്കുന്നു.	എക്സ്പ്രസ്സ് ഹൈവെ എന്തെന്ന് വ്യക്തമാക്കുക?
ചരക്കു ഗതാഗതം	U/Explains	ചരക്കു ഗതാഗതത്തിൽ റെയിൽവെ വലിയ പങ്കാണ് വഹിക്കുന്നതെന്നും റെയിൽ മാർഗ്ഗം കേരളത്തിലെത്തിക്കുന്ന പ്രധാന സാധനങ്ങൾ എന്തൊക്കെയാണെന്നും അദ്ധ്യാപകൻ വ്യക്തമാക്കുന്നു. പാഠഭാഗത്തിലെ പ്രധാന ആശയങ്ങൾ ഒരിക്കൽകൂടി പറഞ്ഞതിനുശേഷം അദ്ധ്യാപകൻ പാഠഭാഗം സംഗ്രഹിക്കുകയും റിവ്യൂ ചോദ്യങ്ങൾ ആരംഭിക്കുകയും ചെയ്യുന്നു.	തീവണ്ടിപ്പാതയുടെ നീളത്തിൽ കഴിഞ്ഞ40 വർഷക്കാലത്തിനിടയ്ക്കുണ്ടായ പുരോഗതി വിലയിരുത്തുക. ചരക്കു ഗതാഗതത്തിൽ റെയിൽവെയുടെ പങ്കെന്ത്?
Review	1. 1770-ൽ ആദ്യത്തെ ആവിവണ്ടി എവിടെയാണ് കണ്ടുപിടിക്കപ്പെട്ടത്? 2. പഴയകാലത്തെ ബസ്സിൽ നിന്നും വ്യത്യസ്ഥമായി പുതിയവയുടെ പ്രത്യേകതകൾ എന്തെല്ലാം? 3. എക്സ്പ്രസ്സ് ഹൈവെ എന്നതുകൊണ്ട് ഉദ്ദേശിക്കുന്നതെന്ത്? 4. ഇന്ത്യയിൽ ആദ്യമായി തീവണ്ടി നിലവിൽ വന്നത് ഏത് വർഷത്തിൽ?	
Assignment	1. പ്രായമായവരോട് ഗതാഗത രംഗത്തുണ്ടായ പുരോഗതിയെക്കുറിച്ച് അന്വേഷിച്ചറിഞ്ഞ് നിരീക്ഷണക്കുറിപ്പുകളുണ്ടാക്കി അവ ഉപയോഗിച്ച് ചുവർ പത്രിക തയ്യാറാക്കുക.	

Appendix II A

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

LESSON TRANSCRIPT FOR CONVENTIONAL LECTURE METHOD OF TEACHING (SOCIAL SCIENCE)

Dr. P.K. SUDHEESH KUMAR — HAMEED, A.

CONTENT ANALYSIS

Terms & Concepts		Distance, Motor Vehicle, Steam engine, Bus, Transportation, Flying train, Hanging train, Express highway, Map, Railway
Facts	1.	It was in the year 1770, the steam engine came into existence in France.
	2.	There is clear difference, in shape, between the buses of the past days and that of today.
	3.	Express High way is the road, to be made by the Government, which connects India from North to South and West to East.
	4.	It was in the year 1853, train service began in India from Bombay to Thane.
Generalisation	1.	Man has been conquering time and distance.
	2.	There are different stages in the growth of motor vehicles.
	3.	Today, transportation facilities have developed very much.
	4.	There is great increase in the length of the railway, in the last 40 years.
	5.	Trains have an important place in the goods transportation of our country.

Major ideas	- Growth of Transportation - Different types of Transportation facilities

INSTRUCTIONAL OBJECTIVES

Acquisition of Knowledge	The student knows the following terms, concepts and facts of the lesson. As a result, 1. The student knows that the steam engine came into existence in France in the year 1970. 2. The student knows that the first railway tunnel of India came into existence in Calcutta.
Development of Understanding	The student understand the following facts, concepts and generalisations. As a result, 1. The student understand the developments that had taken place in the transportation facilities of India. 2. The student understand the meaning of Express Highway.
Appplication	The student applies the knowledge gained from the content area in new situations. As a result 1. Relating to his life situation, the student describes the importance of railway in the transportation of goods. 2. The student can compare the development of transportation in India with that of other countries.

Skill	- The student exhibits skills in making a wall newspaper, by collecting the pictures related with the transportation facilities of the past. - The student exhibits his skills to make a model of bus in the past.
Attitude	The student is having the attitude that the environmental pollution have to be controlled, though there is development in the transportation facilities.
Teaching aids	- The chart which depicts the development of motor vehicles. - The map of India in which the route of express highway is marked.
Previous knowledge	The student have seen and travelled in different types of vehicles in our roads.

Content	Objectives & Specifications	Learning experiences	Evaluation
Introduction	K/Recalls	Teacher asks some leading questions to test the previous knowledge of the child. The child answers - In which vehicle, you came to the school today? - Have you ever travelled in train? - Who was the ruler of India when train service began here?	
Development	U/Explains	The teacher illustrates the examples, that men have been even conquering distance and time, through new inventions in the field of transportation and communication. Hence, the world is becoming 'smaller' day by day.	What are the novel inventions in the field of transportation?
	An/Analyse	Let us study a new topic, namely '**Big men and Small world**'.CB	How can you say that men have conquered time and distance?

Content	Objectives & specifications	Learning experiences	Evaluation
The History of motor vehicles	K / Recalls	The teacher describe how the invention of motor vehicles became an important milestone in the history of human development. The teacher also says that the first steam engine was invented in France in the year 1770.	Where was the first steam engine invented in 1770?
	U / Identifies	The teacher shows the picture of steam engine. The child identifies.	
	K / Recalls	Is there any one in the class who do not travel in the bus? (The child gives answer)	
Bus, in the past	U / Illustrate with example	After showing the picture of the bus in the past, the teacher discusses the peculiarities of the buses of today.	Compare and contrast the peculiarities of the buses in the past and the new one, with suitable examples.
Different types of Trains		Then the teacher explain the features of different types of trains like Hanging train and Flying train. The teacher again make the people understand that the railway came into existence in India during the period of the British.	Which are the different types of trains?

Content	Objectives & specifications	Learning experiences	Evaluation
Roads	K/Recalls	Teacher points the important roads of India with the help of a map. The child also points the same.	Who ruled India, when railway came into existence?
Express Highway	S / Points out U / Defines	The teacher explains that the Govt. of India is intended to construct a new highway which connects from West to East and North to West and it is termed as the **Express Highway**.CB	Mark, in the map provided, the important roads of India. Define the term express highway.
Development of Railway	A / Analyse	With the help of the chart, the teacher explains that there is considerable development in the length of Indian railway. From the 54845 k.m. of 1950-51 period it increased to 62367 k.m. in 1990-91.	Analyse the developments that had taken place in the length of Indian railway, in the last 40 years.
Railway tunnel	K /Recalls	The teacher describes that train service began in India in the year 1853, between Bombay and Thane and the first railway tunnel came into existence in Calcutta.	In which year train service began in India?

Content	Objectives & specifications	Learning experiences	Evaluation
Transportation of goods	U / Describes	The teacher describes the role played by the railway in the transportation of goods and the important items which comes to Kerala through train. After repeating the major concepts in the content area, teacher concludes the lesson and begins to ask review questions.	What was the role played by Railway in the transportation of goods?

Review	1. Where was the first steam engine invented in 1770? 2. Describe the peculiarities of the new buses comparing with the old one. 3. What do you mean by the term Express Highway? 4. In which year train service began in India?
Assignment	Develop a wall magazine, from the observation report, after enquiring from the elders about the developments taken place in the field of transportation.

Appendix III

UNIVERSITY OF CALICUT
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SCALE OF ACHIEVEMENT MOTIVATION

Dr. Kamala S. Pillai and Salimkumar C.

നിർദ്ദേശങ്ങൾ: താഴെ കൊടുത്തിരിക്കുന്ന പ്രസ്താവനകൾ ശ്രദ്ധാപൂർവ്വം വായിക്കുക. ഓരോ പ്രസ്താവനക്കും മുന്നിലായി പ്രതികരണങ്ങൾ കൊടുത്തിരിക്കുന്നു. 'Y' അതെ (Yes) എന്നതിനെയും 'U' തീർച്ചയില്ല (Undecided) എന്നതിനെയും 'N' അല്ല (No) എന്നതിനെയും സൂചിപ്പിക്കുന്നു. ഓരോ പ്രസ്താവനക്കും നിങ്ങളുടെ പ്രതികരണം തന്നിരിക്കുന്ന ഉത്തരക്കടലാസിൽ അതാത് പ്രസ്താവനകളുടെ നമ്പരിനെതിരെ നിങ്ങളുടെ ശരിയായ പ്രതികരണത്തിന് (Y, U, N) മുമ്പടെയുള്ള വൃത്തത്തിൽ 'X' ചിഹ്നംകൊണ്ട് രേഖപ്പെടുത്തുക. എല്ലാ പ്രസ്താവനകൾക്കും പ്രതികരണം രേഖപ്പെടുത്താൻ പ്രത്യേകം ശ്രദ്ധിക്കുക.

1. പഠിക്കാൻ ബുദ്ധിമുട്ട് തോന്നുന്ന പാഠഭാഗങ്ങൾ ഞാൻ ഒഴിവാക്കാൻ ഇഷ്ടപ്പെടുന്നു.
2. ഏത് പ്രവർത്തിയിലും എന്റെ കഴിവിന്റെ പരമാവധി ഞാൻ ഉപയോഗപ്പെടുത്താൻ ശ്രമിക്കാറുണ്ട്.
3. ഓരോ ദിവസവും പഠിപ്പിക്കുന്ന പാഠഭാഗങ്ങൾ ഞാൻ അതാതു ദിവസംതന്നെ പഠിക്കാറുണ്ട്.
4. ഞാനൊരു മടിയനാണെന്ന തോന്നൽ എനിക്കുണ്ട്.
5. ഇന്നു ചെയ്യേണ്ടതാണെന്നറിയാവുന്ന പലകാര്യങ്ങളും ഞാൻ പിന്നീട് ചെയ്യാൻ മാറ്റിവയ്ക്കാറുണ്ട്.
6. കൂടുതൽ അദ്ധ്വാനം ഞാൻ ഇഷ്ടപ്പെടുന്നു.
7. എനിക്ക് ചെയ്യാൻ കഴിയുന്നതിലും വളരെ കുറച്ച് ജോലി മാത്രമെ ഞാൻ ചെയ്യാറുള്ളൂ.
8. വിഷമമുള്ള പാഠഭാഗങ്ങൾ പഠിക്കാൻ ഞാൻ കൂടുതൽ സമയം ചെലവഴിക്കാറുണ്ട്.
9. പഠനപ്രവർത്തനങ്ങൾ നന്നായി ചെയ്യാൻ കഴിയുന്നതിൽ എനിക്ക് സംതൃപ്തിയുണ്ട്.
10. എന്നെപ്പോലെ നന്നായി പഠിക്കുന്നവരോട് കൂട്ടുകൂടാൻ ഞാൻ ഇഷ്ടപ്പെടുന്നു.
11. കഴിഞ്ഞ പരീക്ഷയേക്കാൾ കൂടുതൽ മാർക്ക് വാങ്ങാൻ ഞാൻ ഓരോ തവണയും ശ്രമിക്കാറുണ്ട്.
12. ഒരു പ്രവൃത്തി നല്ല രീതിയിൽ ചെയ്തു തീർക്കുമ്പോൾ സംതൃപ്തിയുണ്ടാകുന്നു.
13. മറ്റുള്ളവർ ചെയ്യുന്നതിനേക്കാൾ നന്നായിട്ടില്ലെങ്കിലും എന്റെ മുൻ പ്രവർത്തനങ്ങളേക്കാൾ നന്നായി ചെയ്യാൻ കഴിഞ്ഞാൽ എനിക്ക് സംതൃപ്തിയുണ്ടാകുന്നു.
14. പഠനകാര്യങ്ങൾ ഏറ്റവും നന്നായി ചെയ്തു തീർക്കുവാൻ എനിക്ക് കഴിയാറുണ്ട്.
15. മറ്റുള്ളവർ എന്നെ മാതൃകയാക്കാവുന്ന തരത്തിലുള്ള പ്രവർത്തനം കാഴ്ചവയ്ക്കാൻ ഞാൻ ഇഷ്ടപ്പെടുന്നു.
16. എന്റെ ക്ലാസ്സിലെ എല്ലാവരും ഇഷ്ടപ്പെടുന്ന വ്യക്തിയാകാൻ ഞാൻ ആഗ്രഹിക്കുന്നു.
17. സംശയ നിവാരണത്തിനായി മറ്റു കുട്ടികൾ എന്റെ അടുത്ത് വരണമെന്ന് ഞാൻ ആഗ്രഹിക്കുന്നു.
18. എല്ലാവരും എന്റെ കഴിവിനെ അംഗീകരിക്കുവാൻ ഞാൻ ആഗ്രഹിക്കുന്നു.
19. എന്റെ അഭിപ്രായങ്ങൾ ഏറ്റവും വിലപ്പെട്ടതാകുവാൻ ഞാൻ ആഗ്രഹിക്കുന്നു.
20. എല്ലാവരാലും ശ്രദ്ധിക്കപ്പെടുവാൻ ഞാൻ ആഗ്രഹിക്കുന്നില്ല.
21. തീരുമാനങ്ങൾ എന്റേതാകുവാൻ ഞാൻ ആഗ്രഹിക്കുന്നു.
22. ഉന്നത വ്യക്തികളുമായി ഇടപഴകുവാൻ ഞാൻ ആഗ്രഹിക്കുന്നു.
23. എന്റെ നല്ല രീതിയിലുള്ള പ്രവർത്തനത്തെ എല്ലാവരും അഭിനന്ദിക്കണമെന്ന് ഞാൻ ആഗ്രഹിക്കുന്നു.
24. പഠനത്തിൽ ഞാൻ ഏറ്റവും മുൻപന്തിയിലാണെങ്കിലും പഠനം തുടരാൻ ഞാൻ ഇഷ്ടപ്പെടുന്നു.
25. മത്സരങ്ങളിൽ മറ്റുള്ളവരേക്കാൾ മുൻപന്തിയിലെത്താൻ ഞാൻ കഠിനമായി പ്രയത്നിക്കാറുണ്ട്.
26. വെറും നേട്ടത്തേക്കാളുപരി എന്റെ പ്രവർത്തിയുടെ ഫലത്തെ ഞാൻ വിലയിരുത്തുന്നത് അത് മറ്റുള്ളവർ ചെയ്യുന്നതിനേക്കാൾ നല്ലതാണോ എന്ന് നോക്കിയാണ്.

27. ഒരു പ്രവൃത്തി മറ്റുള്ളവരേക്കാളും നന്നായി ചെയ്യണമെന്നതിൽ എനിക്ക് നിഷ്ഠർഷയുണ്ട്.
28. ക്ലാസിൽ ഒന്നാംസ്ഥാനം ലഭിക്കണമെന്ന ആഗ്രഹത്തോടെ ഞാൻ പഠിക്കാറുണ്ട്.
29. വിജയം എനിക്കുറപ്പാണെന്ന് ഉറപ്പുള്ള കാര്യങ്ങളും ചെയ്യുവാൻ എനിക്ക് ഉൽസാഹം ഉണ്ട്.
30. എതിരാളികളും ശക്തരാണെങ്കിൽ എന്റെ പ്രവർത്തനം ഏറ്റവും മെച്ചമായിരിക്കും.
31. പഠിത്തത്തിൽ നേട്ടമുണ്ടാക്കാനുള്ള ഏതവസരവും ഞാൻ കളയാറില്ല.
32. മറ്റുള്ളവർ നേരംപോക്കിനായ് സമയം ചെലവഴിക്കുമ്പോഴും കൂടുതൽ നേട്ടങ്ങളും ഉണ്ടാക്കുവാൻ ഞാൻ ശ്രമിക്കുന്നു.
33. പഠിത്തത്തിൽ ഉയർച്ചയുണ്ടായതിന്റെ പിന്നിൽ നേട്ടങ്ങളുടെ ഒരു ചരിത്രം എനിക്കുണ്ട്.
34. കൂടുതൽ നേട്ടങ്ങളും ഉണ്ടാകുന്നതുകൊണ്ടാണ് എനിക്ക് നന്നായി പഠിക്കാൻ കഴിയുന്നത്.
35. പഠനത്തിന് പ്രാധാന്യം കൊടുക്കുന്നത് അതിൽനിന്നും ഉണ്ടാകുന്ന ഉയർച്ചയെ അടിസ്ഥാനമാക്കിയാണ്.
36. പഠനകാര്യങ്ങളും നന്നായി ചെയ്യുന്നതിനുള്ള സമ്മാനങ്ങളും എന്നും എനിക്കുതന്നെയാണ് ലഭിക്കാറുള്ളത്.
37. സാങ്കേതിക ജ്ഞാനം കൂടുതൽ ആവശ്യമുള്ള പ്രവർത്തികളും ചെയ്യുവാൻ ഞാൻ ഇഷ്ടപ്പെടുന്നു.
38. ഉയർന്ന ബുദ്ധിശക്തിയും നിപുണതയും ആവശ്യമായ പഠനപ്രവർത്തികളും ചെയ്യാൻ ഞാൻ ഇഷ്ടപ്പെടുന്നു.
39. ഒരു പ്രവർത്തി ശരിയായി ചെയ്യാൻ കഴിയാതെ വരുമ്പോൾ അത് ഉപേക്ഷിക്കാൻ എനിക്ക് തോന്നാറുണ്ട്.
40. ലക്ഷ്യത്തിലെത്തിച്ചേരാൻ സഹായകമാണോ എന്റെ പഠനരീതി എന്ന് എനിക്ക് സംശയം തോന്നാറുണ്ട്.
41. എല്ലാവരേക്കാളും ഉപരിയായി പഠനകാര്യങ്ങളും നന്നായി ചെയ്യുവാൻ എനിക്ക് കഴിയും.
42. പഠനപരമായ എല്ലാ പ്രവർത്തനങ്ങളിലും ആദ്യം അഭിപ്രായം പറയുന്നത് ഞാനാണ്.
43. പഠനകാര്യങ്ങളും സഹപാഠികളോട് ചർച്ച ചെയ്യാൻ ഞാൻ മുൻകൈയെടുക്കാറുണ്ട്.
44. സഹപാഠികളിൽ സ്വാധീനം ചെലുത്താൻ കഴിയുന്നത് എനിക്ക് സന്തോഷമുള്ള കാര്യമാണ്.
45. അവസരം കിട്ടിയാൽ സഹപാഠികളുടെ ഇടയിൽ ഞാൻ ഒരു നല്ല നേതാവാകും.
46. ഞാൻ പറയുന്നത് എന്റെ സഹപാഠികളും എല്ലാവരും ശ്രദ്ധിക്കാറുണ്ട്.
47. എന്റെ സംഘത്തിലെ നേതാവാണ് ഞാൻ എന്ന് എനിക്ക് എപ്പോഴും തോന്നാറുണ്ട്.
48. സഹപാഠികളും എന്ത് ചെയ്യണമെന്ന് തീരുമാനിക്കുന്നതിലും അത് നടപ്പിലാക്കുന്നതിനും മുൻകൈയെടുക്കുന്നതാണ് എനിക്ക് സന്തോഷം.
49. ഞങ്ങളും ഏതെങ്കിലും ഒരു പ്രവർത്തിക്ക് രൂപം കൊടുക്കുമ്പോൾ അത് മറ്റൊരാളുടെ നേതൃത്വത്തിൽ ഏറ്റെടുത്ത് നടത്തുന്നതിനെക്കാൾ ഞാൻതന്നെ ഏറ്റെടുത്ത് നടത്തുന്നതാണ് എനിക്കിഷ്ടം.
50. സഹപാഠികൾക്ക് നിർദ്ദേശം കൊടുക്കുവാനും അതനുസരിച്ച് കാര്യങ്ങളും നീക്കുവാനും എനിക്കിഷ്ടമാണ്.

Appendix IIIA

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

SCALE OF ACHIEVEMENT MOTIVATION

Dr. Kamala S. Pillai & C. Salim Kumar

***Instructions*:**

Read carefully the statements given below. For each statement, three responses **'Y'**, **'U'** and **'N'** are possible and these denotes **Yes, Undecided** and **No** respectively. Separate sheet is provided for recording your responses. Mark your response with the symbol 'X', below the circle of your responses (Y, U, N) for each statement. Try to mark your response to each and every statement.

1. I like to avoid those lessons which I find difficult to study.
2. I would try to utilise maximum of my ability for doing any work.
3. I usually study the lessons taught each day that day itself.
4. I have the feeling that I am lazy.
5. I often put off things I know I should do today.
6. I like hard work.
7. I used to do very little work which I can do.
8. I would spend more time in studying difficult lessons.
9. I find satisfaction in doing well in my studies.
10. I like to mingle with others, who are good at studies like me.
11. Each time I try to score more marks than my previous examinations.
12. I find satisfaction, when I do a work in a befitting manner.
13. I get satisfaction in doing a work better than my earlier work even if I don't outperform others.
14. I would be able to complete my studies very well.
15. I like to present my activities which others can consider as models.

16. I want to become a person admired by others.
17. I want others to come to me for clearing their doubts.
18. I like to be admired of my abilities.
19. I want others to consider my opinions of great value.
20. I dislike being the centre of attention.
21. I like to take my own decisions.
22. I want to mingle with important persons in the community.
23. I like others to appreciate my good activities.
24. Even if I top in my class studies always I like to continue my studies.
25. I try harder to win the top positions when I am in competition with others.
26. I judge my performance on whether I do better than others rather than just getting a good result.
27. It is important to me to perform better than others on a task.
28. I would study my lessons so that I get the top rank in my class.
29. It gives me pleasure in doing things which I am sure to win.
30. If there is tough competition, my performance will be better.
31. I never neglect opportunities of better performance in my studies.
32. I don't mind working hard while others are having fun.
33. There is continuous effort behind the success of my accomplishments in studies.
34. I could study well as I am getting more recognition.
35. The most important thing about studies is accomplishment.
36. I usually get the trophies and prizes for studies.
37. There is satisfaction in work involving technical knowledge and skill.
38. I find satisfaction in studying materials which require high intellectual ability and skill.
39. I feel like giving up a work which I am unable to do correctly.
40. I feel doubt about my learning style whether it will help to attain the goal.
41. I think I am able to study better than anybody else.

42. In all study matters, my opinions always come first.

43. I used to take initiative in discussing study matters with my classmates.

44. I would enjoy having authority over my classmates.

45. If given the chance I would become a good leader.

46. My classmates take notice of what I say.

47. I usually think, I am the leader of my group.

48. I enjoy taking initiative in what my classmates should do and get things done.

49. When we plan an activity I would like to direct it myself rather than someone else taking the lead.

50. I like to give direction to my classmates and get things going accordingly.

Appendix III B

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

SCALE OF ACHIEVEMENT MOTIVATION

RESPONSE SHEET

പേര് ..... ക്ലാസ്സ് .....ക്ലാസ്സ്നമ്പർ.....

സ്ക്കൂൾ ..... ആൺകുട്ടി/പെൺകുട്ടി.....വയസ്സ്.....

ക്രമ നമ്പർ	അതെ	തീർച്ചയില്ല	അല്ല	ക്രമ നമ്പർ	അതെ	തീർച്ചയില്ല	അല്ല	ക്രമ നമ്പർ	അതെ	തീർച്ചയില്ല	അല്ല	ക്രമ നമ്പർ	അതെ	തീർച്ചയില്ല	അല്ല	ക്രമ നമ്പർ	അതെ	തീർച്ചയില്ല	അല്ല
1.	O	O	O	11.	O	O	O	21.	O	O	O	31.	O	O	O	41.	O	O	O
2.	O	O	O	12.	O	O	O	22.	O	O	O	32.	O	O	O	42.	O	O	O
3.	O	O	O	13.	O	O	O	23.	O	O	O	33.	O	O	O	43.	O	O	O
4.	O	O	O	14.	O	O	O	24.	O	O	O	34.	O	O	O	44.	O	O	O
5.	O	O	O	15.	O	O	O	25.	O	O	O	35.	O	O	O	45.	O	O	O
6.	O	O	O	16.	O	O	O	26.	O	O	O	36.	O	O	O	46.	O	O	O
7.	O	O	O	17.	O	O	O	27.	O	O	O	37.	O	O	O	47.	O	O	O
8.	O	O	O	18.	O	O	O	28.	O	O	O	38.	O	O	O	48.	O	O	O
9.	O	O	O	19.	O	O	O	29.	O	O	O	39.	O	O	O	49.	O	O	O
10.	O	O	O	20.	O	O	O	30.	O	O	O	40.	O	O	O	50.	O	O	O

Appendix III - C

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

SCALE OF ACHIEVEMENT MOTIVATION

RESPONSE SHEET

Name.....Class.....Class No.....
School.....Boy/Girl.....Age.....

Sl.No	Yes	Undecided	No	Sl.No	Yes	Undecided	No	Sl.No	Yes	Undecided	No	Sl.No	Yes	Undecided	No	Sl.No	Yes	Undecided	No
1.	O	O	O	11.	O	O	O	21.	O	O	O	31.	O	O	O	41.	O	O	O
2.	O	O	O	12.	O	O	O	22.	O	O	O	32.	O	O	O	42.	O	O	O
3.	O	O	O	13.	O	O	O	23.	O	O	O	33.	O	O	O	43.	O	O	O
4.	O	O	O	14.	O	O	O	24.	O	O	O	34.	O	O	O	44.	O	O	O
5.	O	O	O	15.	O	O	O	25.	O	O	O	35.	O	O	O	45.	O	O	O
6.	O	O	O	16.	O	O	O	26.	O	O	O	36.	O	O	O	46.	O	O	O
7.	O	O	O	17.	O	O	O	27.	O	O	O	37.	O	O	O	47.	O	O	O
8.	O	O	O	18.	O	O	O	28.	O	O	O	38.	O	O	O	48.	O	O	O
9.	O	O	O	19.	O	O	O	29.	O	O	O	39.	O	O	O	49.	O	O	O
10.	O	O	O	20.	O	O	O	30.	O	O	O	40.	O	O	O	50.	O	O	O

Appendix IV

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

VERBAL GROUP TEST OF INTELLIGENCE

Dr. P.K. Sudheesh Kumar

Hameed. A. & Prasanna. A.

വിദ്യാർത്ഥികളുടെ മാനസികമായ കഴിവുകൾ പരിശോധിക്കുന്നതിനുവേണ്ടി തയ്യാറാക്കിയിട്ടുള്ളതാണ് ഈ ടെസ്റ്റ്. വിവിധ തരത്തിലുള്ള 5 ടെസ്റ്റുകൾ ഇതിൽ ഉൾക്കൊള്ളിച്ചിരിക്കുന്നു. ഓരോ ടെസ്റ്റിന്റെയും ആരംഭത്തിൽ കൊടുത്തിട്ടുള്ള നിർദ്ദേശങ്ങൾ എഴുതിത്തുടങ്ങുന്നതിനുമുമ്പ് ശ്രദ്ധിച്ചു വായിക്കുക. ഉത്തരം എഴുതേണ്ട രീതി ഉദാഹരണസഹിതം വ്യക്തമാക്കിയിട്ടുണ്ട്. നിർദ്ദിഷ്ട സമയത്തിനുള്ളിൽ ഉത്തരം എഴുതിത്തീർക്കാൻ ശ്രദ്ധിക്കുകയും, പറഞ്ഞതിനുശേഷം മാത്രം എഴുതിത്തുടങ്ങുകയും, ഏറ്റവും വേഗത്തിൽ എഴുതിത്തീർക്കാൻ ശ്രമിക്കുകയും ചെയ്യേണ്ടതാണ്. തന്നിരിക്കുന്ന ഈ ചോദ്യക്കടലാസിൽ എന്തെങ്കിലും എഴുതുകയോ, അടയാളപ്പെടുത്തുകയോ ചെയ്യരുത്. പ്രത്യേകം തന്നിട്ടുള്ള ഉത്തരക്കടലാസിൽ മാത്രമേ ഉത്തരം എഴുതാവൂ.

TEST I VERBAL ANALOGY

ഈ വിഭാഗത്തിൽ കൊടുത്തിട്ടുള്ള ചോദ്യങ്ങളിൽ മൂന്നു വാക്കുകൾ വീതം തന്നിട്ടുണ്ട്. നാലാമത്തെ വാക്ക് നിങ്ങൾ എഴുതേണ്ടതാണ്. തന്നിരിക്കുന്ന മൂന്നുവാക്കുകളിൽ ആദ്യത്തെ രണ്ടു വാക്കുകൾ തമ്മിലുള്ള ബന്ധം മനസ്സിലാക്കി മൂന്നാമത്തെ വാക്കിനോട് യോജിക്കുന്ന വാക്ക് A, B, C, D എന്നീ ക്രമത്തിൽ കൊടുത്തിരിക്കുന്ന നാലുവാക്കുകളിൽ നിന്നും തെരഞ്ഞെടുത്ത് ഉത്തരക്കടലാസ്സിൽ അടയാളപ്പെടുത്തുക.

ഉദാഹരണം :

ദാഹം : വെള്ളം : : വിശപ്പ് : ....

A. മാംസം, B. വിശ്രമം, C. ആഹാരം, D. ക്ഷീണം

ദാഹം വരുമ്പോൾ വെള്ളം കുടിയ്ക്കുന്നു. അതുപോലെ വിശപ്പുവരുമ്പോൾ ആഹാരം കഴിക്കുന്നു. അത്കൊണ്ട് 'C' യാണ് ശരിയായ ഉത്തരം.

A	B	C √	D

1. കൗശലം : കുറുക്കൻ : : വിസ്മിതം : ... ...
   A. കുരങ്ങൻ B. കരടി C. മാൻ D. കഴുത

2. ഭയ : ക്രൂരത : : നിശബ്ദത : ... ...
   A. നിശ്ചലം B. ശബ്ദം C. ശാന്തത D. ധ്യാനം

3. നാടകം : സംവിധായകൻ : : ന്യൂസ്പേപ്പർ : ... ...
   A. മാനേജർ B പത്രാധിപർ C. ഉടമസ്ഥൻ D. പ്രസ്സ്

4. കപ്പൽ : ക്യാപ്റ്റൻ : : വിമാനം : ... ...
   A. കടൽ B. എയർപോർട്ട് C. ഡ്രൈവർ D. പൈലറ്റ്

5. കരച്ചിൽ : ചിരി : വിഷമം : ... ...
   A. സന്തോഷം B. ഉന്മേഷം C. ശാന്തി D. സമാധാനം

6. ഷർട്ട് : തുണി : : ചെരുപ്പ് : ... ...
   A. ഉള്ളി B. തുകൽ C. ചെരുപ്പുകുത്തി D. തയ്യൽക്കാരൻ

7. കാക്ക : കറുപ്പ് : : ഹംസം : ... ...
   A പക്ഷി B. വെള്ളം C. വെളുപ്പ് D. തവിട്ട്

8. മാസിക : വായനക്കാരൻ : : റേഡിയോ : ... ...
   A. പരസ്യക്കാർ B. അറിയിപ്പുകാർ C. കാഴ്ചക്കാർ D. കേൾവിക്കാർ

9. വിറക് : കോടാലി : : തുണി : ... ...
   A. മെഷിൻ B. സൂചി C. കത്രിക D. നൂല്

10. വിദ്യാർത്ഥി : ക്ലാസ്സ്റൂം : : കളിക്കാരൻ : ... ...
A. സ്റേഡിയം B. മത്സരം C. കോച്ച് D. കളി

11. വീട് : മേൽക്കൂര : : ഭൂമി : ... ...
A. വായു B. ആകാശം C. അന്തരീക്ഷം D. ധ്രുവങ്ങൾ

12. കുട്ടി : മാതാപിതാക്കൾ : : ബുക്ക് ... ...
A. അധ്യാപകൻ B പ്രസാധകൻ C. പ്രസ്സ് D. ഗ്രന്ഥകർത്താവ്

13. വർഷം : മാസം : : ആഴ്ച : ... ...
A. മണിക്കൂർ B. മിനിറ്റ് C. രണ്ടാഴ്ച D. ദിവസം

14. രാത്രി : പകൽ : : ദേഷ്യം : ... ...
A. സഹായം B. ദയ C. ഇഷ്ടം D. സന്തോഷം

15. കവി : കവിത : : സംഗീതം : ... ...
A. രചയിതാവ് B. എഴുത്തുകാരൻ C. നിർമ്മാതാവ് D. കണ്ടക്ടർ

16. മഞ്ഞ് : വെളുപ്പ് : : കൽക്കരി : ... ...
A. പുക B. ചുവപ്പ് C. കറുപ്പ് D. മഞ്ഞ

17. പശു : മൃഗം : : കോഴി : ... ...
A. വീട് B. പക്ഷി C. മുട്ട D. കൂട്

18 നീന്തൽ : വെള്ളം : : സ്കേറ്റിംഗ് : ... ...
A. മഞ്ഞ് B. ആകാശം C. പർവ്വതം D. ശൂന്യാകാശം

19. മനുഷ്യൻ : ആത്മകഥ : : രാഷ്ട്രം : ... ...
A. ജനങ്ങൾ B. ജനസംഖ്യ C. ഭൂമിശാസ്ത്രം D. ചരിത്രം

20. മരുന്ന് : രോഗം : : പുസ്തകം : ... ...
A. അറിവ് B. അധ്യാപകൻ C. ഗ്രന്ഥകാരൻ D. രചയിതാവ്

TEST II VERBAL CLASSIFICATION

ഈ വിഭാഗത്തിലുള്ള ചോദ്യങ്ങളിൽ ഓരോന്നിലും A, B, C, D എന്നിങ്ങനെ നാലുവാക്കുകൾ വീതം തന്നിട്ടുണ്ട്. അതിൽ രണ്ടെണ്ണം മറ്റു മൂന്നു വാക്കുകളോടും യോജിക്കാതെ നിൽക്കുന്നു. അത് ഏതെന്ന് കണ്ടുപിടിച്ച് ഉത്തരക്കടലാസിൽ അടയാളപ്പെടുത്തുക:

ഉദാഹരണം :

1. A. മധുരം B. മുളക് C എരിവ് D. കയ്പ്

ഇതിൽ A. C. D എന്നിവ വിവിധ രുചികളെകാണിക്കുന്നു. B (മുളക്) രുചികളിൽ ഉൾപ്പെടുന്നതല്ല. അതുകൊണ്ട് ശരി ഉത്തരം 'B' ആണ്.

A	B √	C	D

1.	A. അധ്യാപകൻ	B. പ്രിൻസിപ്പൽ	C. വിദ്യാർത്ഥി	D. പ്രൊഫസർ
2.	A. ബസ്സ്	B. വിമാനം	C. സൈക്കിൾ	D. ലോറി
3.	A. നടക്കുക	B. ചിന്തിക്കുക	C. നിന്നുക	D. ചാടുക
4.	A. വൃത്തം	B. ചതുരം	C. ത്രികോണം	D. ഷഡ്ഭുജം
5.	A. സാന്ദ്രത	B. വാർദ്ധക്യം	C. മിടുക്കൻ	D. യൗവ്വനം
6.	A. ഗ്രാം	B. കിലോഗ്രാം	C. മീറ്റർ	D. കിലോമീറ്റർ
7.	A. സമാധാനം	B. ശബ്ദം	C. ധ്യാനം	D. നിശ്ശബ്ദം
8.	A. സംവിധായകൻ	B. നടൻ	C. പാട്ടുകാരൻ	D. പ്രാസംഗികൻ
9.	A. ദിവസം	B. കലണ്ടർ	C. മാസം	D. ആഴ്ച
10.	A. കിലോൺ	B. ഇഞ്ച്	C. മൈൽ	D. വാര
11.	A നാവ്	B. കണ്ണ്	C. പല്ല്	D. മൂക്ക്
12.	A ഗോതമ്പ്	B റാഗി	C. നെല്ല്	D. പയറ്
13.	A പാമ്പ്	B. തിമിംഗലം	C. അരണ	D. ആമ
14.	A. പെൻസിൽ	B. കട	C. പെയിൻറ്	D. ക്യാൻവാസ്
15.	A. മാവ്	B. പ്ലാവ്	C. തെങ്ങ്	D. തേക്ക്
16.	A. മാങ്ങ	B. ആപ്പിൾ	C തക്കാളി	D. ഉരുളക്കിഴങ്ങ്
17.	A. ചെവി	B. വിരൽ	C. കൈ	D. കാൽ
18.	A. കോഴി	B. ആട്	C. പശു	D. കാള
19.	A. ഓഫീസ്	B. വീട്	C. ബംഗ്ലാവ്	D. കൂടിൽ
20.	A. അറിയിപ്പുകാർ	B. കാഴ്ചക്കാർ	C. രചയിതാവ്	D. കേൾവിക്കാർ

TEST III NUMERICAL REASONING

താഴെകൊടുത്തിരിക്കുന്ന 6. ചോദ്യങ്ങളിൽ കുറെ സംഖ്യകൾ ഓരോ ക്രമത്തിൽ കൊടുത്തിരിക്കുന്നു. ഒന്ന് എഴുതാതെയും വിട്ടിരിക്കുന്നു. താഴെ A, B, C, D എന്നീ ക്രമത്തിൽ നാല് ഉത്തരങ്ങൾ കൊടുത്തിരിക്കുന്നു. ഇവയിൽനിന്നും ശരിയുത്തരം കണ്ടെത്തി അടയാളപ്പെടുത്തുക.

ഉദാഹരണം

1. 2, 4, 6, ——, 10
A. 5 B. 8 C. 7 D. 11

A	B√	C	D

1. 4, 9, 16, 25, 36————
A. 39 B. 47 C. 49 D. 59

2. 25, 24, 22, 19, ——, 10
A. 15 B. 16 C. 17 D. 14

3. 6, 8, ——, 20, 36
A. 15 B. 14 C. 16 D 12

4. 2, 6, 12, 20, 30, ——
A. 42 B. 46 C. 40 D 36

5. 3, 3, 6, 18, ——
A. 68 B. 33 C. 72 D. 29

6. 0 2, 4, 6, —— 10
A. 7 B. 5 C 8. D. 9

7 മുതൽ 10 വരെയുള്ള ചോദ്യങ്ങളിൽ ഓരോന്നിലും A, B, C, D എന്നിങ്ങനെ നാലു സംഖ്യകൾ തന്നിട്ടുണ്ട്. അതിൽ ഒരു സംഖ്യ മറ്റു മൂന്നു സംഖ്യകളോടും യോജിക്കാതെ നിൽക്കുന്നു. അതേതെന്ന് കണ്ടുപിടിച്ച് ഉത്തരക്കടലാസിൽ അടയാളപ്പെടുത്തുക.

ഉദാഹരണം :

A. 1 B. 3 C. 6 D. 7

ഇതിൽ A, B, D എന്നിവ മറ്റ സംഖ്യകളെ സൂചിപ്പിക്കുന്നു. എന്നാൽ 'C' മറ്റൊരു സംഖ്യയല്ല അതുകൊണ്ട് ഉത്തരം 'C'യാകുന്നു.

	A	B	C√	D

7. A. 1 B. 5 C. 25 D. 75

8 A 3 B 4 C. 7 D. 9

9. A. 12 B. 24 C. 35 D. 48

10. A 150 B 36 C 12 D. 4

11 മുതൽ 20 വരെയുള്ള ചോദ്യങ്ങളിൽ മൂന്നു സംഖ്യകൾ വീതം തന്നിട്ടുണ്ട്. നാലാമത്തെ സംഖ്യ നിങ്ങൾ എഴുതേണ്ടതാണ്. തന്നിരിക്കുന്ന മൂന്നുസംഖ്യകളിൽ ആദ്യത്തെ രണ്ടു സംഖ്യകൾ തമ്മിലുള്ള ബന്ധം മനസ്സിലാക്കി മൂന്നാമത്തെ സംഖ്യയോട് യോജിക്കുന്ന സംഖ്യ A. B. C. D. എന്നീ ക്രമത്തിൽ കൊടുത്തിരിക്കുന്ന സംഖ്യകളിൽനിന്നും തെരഞ്ഞെടുത്ത് ഉത്തര കടലാസിൽ അടയാളപ്പെടുത്തുക.

ഉദാഹരണം:

1. 1 : 2 :: 2 :———

A. 6 B. 4 C. 1 D. 5

ഒന്നിന്റെ ഇരട്ടിയാണ് രണ്ട്. അതുപോലെ രണ്ടിന്റെ ഇരട്ടിയാണ് നാല് അതുകൊണ്ട് ഉത്തരം 'B' ആണ്.

	A	B√	C	D

11. 3 : 5 :: 11 : ———
A. 12 B. 13 C. 14 D. 15

12. 5 : 25 :: 3 : ———
A. 6 B. 12 C. 15 D. 9

13. 1 : 6 :: 7 : ———
A. 12 B. 13 C. 11 D. 14

14 10 : 20 :: 18 : ———
A. 26 B. 36 C. 46 D. 32

15 4 : 5 :: 8 : ———
A. 6 B 7 C. 5 D. 9

16. 12 : 72 :: 6 : ———
A. 58 B. 38 C. 46 D. 52

17. 12:4 :: 24 :———
A 6 B 10 C 8 D. 12

18 28 : 22 :: 46 : ———
A. 40 B. 38 C. 42 D. 29

19 49 : 7 :: 4 : ———
A. 16 B. 8 C. 2 D. 12

20. 48 : 8 :: 18 ———
A. 8 B 4 C. 2 D. 3

TEST IV VERBAL REASONING

ഈ വിഭാഗത്തിലുള്ള ഓരോ ചോദ്യങ്ങൾക്കും A, B, C, D എന്ന ക്രമത്തിൽ നാലു വീതം ഉത്തരങ്ങൾ കൊടുത്തിട്ടുണ്ട്. ചോദ്യം ശരിയായി വായിച്ച് മനസ്സിലാക്കി ശരിയായ ഉത്തരം ഉത്തരക്കടലാസിൽ അടയാളപ്പെടുത്തുക.

ഉദാഹരണം :

1. ബിന്ദുവിന് സിന്ധുവിനേക്കാൾ വണ്ണം കൂടുതലാണ്. മഞ്ചുവിനു ബിന്ദുവിനേക്കാൾ വണ്ണം കുറവാണ്, മഞ്ചുവിനും സന്ധ്യയ്ക്കും തുല്യ വണ്ണമാണുള്ളത്. എന്നാൽ ഇവരിലാർക്കാണ് ഏറ്റവും വണ്ണം കൂടുതൽ ?

A. മഞ്ചു B. ബിന്ദു C. സിന്ധു D. സന്ധ്യ

ബിന്ദുവിനാണല്ലോ മറ്റെല്ലാവരെക്കാളും വണ്ണം കൂടുതൽ അതുകൊണ്ട് ഉത്തരം 'B' എന്ന് അടയാളപ്പെടുത്തുക.

A	B√	C	D

1. അപ്പു ചിപ്പുവിനേക്കാൾ നന്നായിപാടും. ദേവന് കണ്ണനോളം പാടാൻ കഴിയില്ല. കണ്ണന് അപ്പുവിനേക്കാൾ പാടാൻ കഴിയും. എന്നാൽ ഇവരിൽ ആരാണ് നന്നായി പാടുന്നത് ?

A. അപ്പു B. കണ്ണൻ C. ചിപ്പു D. ദേവൻ

2. രാമൻ രമയേക്കാൾ പിന്നിലാണ് നടക്കുന്നത്. രമണി രമയേക്കാൾ പിന്നിലും രാമനേക്കാൾ മുന്നിലുമാണ് നടക്കുന്നത്. രാജു രമണിയേക്കാൾ മുൻപിലാണ് നടന്നുന്നത് എങ്കിൽ ഏറ്റവും പുറകിൽ നടക്കുന്നതാര് ?

A രാമൻ B. രമണി C. രമ D രാജു

3. അജയ് വിജയ്നേക്കാൾ ജോലിചെയ്യും. അശോകും അജിത്തും ജോലിചെയ്യുന്നതിൽ തുല്യരാണ്. വിജയ് അശോകിനേക്കാൾ നന്നായി ജോലിചെയ്യും. ഇവരിൽ ഏറ്റവും കൂടുതൽ ജോലി ചെയ്യുന്നതാര് ?

A. അശോക് B അജിത്ത് C. വിജയ് D. അജയ്

4 രമ്യ ഭവ്യയോളം നൃത്തം ചെയ്യില്ല. ദിവ്യ വേദ്യയേക്കാൾ നന്നായി നൃത്തം ചെയ്യും. വിദ്യ ദിവ്യയേക്കാൾ നൃത്തത്തിൽ മിടുക്കിയാണ് എങ്കിൽ ഇവരിലാരാണ് നൃത്തത്തിൽ മിടുമിടുക്കി ?

A ദിവ്യ B. വേദ്യ C രമ്യ D. വിദ്യ

5. ദീപകിന്റെ അച്ഛനാണ് മോഹനന്റെ മകൻ എങ്കിൽ ദീപകും മോഹനനും തമ്മിലുള്ള ബന്ധമെന്ത് ?

A. മകൻ B. സഹോദരൻ C. അനന്തരവൻ D കൊച്ചുമകൻ

6 റഫീക്കിന് മുനീറിനേക്കാൾ കാഴ്ചയുണ്ട്. ഷമീറിനു സുധീറിനേക്കാൾ കാഴ്ചകുറവാണ്. സുധീറിനു റഫീക്കിനോളം കാഴ്ചശക്തിയില്ല. ഇവരിൽ ആർക്കാണ് കാഴ്ച ഏറ്റവും കൂടുതൽ ?

A. സുധീറിനു B ഷമീറിനു C. റഫീക്കിനു D. മുനീറിനു

7. രണ്ടുപേർ ചേർന്ന് പത്തു ദിവസം കൊണ്ട് ഒരു ജോലിചെയ്തീർത്തു എങ്കിൽ ഒരാൾക്ക് ഒരു ദിവസം കൊണ്ട് എത്ര ജോലിചെയ്യാൻ കഴിയും ?

A. $\frac{1}{2}$ B $\frac{1}{5}$ C $\frac{1}{10}$ D. $\frac{1}{20}$

8 ഒരു വീടിയൊച്ച A എന്ന സ്ഥലത്തുനിന്നും B എന്ന സ്ഥലത്തെത്താൻ എടുക്കുന്ന സമയം 2 മിനിറ്റ്. എന്നാൽ 5 വെടിയൊച്ചകൾ A എന്ന സ്ഥലത്തുനിന്നും B എന്ന സ്ഥലത്തെത്താൻ എത്ര സമയമെടുക്കും ?

A. 10 മി. B. 2 മി C 4 മി D: 5 മി.

9. ഷർമിളയ്ക്ക് മാലയേക്കാൾ പ്രായം കുറവാണ്. കുഞ്ഞനും നന്ദുവും തുല്യ പ്രായമാണുള്ളത്. സുധീഷിനു നന്ദുവിനേക്കാൾ പ്രായം കുറവാണ്. സുധീഷിനു ഷർമിളയേക്കാൾ പ്രായം കൂടുതലാണ്. മാലയ്ക്ക് സുധീഷിനോളം പ്രായം ഇല്ല. എന്നാൽ ഏറ്റവും കൂടുതൽ പ്രായമാർക്ക്?

A. സുധീഷ് B. മാല C. ഷർമിള D കുഞ്ഞൻ

10. ഒരു കോളേജിലെ ക്ലാസ്സടയ്ക്കാൻ നിൽക്കുന്ന 'ക്യൂ'വിലെ കുട്ടികളുടെ എണ്ണം 70 ആകുന്നു. അതിൽ മോഹനന്റെ സ്ഥാനം ജനലിന്റെ അടുത്തുനിന്നും 54-ാമതാണെങ്കിൽ അവന്റെ പുറകിൽ എത്ര പേരുകാണും ?

A. 15 B. 16 C. 17 D. 18

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11. തെക്കു പടിഞ്ഞാറ് വടക്കാണെങ്കിൽ വടക്കുകിഴക്ക് എന്തായിരിക്കും ?

A. പടിഞ്ഞാറ് B. തെക്കുപടിഞ്ഞാറ് C. കിഴക്കുപടിഞ്ഞാറ് D. തെക്ക്

12. A, Bയുടെ മകനാണ്. Bയും Cയും സഹോദരികളാണ്. D, Cയുടെ അമ്മയും E. Dയുടെ മകനുമാണ് എന്നാൽ താഴെ പറയുന്നവയിൽ ഏതാണ് ശരി ?

A. Aയുടെ അമ്മയുടെ സഹോദരിയാണ് E

B. Cയും Eയും സഹോദരിസഹോദരൻമാരാണ്.

C. C, Aയുടെ അമ്മൂമ്മയാണ്.

D. Aയും Eയും സഹോദരൻമാരാണ്.

13 ഒരു കമ്പനിയിലെ തൊഴിലാളികളുടെ എണ്ണം 60 ആകുന്നു. അതിൽ $\frac{1}{4}$ പേർക്ക് കാറും $\frac{1}{2}$ പേർക്ക് സ്കൂട്ടറും, $\frac{1}{10}$ പേർക്ക് കാറും സ്കൂട്ടറുമുണ്ട്. എന്നാൽ എത്രപേർക്കാണ് കാറോ, സ്കൂട്ടറോ ഇല്ലാത്തത് ?

A 12 B 32 C 30 D. 28

14. 51 പേരുള്ള ഒരു ക്ലാസ്സിൽ അഖിലിനു 21-മതായി റാങ്കാണ്. ഏറ്റവും ഒടുവിലത്തെ റാങ്കുള്ള കുട്ടിയിൽ നിന്നും കണക്കാക്കുമ്പോൾ അഖിലിനു് എത്രാമത്തെ റാങ്കായിരിക്കും ഉണ്ടാവുക ?

A. 12 B. 30 C. 31 D. 35

15. ഒരാൾ 'X' എന്ന സ്ഥലത്തുനിന്നും 4 മൈൽ കിഴക്കോട്ടു നടന്ന് ഇടത്തോട്ട് തിരിഞ്ഞ് വീണ്ടും, 5 മൈൽ നടന്ന് വീണ്ടും ഇടത്തോട്ട് തിരിഞ്ഞ് 2 മൈൽ നടന്നു. എങ്കിൽ അയാൾ ഇപ്പോൾ നടക്കുന്ന ദിശയേത് ?

A. വടക്ക് B. പടിഞ്ഞാറ് C. കിഴക്ക് D. തെക്ക്

16. F, Aയുടെ സഹോദരനാണ്. C, Aയുടെ മകളാണ്. K, Fന്റെ സഹോദരിയാണ്. G, Cയുടെ സഹോദരനാണ്. ഇതിൽ ആരാണ് Gയുടെ അമ്മാവൻ ?

A. F B C C. K D. A

17. ചിന്നുവിനേക്കാൾ രണ്ടുവയസ്സുള്ള ജിനുവിന് മിനുവിനേക്കാൾ രണ്ടു മടങ്ങ് പ്രായമുണ്ട്. മൂന്നുപേരുടേയും വയസ്സു കൂട്ടിയാൽ 19 കിട്ടും എങ്കിൽ ജിനുവിന്റെ വയസ്സ് എത്ര ?

A. 5 B. 3 C 9 D. 10

18. ഒരു മാവേലിസ്റ്റോറിന്റെ മുന്നിലുള്ള ക്യൂവിൽ നിൽക്കുന്ന X എന്നയാളിന്റെ സ്ഥാനം മുന്നിൽനിന്നും 22 മത്തേതും പിന്നിൽ നിന്നും, 28 മത്തേതുമാണെങ്കിൽ ആകെ ക്യൂവിലുള്ള ആളുകളുടെ എണ്ണം എത്ര ?

A. 48 B. 52 C. 50 D. 54

19. Aയ്ക്ക് Yയേക്കാൾ നീളം കൂടുതലാണ് Bയ്ക്ക് Xനേക്കാൾ നീളം കുറവാണ്. Xനും Yയ്ക്കും തുല്യ നീളമാണുള്ളത് Zന് Aയേക്കാൾ നീളം കൂടുതലുണ്ട് എങ്കിൽ ഏറ്റവും നീളം കുറവാർക്ക്?

A. X B Y C. A D. B

20 ശ്യാമിന്റെ അച്ഛനാണ് സഞ്ജയിന്റെ മകനെങ്കിൽ ശ്യാമു, സഞ്ജയും തമ്മിലുള്ള ബന്ധം മെന്ത് ?

A. മകൻ B. കൊച്ചുമകൻ C. സഹോദരൻ D. അനന്തരവൻ

TEST V COMPREHENSION

ഈ വിഭാഗത്തിലുള്ള ചോദ്യങ്ങളിൽ ഓരോന്നിലും ഏതാനും ചില പ്രസ്താവനകൾ കൊടുത്തിട്ടുണ്ട്. ഇവ ശ്രദ്ധാപൂർവ്വം വായിച്ച് അതിനുതാഴെ കൊടുത്തിരിക്കുന്ന ചോദ്യങ്ങൾക്ക് ഉത്തരം കണ്ടെത്തുക. A, B, C, D എന്നീ ക്രമത്തിൽ നാല് ഉത്തരങ്ങൾ കൊടുത്തിരിക്കുന്നു. ശരി ഉത്തരം കണ്ടെത്തി ഉത്തരക്കടലാസിൽ അടയാളപ്പെടുത്തുക.

ഉദാഹരണം :

സതീഷിന്റെ പുത്രന്മാരാണ് Aയും Bയും, പുത്രിമാരാണ് Cയും, Dയും. ശ്യാമയുടെ മക്കളാണ് Xഉം Yയും മനോജിന്റെ മക്കളായ Eയും Fഉം ഒരു കമ്പനിയിൽ ജോലിയുള്ളവരാണ്. Aയും Dയും വിവാഹിതരാണ്. X, വിവാഹം ചെയ്തിരിക്കുന്നത് Cയെയും F, വിവാഹം ചെയ്തിരിക്കുന്നത് Aയെയും ആണ്. മനോജിനും ശ്യാമയ്ക്കും തമ്മിൽ സഹോദരിസഹോദര ബന്ധമാണ്.

ചോദ്യങ്ങൾ:

1. X-ഉം E-യും തമ്മിലുള്ള ബന്ധമെന്ത് ?

   A. മകനും അച്ഛനും. B. സഹോദരിസഹോദരന്മാർ

   C. സഹോദരിസഹോദരന്മാരുടെ മക്കൾ D. മകളും അച്ഛനും.

A	B	√C	D

(1) ഒരു വിദ്യാലയത്തിലെ നാല് അദ്ധ്യാപകരാണ് W, X, Y, Z. ഇവരിൽ W, X, Y വിദ്യാഭ്യാസമുള്ളവരാണ് W, Y, Z സത്യസന്ധരും Y, Z എന്നിവർ ജോലിയുള്ളവരുമാകുന്നു. W, X, Z എന്നിവർക്ക് വിനയവുമുണ്ട്.

1. ആർക്കാണ് വിദ്യാഭ്യാസം, സത്യസന്ധത എന്നീ ഗുണങ്ങളുള്ളതും എന്നാൽ ജോലിയില്ലാത്തതും?

   A. W B. X C. Y D. Z

2. ജോലിയും, വിദ്യാഭ്യാസവും, സത്യസന്ധതയും ഉള്ളതാർക്കാണ് ?

   A. W B. X C. Y D. Z

3. ആർക്കാണ് ജോലിയും സത്യസന്ധയുമുള്ളതും എന്നാൽ വിദ്യാഭ്യാസമില്ലാത്തതും ?

   A. W B. X C. Y D. Z

4. വിദ്യാഭ്യാസവും വിനയവും ഉണ്ടെങ്കിലും സത്യസന്ധതയും ജോലിയും ഇല്ലാത്തതാർക്ക് ?

   A. W B. X C. Y D. Z

5. സത്യസന്ധതയും, ജോലിയും, വിനയവും ഉണ്ടായിട്ടും വിദ്യാഭ്യാസമില്ലാത്തതാർക്കാണ്?

   A. W B. X C. Y D. Z

(2) ദിനേശിന് Aഎന്ന പുത്രിയും B, C എന്ന പുത്രന്മാരുമുണ്ട്. ശ്യാമിന് P, Q എന്ന പുത്രന്മാരും R എന്ന പുത്രിയുമുണ്ട്. Pയും Cയും വിവാഹിതരാണ്. M-ഉം, N-ഉം അവരുടെ പുത്രന്മാരും. രോഹിത്തിന്റെ പുത്രൻ S. പുത്രി Tയുമാണ്. T വിവാഹം കഴിച്ചിരിക്കുന്നത് Bയെ, അവരുടെ പുത്രിമാരാണ് Dയും Eയും പുത്രൻ G.

6. Qവിന് Nമായുള്ള ബന്ധമെന്ത് ?

   A. അച്ഛൻ B. മുത്തച്ഛൻ C. അമ്മാവൻ D. പുത്രൻ

7. ദിനേശിന് Eയുമായുള്ള ബന്ധമെന്ത് ?

   A. മുത്തച്ഛൻ B. അമ്മാവൻ C. അച്ഛൻ D. പുത്രൻ

8. Mന് R-നോടുള്ള ബന്ധമെന്ത് ?

   A. അമ്മ B. മകൾ C. അനന്തിരവൾ D. അമ്മായി

9. Bയ്ക്ക് Gയോടുള്ള ബന്ധമെന്ത് ?

   A. മകൻ B. അമ്മ C. അമ്മായി D. അനന്തിരവൾ

10. Eയ്ക്ക് S-നോടുള്ള ബന്ധമെന്ത് ?

    A. പേരക്കിടാവ് B. അമ്മാവൻ C. സഹോദരിപുത്രി D. അച്ഛൻ

(4) 5 PQ 8 = 5^2+8 = 25+8=33 ആയാൽ

11. 4 PQ 4 = ?

A. 16 B. 20 C. 24 D. 12

12. 4 PQ 1 = ?

A 17 B 12 C 8 D 9

13. 5 PQ 5 = ?

A. 20 B. 30 C. 15 D. 25

14. 6 PQ ? = 108

A. 72 B. 82 C. 52 D. 42

15. ? PQ 9 = 109

A. 50 B. 25 C. 20 D. 10

(5) ഒരു വീട്ടിലെ ആറ് അംഗങ്ങളാണ് U, V, W, X, Y, Z ഇവരിൽ ഒരാൾ ഫുഡ്ബോൾ കളിക്കാരനും, മറ്റൊരാൾ ചെസ്സ് കളിക്കാരനും, ഇനിയുമൊരാൾ ക്രിക്കറ്റുകളിക്കാരനുമാണ്. അവിവാഹിതകളായ Uഉം Xഉം ഒരു കളിയിലും പങ്കെടുക്കുന്നില്ല ഒന്ന് സ്ത്രീകളും ഫുഡ്ബോൾ കളിയിലോ ക്രിക്കറ്റ് കളിയിലോ ഏർപ്പെടുന്നില്ല. ഇവരിൽ ഒരു വിവാഹ ജോടിയിലെ ഭർത്താവാണ് Z. W-ന്റെ സഹോദരനായ V. ഒരു ചെസ്സ് കളിക്കാരനോ ക്രിക്കറ്റുകളിക്കാരനോ അല്ല Y, Vയുടെ കൂട്ടുകാരനും ക്രിക്കറ്റുകളിക്കാരനുമാണ്.

16 ആരാണ് ഫുഡ്ബോൾ കളിക്കാരൻ

A. X B. U C. Y D. Z

17. ആരാണ് ചെസ്സ് കളിക്കാരി ?

A U B V C W D. X

18. ആരാണ് 'Z' ന്റെ ഭാര്യ ?

A. W B V C. U D. Y

19. ആരെല്ലാമാണ് സ്ത്രീകൾ

A. UXV B. VYX C. XZY D. UXW

20. ആരെല്ലാമാണ് പുരുഷൻമാർ ?

A. XUY B. UXV C VYZ D. WXZ

Appendix IVA

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

VERBAL GROUP TEST OF INTELLIGENCE

Dr. P.K. Sudheesh Kumar
Hameed, A. & Prasanna A.

This test is prepared to test the mental abilities of children. This test includes 5 sub tests. Before writing the answer, read the instructions carefully given in the beginning of each sub test. The mode of answering is explained with example. You should start answering only after the instruction is given, and try to complete within the stipulated time. Don't write or mark anything on this question booklet. Mark your response only in the Response sheet provided.

TEST - I VERBAL ANALOGY

In this section, for each question, three words are given. You have to write the fourth word. By understanding the relationship between the first word and second word from the given three words; Select the fourth word from the alternatives A,B,C and D and mark it on the response sheet provided.

Example:

Thirst : Water :: Hunger : .....
A. meat B. Leisure C. Food D. Weariness

We drink water when we have thrist. Like wise we take food when we are hungry. Hence the correct answer is "C".

A	B	C✓	D

1. Clever: Fox :: Foolishness :: .....
   A. Monkey B. Bear C. Deer D. Ass

2. Mercy : Cruelty :: Silence: .....
   A. Serene B. Noise C. Calmness D. Meditation

3. Drama : Director :: Newspaper .....
   A. Manager B. Editor C. Owner D. Press

4. Ship : Captain :: Aeroplane : .....
   A. Sea B. Airport C. Driver D. Pilot

5. Cry : Laugh :: Sadness: .....
   A. Happiness B. Energetic C. Harmony D.Peace

6. Shirt : Cloth :: Chappals : .....
   A. Chissel B. Leather C. Cobbler D. Tailor

7. Crow : Black :: Swan : .....
   A. Bird B. Water C. White D. Grey

8. Magazine : Reader :: Radio: .....
A. Advertisers B. Announcers C. Spectators D. Listners

9. Firewood : Axe :: Cloth : .....
A. Machine B. Needle C. Scissors D. Thread

10. Student : Classroom :: Player: .....
A. Stadium B. Competition C. Coach D. Game

11. House : Roof :: Earth : .....
A. Air B. Sky C. Atmosphere D. Poles

12. Child : Parents :: Book : .....
A. Teacher B. Publisher C. Press D. Author

13. Year : Month :: Week .....
A. Hour B. Minute C. Two weeks D. Day

14. Night : Day :: Hatred: .....
A. Help B. Mercy C. Love D. Failure

15. Poet : Poem :: Music: .....
A. Composer B. Writer C. Producer D. Conductor

16. Snow : White :: Coal : .....
A. Smoke B. Red C. Black D. Yellow

17. Cow : Animal :: Hen: .....
A. House : B. Bird C. Egg D. Nest

18. Swimming : Water :: Skating: .....
A. Ice B. Sky C. Mountain D. Space

19. Man : Autobiography :: Nation: .....
A. People B. Population C. Geography D. History

20. Medicine : Disease :: Book: .....
A. Knowledge B. Teacher. C. Author D. Publisher

TEST II VERBAL CLASSIFICATION

In this section, for each question, four words are given, of which, three can be grouped together findout the fourth word, and mark it on the response sheet.

Example

1. A. Sweetness B. Chilly C. hotness D. Bitterness.

Among these words, A,C and D denote different tastes. B (chilly) is not included in this category. So the right answer is 'B'.

A	B✓	C	D

1.	A. Teacher	B. Principal	C. Student	D. Professor
2.	A. Bus	B. Aeroplane	C. Bicycle	D. Lorry
3.	A. Walking	B. Thinking	C. Swimming	D. Jumping
4.	A. Circle	B. Square	C. Triangle	D. Hexagon
5.	A. Beauty	B. Senility	C. Chap	D. Youth
6.	A. Grain	B. Kilogram	C. Metre	D. Quintal
7.	A. Peace	B. Sound	C. Meditation	D. Stillness
8.	A. Director	B Actor	C. Singer	D. Orator
9.	A. Day	B. Calender	C. Month	D. Week
10.	A. Quintal	B. Inch	C. Mile	D. Feet
11.	A. Tongue	B. Eye	C. Teeth	D. Nose
12.	A. Wheat	B. Raggy	C. Paddy	D. Pie
13.	A. Snake	B. Whale	C. Chameleon	D. Tortoise
14.	A. Pencil	B. Umbrella	C. Paint	D. Canvas
15.	A. Mango trea	B. Jack fruit tree	C. Coconut tree	D. Teak
16.	A. Mango	B. Apple	C. Tomato	D. Potato
17.	A. Ear	B. Finger	C. Hand	D. Leg
18.	A. Hen	B. Goat	C. Cow	D. Crow
19.	A. Office	B. House	C. Bungalow	D. Hut
20.	A. Announcers	B. Spectators	C. Lyricist	D. Listeners

TEST III NUMERICAL REASONING

For the 6 items given below, certain numbers are given in particular orders. For each item four alternatives are given as A, B, C and D. Find out the right answer and mark it on the answer sheet.

Example:

1. 2, 4, 6, ——, 10
   A. 5 B. 8 C. 7 D. 11

A	B√	C	D

1. 4, 9, 16, 25, 36————
   A. 39 B. 47 C. 49 D. 59

2. 25, 24, 22, 19, ———, 10
   A 15 B. 16 C. 17 D. 14

3. 6, 8, ——, 20, 36
   A. 15 B. 14 C. 16 D 12

4 2, 6, 12, 20, 30, ——
   A 42 B. 46 C 40 D 36

5 3, 3, 6, 18, ——
   A. 68 B. 33 C. 72 D. 29

6. 0 2, 4, 6, ——, 10
   A. 7 B 5 C 8. D 9

For the questions 7 to 10, four numerals are given. Find out the numeral that is not related to the other three and mark it on the response sheet provided.

Example:

A: 1 B: 3 C: 6 D: 7

A, B and D are the odd numbers whereas C is not an odd number. Therefore the answer is 'C'.

	A	B	C√	D
7.	A. 1	B. 5	C. 25	D. 75
8	A 3	B. 4	C. 7	D. 9
9.	A. 12	B. 24	C. 35	D. 48
10.	A. 150	B 36	C 12	D 4

For the questions 11 to 20 three numbers are given. You have tofind out the fourth number from the given three numerals. There is a relationship between the first two. Select the most appropriate numeral to the third one from the numerals A, B, C and D.

Example:

1. 1 : 2 :: 2 : .....

A. 6 B. 4 C. 1 D. 5

One is the multiple of two. Similarly two is the multiple of four. Therefore the answer is 'B'.

	A	B√	C	D
11.	3 : 5 :: 11 : ———			
	A. 12	B. 13	C. 14	D. 15
12.	5 : 25 : : 3 : ———			
	A. 6	B. 12	C. 15	D. 9
13.	1 : 6 : : 7 : ———			
	A. 12	B. 13	C. 11	D. 14
14	10 : 20 : : 18 ———			
	A. 26	B 36	C. 46	D. 32
15	4 : 5 : : 8 : ———			
	A 6	B 7	C 5	D 9
16	12 : 72 : : 6 : ———			
	A. 58	B 38	C. 46	D 52
17.	12:4 : : 24 : ———			
	A 6	B 10	C 8	D. 12
18	28 : 22 : : 46 : ———			
	A. 40	B. 38	C. 42	D. 29
19	49 : 7 : : 4 ———			
	A. 16	B. 8	C. 2	D 12
20.	48 : 8 : : 18 : ———			
	A. 8	B. 4	C, 2	D. 3

TEST - IV - VERBAL REASONING

For each question in this section four alternatives are given as A,B,C, and D. Read the questions carefully and mark the answers on the response sheet provided.

Example:

1. Bindu is fatter than Sindhu. Manju is not so fatter than Bindu. Manju and Sandhya are equally fat. Then who among them is the fattest?

   A. Manju B. Bindu C. Sindhu D. Sandhya

A	B✓	C	D

1. Appu sings better than Chippu. Devan can't sing as good as Kanna. Kannan can sing better than Appu. Who is the best singer among them?

   A. Appu B. Kannan C. Chippu D. Devan

2. Raman is walking behind Rama. Ramani is walking behind Rama but infront of Raman. Raju is walking in front of Ramani. Then who is walking behind everybody?

   A. Raman B. Ramani C. Rama D. Raju

3. Ajay works more than Vijay. Asok and Ajith has the same capacity to work. Vijay works better than Asok. Who is the hard worker?

   A. Asok B. Ajith C. Vijay D. Ajay

4. Ramya cannot dance as Bhavya. Divya can dance, better than Bhavya. Vidya's performance in dance is better than Divya. Then who is the top dancer?

   A. Divya B. Bhavya C. Ramya D. Vidya

5. If son of Mohanan is the father of Deepak. What is the relationship between Deepak and Mohanan?

A. Son B. Brother C. Nephew D. Grandson

6. Rafeeq has better sight power than Muneer. Shameer have less sight to that of Sudheer. Sudheer doesn't have sight as that of Rafeeq. Who among these have more power of sight?

A. Sudheer B. Shameer C. Rafeeq D. Muneer

7. If two persons have completed a job within 10 days, what amount of job one can do in one day?

A. 1/2 B 1/5 C. 1/10 D. 1/20

8. If the sound of a gunfire takes 2 minutes to reach from place A to place B, how much time the sounds of five gunfire will take to reach from place A to B?

A. 10 minutes B. 2 minutes C. 4 minutes D. 5 minutes

9. Sharmila is younger than Mala. Kunjan and Nanda are of the same age. Sudheesh is younger than Nanda and elder than Sharmila. Mala is not as old as Sudheesh. Then who is the eldest one?

A. Sudheesh B. Mala C. Sharmila D. Kunjan

10. There are 70 students in a queue for remitting the fees. If the place of Mohan is 54th from the Window how many students are there behind Mohanan?

A. 15 B. 16 C. 17 D.18

11. If South-West is North, what will be the North-East?

A. West B. South west C. East west D. South

12. A is the son of B. B and C are sisters. D is the mother of C and E is the son of D. Then, which is right among the following?

A. E is the uncle of A
B. C and E are brother and sister
C. C is the grandmother of A
D. A and E are brothers.

13. There are 80 employees in a company in which 1/4 of them have a car 1/2 of them have scooter and 1/10 of them have both car and scooter. Then how many of them are there without a car or scooter?

A. 12 B. 32 C. 30 D. 28

14. In a class having a strength of 51 students, the rank of Akhil is 21st. When count from the least ranked student, which will be the rank of Akhil?

A. 12 B. 30 C. 31 D. 35

15. A person started his journey from the place, X. After walking 4 miles towards east he turned left and again walked 5 miles. Then he turned left and walked two miles. Then, to which discretion now he is walking?

A. North B. West C. East D. South

16. F is the brother of A and C is the daughter of A. K is the sister of F and G is the brother of C. Among them who is the uncle of 'G'.

A. F B. C C. K D. A

17. Jinu is two years elder than Vinu and have three times the age of Minu? If, the ;sum of the age of 3 persons is 27, what is the age of Jinu?
A. 5 B. 3 C. 9 D. 10

18. If the place of X, who is standing in a queue in front of a Maveli store, from the front is 22 and from the back is 28. How many persons are there in the queue?
A. 49 B. 52 C. 50 D. 54

19. A is longer than B and B is shorter than X. X and Y are of the same length. If Z is longer than A, then who is the shortest one?

A. X B. Y C. A D. B

20. If father of Syam is the son of Sajjay, what is the relationship ;between Syam and Sajjay.

A. Son B. Grandson C. Brother D. Nephew.

TEST - V - COMPREHENSION

In this section, for every question, some statements are given. Four alternatives are given for every question as A, B, C and D. Read the statements carefully and find out the answers and mark it on the answer sheet provided.

Example:

Satheesh have two sons. A and B and two daughters C and D. Shyama have two children X and Y. Manoj have two children namely E and F and they are employed in a company. A and D are married. X married C and F married A. Manoj is the brother of Shyama.

Question:

1. What is the relationship between X and E?

A. Father and Son
B. Brother and Sister
C. Cousins
D. Father and daughter

A	B	C✓	D

1) W, X, Y and Z are the members of a home. Among them W, X and Y are educated and W, Y and Z are honest. Y and Z are employed and W, X and Z have humility

1. Who have education and honesty, but is not employed?

A. W. B. X C. Y D. Z

2. Who is honest, educated and employed?

A. W. B. X C. Y D. Z

3. Who is honest and employed but does not have education?

A. W. B. X C. Y D. Z

4. Whom have education and humility, yet not with honesty and employment

A. W. B. X C. Y D. Z

5. Who doesn't have education, even if he is humble, honest and employed.

A. W. B. X C. Y D. Z

2) Dinesh have a daughter namely A and two sons namely B and C. Shyam have two sons namely P and Q and a daughter R. P and C are married and they have two sons, M and N. Rohit is the father of both S and T. T and B are married and they have two daughters D and E and a son G.

6. What is the relationship between Q and N.

A. Father B. Grand father C. Uncle D. Son

7. What is the relationship between Dinesh and E?

A. Grand father B. Uncle C. Father D. Son

8. What is the relationship between M and R?

A. Mother B. Daughter C. Niece D. Aunt

9. What is the relationship between B and G?

A. Daughter B. Mother C. Aunt D. Niece

10. What is the relationship between E and S?

A. Grand Son B. Uncle C. Niece D. Father

3. If 5 PQ8 = $5^2 + 8 = 25 + 8 = 33$

11. 4 PQ 4 = ?

A. 16 B. 20 C. 24 D. 12

12. 4 PQ 1 = ?

A. 17 B. 12 C. 8 D. 9

13. 5 PQ 5 = ?

A. 20 B. 30 C. 24 D. 12

14. 6 PQ ? = 108

A. 72 B. 30 C. 15 D. 25

15. ? PQ9 = 109

A. 50 B. 25 C. 20 D. 10

4) U, V, W, X, Y and Z are the members of a home. One among them is a foot ball player and another one, a chess player. The third person is a cricket player. U and X are unmarried women and they do not participate in any game. No women are engaged in playing football or in cricket. Z is the husband of a married couple. V, the brother of W is not a chee player or a cricket player Y, is the friend of 'V' and a cricket player.

16. Who is the football player?

A. X B. U C. Y D. Z

17. Who is the chess player?

A. U B. V C. W D. X

18. Who is the wife of 'Z' ?

A. W B. V C. U D. Y

19. Who are the ladies?

A. UXV B. VYX C. XZY D. UVW

20. Who are the gents?

A. XUY B. UXV C. XYZ D. WXZ

Appendix IVB

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION
VERBAL GROUP TEST OF INTELLIGENCE
RESPONSE SHEET

പേര്..... ക്ലാസ്സ് .....വയസ്സ് .....

സ്ക്കൂൾ: ഗവണ്മെന്റ്/പ്രൈവറ്റ്.....ഡിവിഷൻ..... ആൺകുട്ടി/പെൺകുട്ടി

ക്രമനമ്പർ	ഉത്തരം Test I				ക്രമനമ്പർ	ഉത്തരം Test II				ക്രമനമ്പർ	ഉത്തരം Test III				ക്രമനമ്പർ	ഉത്തരം Test IV				ക്രമനമ്പർ	ഉത്തരം Test V			
1.	A	B	C	D	1.	A	B	C	D	1.	A	B	C	D	1.	A	B	C	D	1.	A	B	C	D
2.	A	B	C	D	2.	A	B	C	D	2.	A	B	C	D	2.	A	B	C	D	2.	A	B	C	D
3.	A	B	C	D	3.	A	B	C	D	3.	A	B	C	D	3.	A	B	C	D	3.	A	B	C	D
4.	A	B	C	D	4.	A	B	C	D	4.	A	B	C	D	4.	A	B	C	D	4.	A	B	C	D
5.	A	B	C	D	5.	A	B	C	D	5.	A	B	C	D	5.	A	B	C	D	5.	A	B	C	D
6.	A	B	C	D	6.	A	B	C	D	6.	A	B	C	D	6.	A	B	C	D	6.	A	B	C	D
7.	A	B	C	D	7.	A	B	C	D	7.	A	B	C	D	7.	A	B	C	D	7.	A	B	C	D
8.	A	B	C	D	8.	A	B	C	D	8.	A	B	C	D	8.	A	B	C	D	8.	A	B	C	D
9.	A	B	C	D	9.	A	B	C	D	9.	A	B	C	D	9.	A	B	C	D	9.	A	B	C	D
10.	A	B	C	D	10.	A	B	C	D	10.	A	B	C	D	10.	A	B	C	D	10.	A	B	C	D
11.	A	B	C	D	11.	A	B	C	D	11.	A	B	C	D	11.	A	B	C	D	11.	A	B	C	D
12.	A	B	C	D	12.	A	B	C	D	12.	A	B	C	D	12.	A	B	C	D	12.	A	B	C	D
13.	A	B	C	D	13.	A	B	C	D	13.	A	B	C	D	13.	A	B	C	D	13.	A	B	C	D
14.	A	B	C	D	14.	A	B	C	D	14.	A	B	C	D	14.	A	B	C	D	14.	A	B	C	D
15.	A	B	C	D	15.	A	B	C	D	15.	A	B	C	D	15.	A	B	C	D	15.	A	B	C	D
16.	A	B	C	D	16.	A	B	C	D	16.	A	B	C	D	16.	A	B	C	D	16.	A	B	C	D
17.	A	B	C	D	17.	A	B	C	D	17.	A	B	C	D	17.	A	B	C	D	17.	A	B	C	D
18.	A	B	C	D	18.	A	B	C	D	18.	A	B	C	D	18.	A	B	C	D	18.	A	B	C	D
19.	A	B	C	D	19.	A	B	C	D	19.	A	B	C	D	19.	A	B	C	D	19.	A	B	C	D
20.	A	B	C	D	20.	A	B	C	D	20.	A	B	C	D	20.	A	B	C	D	20.	A	B	C	D

Appendix IVC

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION
VERBAL GROUP TEST OF INTELLIGENCE
RESPONSE SHEET

Name .....Class.....Age.....

School:Government/Private.....Division.....Boy/Girl

Sl. No.	Answers Test I				Sl. No.	Answers Test II				Sl. No.	Answers Test III				Sl. No.	Answers Test IV				Sl. No.	Answers Test V			
1.	A	B	C	D	1.	A	B	C	D	1.	A	B	C	D	1.	A	B	C	D	1.	A	B	C	D
2.	A	B	C	D	2.	A	B	C	D	2.	A	B	C	D	2.	A	B	C	D	2.	A	B	C	D
3.	A	B	C	D	3.	A	B	C	D	3.	A	B	C	D	3.	A	B	C	D	3.	A	B	C	D
4.	A	B	C	D	4.	A	B	C	D	4.	A	B	C	D	4.	A	B	C	D	4.	A	B	C	D
5.	A	B	C	D	5.	A	B	C	D	5.	A	B	C	D	5.	A	B	C	D	5.	A	B	C	D
6.	A	B	C	D	6.	A	B	C	D	6.	A	B	C	D	6.	A	B	C	D	6.	A	B	C	D
7.	A	B	C	D	7.	A	B	C	D	7.	A	B	C	D	7.	A	B	C	D	7.	A	B	C	D
8.	A	B	C	D	8.	A	B	C	D	8.	A	B	C	D	8.	A	B	C	D	8.	A	B	C	D
9.	A	B	C	D	9.	A	B	C	D	9.	A	B	C	D	9.	A	B	C	D	9.	A	B	C	D
10.	A	B	C	D	10.	A	B	C	D	10.	A	B	C	D	10.	A	B	C	D	10.	A	B	C	D
11.	A	B	C	D	11.	A	B	C	D	11.	A	B	C	D	11.	A	B	C	D	11.	A	B	C	D
12.	A	B	C	D	12.	A	B	C	D	12.	A	B	C	D	12.	A	B	C	D	12.	A	B	C	D
13.	A	B	C	D	13.	A	B	C	D	13.	A	B	C	D	13.	A	B	C	D	13.	A	B	C	D
14.	A	B	C	D	14.	A	B	C	D	14.	A	B	C	D	14.	A	B	C	D	14.	A	B	C	D
15.	A	B	C	D	15.	A	B	C	D	15.	A	B	C	D	15.	A	B	C	D	15.	A	B	C	D
16.	A	B	C	D	16.	A	B	C	D	16.	A	B	C	D	16.	A	B	C	D	16.	A	B	C	D
17.	A	B	C	D	17.	A	B	C	D	17.	A	B	C	D	17.	A	B	C	D	17.	A	B	C	D
18.	A	B	C	D	18.	A	B	C	D	18.	A	B	C	D	18.	A	B	C	D	18.	A	B	C	D
19.	A	B	C	D	19.	A	B	C	D	19.	A	B	C	D	19.	A	B	C	D	19.	A	B	C	D
20.	A	B	C	D	20.	A	B	C	D	20.	A	B	C	D	20.	A	B	C	D	20.	A	B	C	D

Appendix V

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE (FOR STANDARD VII PUPILS)

DRAFT FORM

Dr. P.K. SUDHEESH KUMAR HAMEED, A.

നിർദ്ദേശങ്ങൾ:

- ഇതൊരു സോഷ്യൽ സയൻസ് പരീക്ഷയാണ്. ചോദ്യക്കടലാസിൽ ഒന്നും എഴുതരുത്. ഉത്തരങ്ങൾ അടയാളപ്പെടുത്തുന്നതിന് പ്രത്യേകം ഷീറ്റ് തന്നിരിക്കുന്നു.
- എല്ലാ ചോദ്യങ്ങൾക്കും **A,B,C,D** എന്നിങ്ങനെ നാല് ഉത്തരങ്ങൾ വീതം കൊടുത്തിരിക്കുന്നു. അവയിൽ ഒന്നുമാത്രമാണ് ശരി. ഉത്തരക്കടലാസിൽ ഓരോ ചോദ്യ നമ്പറിനു നേരെയും **A,B,C,D** എന്നിങ്ങനെ രേഖപ്പെടുത്തിയിരിക്കുന്നു. ശരിയുത്തരം കണ്ടുപിടിച്ചശേഷം ഉത്തരക്കടലാസിൽ ശരിയുത്തരത്തെ സൂചിപ്പിക്കുന്ന അക്ഷരത്തിൽ **'X'** അടയാളം രേഖപ്പെടുത്തുക.
- നിങ്ങൾ ആദ്യം അടയാളപ്പെടുത്തിയ ചിഹ്നം തെറ്റായ സ്ഥാനത്താണെങ്കിൽ, സ്ഥാനം മാറ്റുന്നതിന് അതിനു ചുറ്റും ഒരു സമചതുരം (☐) വരയ്ക്കുകയും ശരിയായ സ്ഥാനത്ത് **'X'** ചിഹ്നം രേഖപ്പെടുത്തുകയും ചെയ്യുക.
- എല്ലാ ചോദ്യങ്ങൾക്കും ഉത്തരം രേഖപ്പെടുത്താൻ ശ്രദ്ധിക്കുക.

മാതൃക: ഇറ്റലിയിലെ നാണയത്തിന്റെ പേരെന്ത്?

A. ലിറ B. യെൻ

C. ദിനാർ D. റൂബിൾ

A X	B	C	D

1. ഇന്ത്യയിൽ തീവണ്ടി ഗതാഗതം ആരംഭിച്ചത് ഏത് വർഷത്തിലായിരുന്നു?

A. 1753 B.1458 C.1853 D.1643

2. ഇന്ത്യയിൽ ആദ്യമായി ഗ്രേഗർറോയിൽവെ നിലവിൽ വന്നത് എവിടെയാണ്?

A. ആസ്സാം B. ബോംബെ C. മദ്രാസ് D. കൽക്കത്ത

3. കരിപ്പൂർ വിമാനത്താവളം സ്ഥിതിചെയ്യുന്നത് ഏതു ജില്ലയിലാണ്?

A. കോഴിക്കോട് B. മലപ്പുറം C. തൃശൂർ D. കണ്ണൂർ

4. പോർട്ടുഗീസിലെ ഏതു തുറമുഖത്തിൽ നിന്നുമാണ് വാസ്കോഡഗാമ തന്റെ കപ്പൽയാത്ര ആരംഭിച്ചത്?

A. ഫോർമോസ B. ന്യൂയോർക്ക് C. സ്പെയിൻ D .ലിസ്ബൺ

5. ഇന്ത്യയിലെ ഏറ്റവും പ്രധാനപ്പെട്ട തുറമുഖം ഏതാണ്?

A. കൽക്കത്ത B. വിശാഖപട്ടണം C. ബോംബെ D. മദ്രാസ്

6. ജപ്പാനിലെ നാണയത്തിന്റെ പേരെന്ത്?

A. യെൻ B. ഡോളർ C. മാർക്ക് D. ടാങ

7. ഇന്ത്യ വിക്ഷേപിച്ച ആദ്യത്തെ കൃത്രിമോപഗ്രഹം ഏതാണ്?

A. സ്കൈലാബ് B. പൃത്വി C. ആര്യഭട്ട D. അഗ്നി

8. താഴെ പറയുന്നവരിൽ ടെലിഫോൺ കണ്ടുപിടിച്ചത് ആരാണ്?

A. ഐസക് ന്യൂട്ടൺ B. ഗ്രാഹാംബെൽ C. ഫാരഡെ D. ആമ്പിയർ

9. പത്രവരിക്കാരുടെ എണ്ണത്തിൽ മുമ്പിൽ നിൽക്കുന്ന രാജ്യം ഏതാണ്?

A. ശ്രീലങ്ക B. ഇന്ത്യ C. അമേരിക്ക D. ജപ്പാൻ

10. ചരക്കുഗതാഗതത്തിന് മുമ്പ്കാലത്ത് നാം ഉപയോഗിച്ചിരുന്ന പ്രധാന മാർഗ്ഗം എന്തായിരുന്നു?

A. കാളവണ്ടി B. ട്രാക്ടർ C. ട്രോളി D. തീവണ്ടി

11. പി.ടി. ഉഷ, സ്പോർട്സിൽ ഏത് ഇനത്തിലാണ് പങ്കെടുത്തിരുന്നത്?

A. വോളിബോൾ B. സൈക്ലിംഗ് C. ഹോക്കി D. അത്ലറ്റിക്സ്

12. അലൂമിനിയം ഖനനത്തിൽ ലോകത്തിൽ ഒന്നാംസ്ഥാനത്ത് നിൽക്കുന്ന രാഷ്ട്രം ഏതാണ്?

A. കാനഡ B. ജപ്പാൻ C. അമേരിക്ക D. ഇറ്റലി

13. ലോകത്തിൽ ഏറ്റവും കൂടുതൽ സ്വർണ്ണം ഉൽപ്പാദിപ്പിക്കുന്ന രാഷ്ട്രം ഏതാണ്?

A. ചിലി B. ഓസ്ട്രേലിയ C.ഘാന D. ദക്ഷിണാഫ്രിക്ക

14. 1990-1991 വർഷത്തിൽ ഇന്ത്യയിലെ തീവണ്ടിപ്പാതയുടെ നീളം എത്ര കിലോമീറ്റർ ആയിരുന്നു?

A. 62367 കി.മീ B. 54859 കി.മീ C. 64447 കി.മീ D. 58312 കി.മീ

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15. ഇന്ത്യയിലെ പ്രധാന കപ്പൽ നിർമ്മാണകേന്ദ്രം ഏതാണ്?

A. കൊച്ചി B. കൽക്കത്ത C. വിശാഖപട്ടണം D. ബോംബെ

16. ഇന്ത്യയിൽ റബ്ബർ ഉൽപ്പാദനത്തിൽ ഒന്നാം സ്ഥാനത്തു നിൽക്കുന്ന സംസ്ഥാനം ഏതാണ് ?

A. കർണ്ണാടക B. ആസ്സാം C. തമിഴ്നാട് D. കേരളം

17. ലോകത്തിൽ ഏറ്റവും കൂടുതൽ വ്യവസായ കമ്പനികൾ സ്ഥിതി ചെയ്യുന്ന രാഷ്ട്രം ഏതാണ്?

A. ചൈന B. ബ്രിട്ടൻ C.അമേരിക്ക D. ഇന്ത്യ

18. താഴെ പറയുന്നവയിൽ പേനയുടെ മുൻഗാമി ആരാണ്?

A. നാരായം B. താളിയോല C.മരഫലക D. കടലാസ്

19. അലൂമിനിയത്തിന്റെ അയിര് ഏതാണ്?

A. ലിഗ്നൈറ്റ് B. ബോക്സൈറ്റ് C. സിസ്റ്റ് D. കളിമണ്ണ്

20. സി.എച്ച്. മുഹമ്മദ് കോയയുടെ യാത്രാവിവരണത്തിന്റെ പേരെന്ത്?

A. ഹജ്ജ് യാത്ര B. എന്റെ ഹജ്ജ് യാത്രാവിവരണം

C. ഞങ്ങളുടെ ഹജ്ജ് യാത്ര D. എന്റെ ഹജ്ജ് യാത്ര

21. "എക്സ്പ്രസ് ഹൈവേ" എന്നതുകൊണ്ട് ഉദ്ദേശിക്കുന്നത് എന്ത്?

A. ഇന്ത്യയെ തെക്കുവടക്കും കിഴക്കു പടിഞ്ഞാറും ബന്ധിപ്പിക്കുന്ന ഹൈവേ

B. അതിവേഗതയിൽ യാത്ര ചെയ്യാൻ പറ്റുന്ന ഹൈവേ

C. എക്സ്പ്രസ് തീവണ്ടികൾക്ക് മാത്രമായുള്ള പുതിയ റെയിൽപാത

D. ഇന്ത്യയെയും പാക്കിസ്ഥാനെയും തമ്മിൽ ബന്ധിപ്പിക്കുന്ന ഹൈവേ

22. താഴെ പറയുന്നവയിൽ ഏത് ദേശീയപാതയാണ് നമ്മുടെ പ്രദേശത്തു കൂടി കടന്നുപോകുന്നത്?

A. ദേശീയപാത 1 B. ദേശീയപാത 27

C. ദേശീയപാത 17 D. ദേശീയപാത 47

23. താഴെ പറയുന്നവയിൽ ഏതാണ് ഗതാഗതത്തിന്റെ ചരിത്രത്തിലെ ഒരു സുപ്രധാനനാഴികക്കല്ലായ സംഭവം ഏതാണ്?

A. കാളവണ്ടിയുടെ ഉപയോഗം

B. വിമാനത്തിന്റെ കണ്ടുപിടുത്തം

C. കപ്പലിന്റെ ഉപയോഗം

D. ചക്രത്തിന്റെ കണ്ടുപിടുത്തം

24. സൂപ്പർസോണിക് വിമാനങ്ങളുടെ പ്രത്യേകതയെന്ത്?

A. ശൂന്യാകാശ യാത്രകൾക്ക് ഉപയോഗിക്കുന്നവയാണ്.

B. ശബ്ദത്തെക്കാൾ വേഗതയിൽ സഞ്ചരിക്കുന്നവയാണ്.

C. പരമാവധി ഭാരം കയറ്റാൻ കഴിയുന്നവയാണ്.

D. യാത്രാകൂലി ഏറ്റവും കുറഞ്ഞവയാണ്.

25. ഇന്ത്യയിലെ ഏറ്റവും വലിയ ഇറക്കുമതി ഇനം ഏതാണ്?

A. പെട്രോളിയം ഉൽപന്നങ്ങൾ B. മുത്തുകൾ

C. യന്ത്രങ്ങൾ D. രാസവസ്തുക്കൾ

26. ഇന്ത്യയിലെ ഏറ്റവും വലിയ കയറ്റുമതി ഇനം ഏതാണ്?

A. കയറുൽപന്നങ്ങൾ B. തുണിത്തരങ്ങൾ

C. കാപ്പി D. ഖനിജവസ്തുക്കൾ

27. ഇന്ത്യയിലെ മറ്റുവിമാനത്താവളങ്ങളെ അപേക്ഷിച്ച് ബോംബെയെ വ്യത്യസ്തമാക്കുന്നതെന്ത്?

A. ഏറ്റവും തിരക്കേറിയ വിമാനത്താവളമാണ്.

B. ഏറ്റവും തിരക്കു കുറഞ്ഞ വിമാനത്താവളമാണ്.

C. വ്യവസായ സ്ഥാപനങ്ങൾ കൂടുതലുള്ള സ്ഥലമാണ്.

D. ചരക്കുകടത്തുകൂലി കുറവുള്ള വിമാനത്താവളമാണ്.

28. താഴെ കൊടുത്തിരിക്കുന്നവയിൽ ഏതു പ്രത്യേകതയാണ് പെട്രോളിയം വ്യവസായത്തെ മറ്റുള്ളവയിൽ നിന്നു വ്യത്യസ്തമാക്കുന്നത്?

A. കയറ്റുമതി സാധ്യത കൂടുതലുള്ള വ്യവസായമാണ്.

B. ഏറ്റവും കുറഞ്ഞ മുതൽ മുടക്ക് ആവശ്യമായ വ്യവസായമാണ്.

C. ഏറ്റവും ലാഭകരമായ വ്യവസായമാണ്.

D. ഭാരതസർക്കാരിന്റെ പൂർണ്ണനിയന്ത്രണത്തിലിരിക്കുന്ന വ്യവസായമാണ്.

29. യു.എസ്. ഡോളറിന് ഇന്ത്യൻ രൂപയുമായി നിലവിലുള്ള വിനിമയനിരക്കെത്ര?

A. 11 രൂപ B. 0.35 രൂപ C. 43 രൂപ D. 23 രൂപ

30. BBC എന്നതിന്റെ പൂർണ്ണരൂപം എന്താണ്?

A. ബ്രിട്ടാനിയ ബിസ്കറ്റ് കമ്പനി

B. ബ്രിട്ടീഷ് ബ്രോഡ്കാസ്റ്റിംഗ് കോർപ്പറേഷൻ

C. ബിസിനസ് ബ്രോഡ്കാസ്റ്റിംഗ് കമ്പനി

D. ബ്രിട്ടീഷ് ബിസിനസ് കോർപ്പറേഷൻ

31. 'യൂറോ' എന്നതുകൊണ്ട് ഉദ്ദേശിക്കുന്നതെന്ത്?

A. യൂറോപ്പിലെ പൊതുനാണയം

B. പശ്ചിമ യൂറോപ്യൻ രാജ്യങ്ങളിലെ പൊതുനാണയം

C. ഐക്യരാഷ്ട്രസഭയുടെ നാണയം

D. അമേരിക്കൻ ഡോളർ

32. 'അന്താരാഷ്ട്ര ഡോളറി'ന്റെ പ്രത്യേകതയെന്ത്?

A. ഏഷ്യയിലെ നാണയമാണ്

B. അമേരിക്കയിലെ നാണയമാണ്

C. ലോകം മുഴുവൻ അംഗീകരിച്ച നാണയമാണ്.

D. യൂറോപ്പിൽ മാത്രം അംഗീകരിക്കപ്പെട്ട നാണയമാണ്

33. ഏതു രാജ്യത്താണ് ഇന്ത്യയെപ്പോലെ രൂപ എന്ന നാണയം നിലവിലുള്ളത്?

A. കുവൈത്ത് B. ബംഗ്ലാദേശ് C. തിബറ്റ് D. ശ്രീലങ്ക

34. SAARC എന്നത് ഏതുതരത്തിലുള്ള സംഘടനയാണ്?

A. വ്യാപാര സംഘടന

B. പ്രാദേശിക സഹകരണത്തിനുള്ള സംഘടന

C. സാമ്പത്തിക സഹകരണത്തിനുള്ള സംഘടന

D. സമാധാനത്തിനുള്ള സംഘടന

35. താഴെ പറയുന്നവയിൽ G -8 രാഷ്ട്രങ്ങളിൽ ഉൾപ്പെടാത്തതേത്?

A. ജപ്പാൻ B. മലേഷ്യ C. ജർമ്മനി D. റഷ്യ

36. ഇന്ത്യ അംഗമായ കൂട്ടായ്മ ഏത്?

A. SAARC B. OPEC C. ASEAN D. NATO

37. 'റിമോട്ട് സെൻസിംഗി'ന്റെ ഉപയോഗമെന്ത്?

A. മഴ അളക്കുന്നതിന് സഹായിക്കുന്നു

B. കാറ്റിന്റെ ഗതി മനസ്സിലാക്കുന്നതിന് സഹായിക്കുന്നു

C. വായുവിന്റെ മർദ്ദം അളക്കുന്നതിന് സഹായിക്കുന്നു

D. കാലാവസ്ഥ പ്രവചനത്തിന് സഹായിക്കുന്നു

38. ഒരു വാർത്താവിനിമയോപാധി എന്ന നിലയിൽ റേഡിയോയുടെ പ്രധാന്യമെന്ത്?

A. ഇന്ത്യയിൽ ഏറ്റവും കുറച്ചുപേർ ഉപയോഗിക്കുന്ന വാർത്താവിനിമയ മാദ്ധ്യമമാണ്.

B. ഇന്ത്യയിൽ ഏറ്റവും കൂടുതൽ പേർ ഉപയോഗിക്കുന്ന വാർത്താവിനിമയ മാദ്ധ്യമമാണ്

C. ഇന്ത്യയിൽ സാധാരണക്കാർ മാത്രം ഉപയോഗിക്കുന്ന വാർത്താവിനിമയ മാദ്ധ്യമമാണ്.

D. ഇന്ത്യയിലെ സമ്പന്നർ മാത്രം ഉപയോഗിക്കുന്ന വാർത്താവിനിമയ മാദ്ധ്യമമാണ്.

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39. STD എന്നതിന്റെ പൂർണ്ണരൂപമെന്ത്?

A. Subscriber's Trunk Depot System

B. Substantial Trunk Dialing System

C. Sagar Trade Department and System

D. Subscriber's Trunk Dialing System

40. 'അസോസിയേറ്റ് പ്രസ്സിന്റെ' പ്രത്യേകതയെന്ത്?

A. ഒരു ബ്രിട്ടീഷ് വാർത്താ വിതരണ ഏജൻസിയാണ്

B. ഒരു അമേരിക്കൻ വാർത്താ വിതരണ ഏജൻസിയാണ്

C. ഒരു ജർമ്മൻ വാർത്താ വിതരണ ഏജൻസിയാണ്

D. ഒരു ഇന്ത്യൻ വാർത്താ വിതരണ ഏജൻസിയാണ്

41. 'തോംസൺസ്' ഏതു വിഭാഗത്തിലാണ് ഉൾപ്പെടുന്നത്?

A. വാർത്താവിതരണ ഏജൻസി

B. ഫാർമസ്യൂട്ടിക്കൽ ഏജൻസി

C. പരസ്യ ഏജൻസി

D. ഇൻഷുറൻസ് ഏജൻസി

42. താഴെപറയുന്ന വിശദീകരണങ്ങളിൽ 'ഇന്റർനെറ്റു'മായി ബന്ധമുള്ളത് ഏതെന്ന് തിരഞ്ഞെടുക്കുക?.

A. ടെലിഫോണുകളുടെ ലോകാടിസ്ഥാനത്തിലുള്ള ശൃംഖല ആണ്.

B. പത്രങ്ങളുടെ ലോകാടിസ്ഥാനത്തിലുള്ള ശൃംഖലയാണ്.

C. കമ്പ്യൂട്ടറുകളുടെ ലോകാടിസ്ഥാനത്തിലുള്ള ശൃംഖലയാണ്.

D. ടെലിവിഷനുകളുടെ ലോകാടിസ്ഥാനത്തിലുള്ള ശൃംഖലയാണ്.

43. മറ്റു സംസ്ഥാനങ്ങളെ അപേക്ഷിച്ച് ആസ്സാമിനെ വ്യത്യസ്തമാക്കുന്നതെന്ത്?

A. ഇന്ത്യയിൽ ഏറ്റവും കൂടുതൽ അഭ്രം ഉൽപാദിപ്പിക്കുന്ന സംസ്ഥാനമാണ്.

B. ഇന്ത്യയിൽ ഏറ്റവും കൂടുതൽ പെട്രോളിയം ഉൽപാദിപ്പിക്കപ്പെടുന്ന സംസ്ഥാനമാണ്

C. ഇന്ത്യയിലെ പ്രധാന തുറമുഖമാണ്.

D. ഇന്ത്യയിൽ ഏറ്റവും കൂടുതൽ ബോക്സൈറ്റ് ഉൽപാദിപ്പിക്കുന്ന സംസ്ഥാനമാണ്.

44. താഴെ പറയുന്നവയിൽ ഒറീസയുടെ പ്രത്യേകതയെന്ത്?

A. ഇന്ത്യയിൽ ഏറ്റവും കൂടുതൽ ജനസാന്ദ്രതയുള്ള സംസ്ഥാനമാണ്.

B. ഇന്ത്യൻ റെയിൽവെയുടെ ആസ്ഥാനമാണ്.

C. ഏറ്റവും കൂടുതൽ സ്വർണ്ണം ഉൽപാദിപ്പിക്കുന്ന സംസ്ഥാനമാണ്.

D. മാംഗനീസ് ഉൽപാദനത്തിൽ ഒന്നാം സ്ഥാനത്തു നിൽക്കുന്ന സംസ്ഥാനമാണ്.

45. 'ഫിയറ്റ്' കമ്പനി ഏത് ഉൽപന്നവുമായാണ് ബന്ധപ്പെട്ടിരിക്കുന്നത്?

A. കൊക്കക്കോള B. ലോറി

C. തീവണ്ടി എഞ്ചിൻ D. കാർ

46. 'കെൽട്രോണി'ന്റെ പ്രത്യേകത എന്ത്?

A. ഒരു വിദേശ കമ്പനിയാണ് B. ഒരു സഹകാര്യ സ്ഥാപനമാണ്

C. ഒരു ഇന്ത്യൻ കമ്പനിയാണ് D. ഒരു കരകൗശല സ്ഥാപനമാണ്

47. മറ്റ് ഇന്ത്യൻ സംസ്ഥാനങ്ങളിൽ നിന്നും ഉത്തർപ്രദേശിനെ വ്യത്യസ്തമാക്കുന്നതെന്ത്?

A. വിദ്യാഭ്യാസപുരോഗതിയിൽ ഇന്ത്യയിൽ ഒന്നാംസ്ഥാനത്തു നിൽക്കുന്ന സംസ്ഥാനമാണ്.

B. പഞ്ചസാര വ്യവസായം കേന്ദ്രീകരിക്കപ്പെട്ടിരിക്കുന്ന സംസ്ഥാനമാണ്.

C. പരുത്തി ഉൽപാദനം കേന്ദ്രീകരിക്കപ്പെട്ടിരിക്കുന്ന സംസ്ഥാനമാണ്

D. റബ്ബർ ഉൽപാദനം കേന്ദ്രീകരിക്കപ്പെട്ടിരിക്കുന്ന സംസ്ഥാനമാണ്.

48. 'ഇന്ത്യൻ ഓയിൽ കോർപ്പറേഷ'ന്റെ പ്രത്യേകത എന്ത്?

A. ലോകത്തിൽ കൂടുതൽ പെട്രോൾ ഉൽപാദിപ്പിക്കുന്ന കമ്പനിയാണ്.

B. ഇന്ത്യയിലെ ഏറ്റവും വലിയ സഹകാര്യ വ്യവസായ കമ്പനിയാണ്.

C. ഇന്ത്യയിലെ എണ്ണ വ്യവസായത്തിന്റെ ആസ്ഥാനമാണ്

D. ലോകത്തിലെ വൻകിട വ്യവസായ കമ്പനികളിൽ പെടുന്ന ഇന്ത്യൻ കമ്പനിയാണ്.

49. ഇന്ത്യയുടെ വ്യവസായ ഭൂപടത്തിൽ ഭോപ്പാലിന്റെ സ്ഥാനമെന്ത്?

A. ഇന്ത്യയിൽ ഏറ്റവും കൂടുതൽ പെട്രോളിയം ഖനനം ചെയ്യുന്ന സ്ഥലമാണ്.

B. മദ്ധ്യപ്രദേശ് സംസ്ഥാനത്തിന്റെ തലസ്ഥാന നഗരിയാണ്.

C. അമേരിക്കൻ കമ്പനിയായ യൂണിയൻ കാർബൈഡ് സ്ഥിതി ചെയ്യുന്ന സ്ഥലമാണ്.

D. ഇന്ത്യയിലെ ഏറ്റവും പ്രധാനപ്പെട്ട വ്യവസായ കേന്ദ്രമാണ്.

50. താഴെ പറയുന്നവയിൽ 'മാരുതി സുസുക്കി'യെക്കുറിച്ച് ശരിയായതേത്?

A. ഇന്ത്യൻ കമ്പനിയാണ്

B. വിദേശ കമ്പനിയാണ്

C. ഇന്ത്യൻ കമ്പനിയും വിദേശകമ്പനിയും സംയുക്തമായിട്ടുള്ളതാണ്.

D. അമേരിക്കൻ കമ്പനിയാണ്.

51. പൂക്കൾ, പച്ചക്കറികൾ എന്നിവ വിമാനമാർഗ്ഗമാണ് കയറ്റി അയക്കുന്നത്. എന്തുകൊണ്ട്?

A. വില കൂടിയ വസ്തുക്കളായതുകൊണ്ട്

B. എളുപ്പം നശിക്കുന്നവയായതുകൊണ്ട്

C. ഭാരക്കുറവുള്ള വസ്തുക്കളായതുകൊണ്ട്

D. സമ്പന്നർ ഉപയോഗിക്കുന്നതായതുകൊണ്ട്

52. ഇന്ത്യയുടെ തീവണ്ടിഷാത്തയുടെ നീളത്തിൽ, താഴെ പറയുന്നവയിൽ, ഏതു തരത്തിലുള്ള മാറ്റമാണ് ദർശിക്കാൻ കഴിയുക?

A. തീവണ്ടിഷാത്തയുടെ നീളം വർഷം തോറും വർദ്ധിച്ചു വരുന്നു.

B. തീവണ്ടിഷാത്തയുടെ നീളം വർഷം തോറും കുറഞ്ഞു വരുന്നു

C. തീവണ്ടിഷാത്തയുടെ നീളത്തിൽ വർദ്ധനവും കുറവും ഉണ്ടാവുന്നു.

D. തീവണ്ടിഷാതകൾ വൈദ്യുതീകരിക്കപ്പെട്ടു വരുന്നു.

53. മറ്റുകാലങ്ങളെ അപേക്ഷിച്ച്, വേനൽക്കാലത്ത് പരുത്തി വസ്ത്രങ്ങളാണ് ധരിക്കാൻഏറ്റവും അനുയോജ്യം എന്ന് പറയുന്നതിന്റെ അടിസ്ഥാനം എന്ത്?

A. വേനൽക്കാലത്ത് പരുത്തി വസ്ത്രങ്ങളുടെ വില വളരെ കുറവായതിനാൽ.

B. പരുത്തി വസ്ത്രങ്ങൾ വായു സഞ്ചാരം സുതാര്യമാക്കും എന്നതിനാൽ.

C. പരുത്തി വസ്ത്രങ്ങൾക്ക് വേനൽക്കാലത്ത് ഭാരം കുറവാണെന്നതിനാൽ.

D. പരുത്തി വസ്ത്രങ്ങൾ വേനൽക്കാലത്ത് കൂടുതൽ ലഭ്യമാണെന്നതിനാൽ.

54. താഴെ കൊടുത്തിരിക്കുന്ന പട്ടികയിൽ നിന്നും വ്യാപാരക്കമ്മി ഏറ്റവും കുറഞ്ഞമാസം ഏതെന്ന് കണ്ടെത്തുക?

മാസവും വർഷവും	കയറ്റുമതി	ഇറക്കുമതി	വ്യാപാരക്കമ്മി
മാർച്ച്'' 99	14,414	15.185	771
ഏപ്രിൽ' 99	11,431	13,655	2,224
മെയ് '99	11,163	15,051	3,888

A. മാർച്ച് 99 B. മെയ് 99

C. ഏപ്രിൽ 99 D. 1999 ഏപ്രിൽ, മെയ് മാസങ്ങളിൽ

55. വർഷം തോറും ഇന്ത്യൻ രൂപയുടെ മൂല്യത്തിൽ ഇടിവ് സംഭവിക്കുന്നു എന്ന അഭിപ്രായത്തെ നിങ്ങളെങ്ങിനെ സാധൂകരിക്കും?

A. ഉൽപന്നങ്ങളുടെ വില വർഷം തോറും കുറഞ്ഞു വരുന്നു എന്നതിനാൽ

B. ഉൽപന്നങ്ങളുടെ വില വർഷം തോറും വർദ്ധിച്ചു വരുന്നു എന്നതിനാൽ

C. ഉൽപന്നങ്ങളുടെ വിലയിൽ വർഷം തോറും മാറ്റമുണ്ടാവുന്നില്ല എന്നതിനാൽ

D. ഉൽപന്നങ്ങൾ കൂടുതലായി വിണിയിൽ ലഭ്യമാണ് എന്നതിനാൽ

56. സാമ്പത്തികമായി വികസിതമായ രാജ്യങ്ങളിലെ ജനസംഖ്യ വർഷം തോറും കുറഞ്ഞുവരുന്നു എങ്കിൽ, ഇന്ത്യൻ ജനസംഖ്യയുടെ സ്ഥിതി താഴെ പറയുന്നവയിൽ ഏതാണ്?

A. ഇന്ത്യയിലെ ജനസംഖ്യ വർഷം തോറും കുറഞ്ഞു വരുന്നു.

B. ഇന്ത്യയിലെ ജനസംഖ്യ വർഷം തോറും വർദ്ധിച്ചു വരുന്നു.

C. ഇന്ത്യയിലെ ജനസംഖ്യ വർഷങ്ങൾ ഇടവിട്ട് വർദ്ധിക്കുകയും കുറയുകയും ചെയ്യുന്നു.

D. ഇന്ത്യയിലെ ജനസംഖ്യയിൽ ഒരു മാറ്റവും ഉണ്ടാവുന്നില്ല.

57. ആധുനികകാലത്ത് ഇരുമ്പ് പ്രധാനമായും ഉപയോഗിക്കുന്നത് യന്ത്രങ്ങളും മറ്റും നിർമ്മിക്കുന്നതിനാണെങ്കിൽ പുരാതനകാലത്ത് ഇരുമ്പിന്റെ ഉപയോഗം മൂലമുണ്ടായ ഗുണപരമായ മാറ്റം എന്തായിരുന്നു?

A. ഇരുമ്പുരുക്കു വ്യവസായങ്ങൾ വികസിച്ചു

B. കൃഷിയുടെ വ്യാപനത്തിന് സഹായകമായി

C. സാമ്പത്തികമായി പുരോഗതിയുണ്ടായി

D. യുദ്ധങ്ങൾ വർദ്ധിക്കാൻ ഇടയാക്കി

58. ഇന്ത്യിലെ മറ്റു സംസ്ഥാനങ്ങളെ അപേക്ഷിച്ച് ലോഹ വ്യവസായങ്ങൾ ഏറ്റവും കൂടുതലായി കാണപ്പെടുന്ന സംസ്ഥാനമാവാൻ ബീഹാറിനെയും ഒറീസ്സയെയും സഹീയിക്കുന്ന പ്രധാന ഘടകമെന്ത്?

A. ഗതാഗത സൗകര്യങ്ങൾ കൂടുതൽ ലഭ്യമായതിനാൽ

B. മുതൽമുടക്ക് കൂടുതൽ ലഭ്യമായതിനാൽ

C. ഇരുമ്പയിര് വർദ്ധിച്ച ചോചിൽ ലഭ്യമായതിനാൽ

D. വിദ്യാഭ്യാസപരമായി മുന്നിൽ നിൽക്കുന്ന സംസ്ഥാനങ്ങളായതിനാൽ

59. സൈക്കിൾ, തൂമ്പ, ഉച്ചഭാഷിണി എന്നീ ഉപകരണങ്ങളിൽ നിങ്ങൾ തൂമ്പയാണ് തിരഞ്ഞെടുക്കുന്നതെങ്കിൽ അതിന്റെ അടിസ്ഥാനമെന്ത്?

A. ജോലിസമയം ലാഭിക്കാൻ സഹായിക്കുന്നു എന്നതിനാൽ

B. സാമ്പത്തിക ചിലവ് കുറക്കുന്നു എന്നതിനാൽ

C. കാലിലെ പേശികളുടെ ബലം വർദ്ധിഷിക്കുന്നു എന്നതിനാൽ

D. കൈകളുടെ കാര്യക്ഷമത വർദ്ധിഷിക്കുന്നു എന്നതിനാൽ

60. ഓഹരികളുടെ വാങ്ങൽ-വിൽപനകളുമായി ബന്ധപ്പെട്ട സ്ഥാപനമാണ് സ്റ്റോക്ക് എക്സ്ചേഞ്ച്. വ്യത്യസ്ത സമയങ്ങളിൽ ഓഹരികളുടെ മൂല്യത്തിൽ ഏതു തരത്തിലുള്ള മാറ്റമാണ് സംഭവിക്കുന്നത്?

A. ഓഹരിയുടെ വില എല്ലാ സമയത്തും സ്ഥിരമായി നിൽക്കുന്നു.

B. ഓഹരികളുടെ വില എല്ലായ്പോഴും വർദ്ധിച്ചു വരുന്നു

C. ഓഹരികളുടെ വില എല്ലായ്പോഴും കുറഞ്ഞു വരുന്നു.

D. ഓഹരിയുടെ വില ചില സമയങ്ങളിൽ വർദ്ധിക്കുകയും മറ്റു ചില സമയങ്ങളിൽ കുറയുകയും ചെയ്യുന്നു.

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61. ചരക്കുഗതാഗതത്തിൽ വിമാനത്തെ അപേക്ഷിച്ച് കപ്പലിനുള്ള പ്രധാന മേന്മയെന്ത്?

A. വേഗത കൂടുതലാണ്

B. വളരെ കൂടിയ അളവിൽ ചരക്ക് കടത്താം

C. ഇന്ധനക്ഷമത കൂടുതലാണ്

D. കൂടുതൽ യാത്രക്കാരെ ഉൾക്കൊള്ളാനാവും

62. മറ്റു രാജ്യങ്ങളെ അപേക്ഷിച്ച് കാർഷിക- വ്യാവസായിക മേഖലകളിലെ പുരോഗതിയിൽ ഇന്ത്യ വളരെ പുറകിലാണ്. ഇതിനുള്ള പ്രധാന പരിമിതി എന്ത്?

A. അസംസ്കൃത വസ്തുക്കളുടെ ലഭ്യതയില്ലായ്മ

B. അസംസ്കൃത വസ്തുക്കളുടെ ആധിക്യം.

C. അസംസ്കൃത വസ്തുക്കളുടെ കാര്യക്ഷമമല്ലാത്ത ഉപയോഗം

D. തൊഴിലാളികളുടെ ലഭ്യതയില്ലായ്മ

63. കോഴിക്കോടുനിന്നും ഒരാൾ മലപ്പുറത്തേക്കും തിരുവനന്തപുരത്തേക്കും അഞ്ചു മിനിട്ടു വീതം ടെലഫോണിൽ സംസാരിക്കുന്നു. എങ്കിൽ തിരുവനന്തപുരത്തേക്ക് കൂടുതൽ ചിലവ് വേണ്ടി വരുന്നു. ഇതിന്റെ അടിസ്ഥാനമെന്ത്?.

A. ദൂരം കൂടുന്നതിനനുസരിച്ച് പൾസ് റേറ്റിൽ മാറ്റമുണ്ടാവുന്നില്ല.

B. ദൂരവും പൾസ്റേറ്റും തമ്മിൽ ബന്ധമില്ല

C. ദൂരം കൂടുന്നതിനനുസരിച്ച് പൾസ്റേറ്റ് കൂടുന്നു

D. ദൂരം കൂടുന്നതിനനുസരിച്ച് പൾസ്റേറ്റ് കുറയുന്നു.

64. നമ്മുടെ രാജ്യത്തിലെ വാണിജ്യക്കമ്മി വർഷം തോറും വർദ്ധിച്ചുവരികയാണല്ലോ.ഇതിന് നിങ്ങൾക്കെന്തു പരിഹാരമാർഗ്ഗമാണ് നിർദ്ദേശിക്കാനുള്ളത്?

A. കയറ്റുമതി കുറച്ച് ഇറക്കുമതി വർദ്ധിപ്പിക്കുക

B. ഇറക്കുമതി കുറച്ച് കയറ്റുമതി വർദ്ധിപ്പിക്കുക

C. ഇറക്കുമതിയും കയറ്റുമതിയും വർദ്ധിപ്പിക്കുക

D. ഇറക്കുമതിയും കയറ്റുമതിയും നിർത്തൽ ചെയ്യുക

65. കരിപ്പൂരിൽ നിന്നും ബോംബെയിലേക്ക് യാത്ര ചെയ്യണമെങ്കിൽ നിങ്ങൾവിമാനമാർഗ്ഗമാണ് സ്വീകരിക്കുക എന്നു സങ്കൽപ്പിക്കുക. എന്തുകൊണ്ട്?

A. വിമാനം സമ്പന്നരുടെ യാത്രക്കുമാത്രം യോജിച്ചതായതുകൊണ്ട്

B. കപ്പലിനെ അപേക്ഷിച്ച് സുഖസൗകര്യങ്ങൾ കൂടുതലായതുകൊണ്ട്

C. യാത്രാചിലവ് കുറഞ്ഞതായതിനാൽ

D. വിമാനയാത്രയ്ക്ക് കുറഞ്ഞസമയം മതി എന്നതിനാൽ

66. ഇന്ത്യൻ കാർഷികരംഗത്തുള്ള യന്ത്രവൽക്കരണം നാൾക്കുനാൾ വർദ്ധിച്ചു വരികയാണ്. ഇതിന്റെ വിപരീതഫലം എന്തായിരിക്കും?

A. കാർഷികോപകരണങ്ങളുടെ ഉൽപാദനം വർദ്ധിക്കും

B. പുതിയതരം തൊഴിവിളകൾ ലഭ്യമാവും

C. കാർഷിക രംഗത്ത് തൊഴിലില്ലായ്മ വർദ്ധിക്കും

D. കാർഷികോൽപന്നങ്ങളുടെ ഉൽപാദനം വർദ്ധിക്കും

67. താഴെ കൊടുത്തിരിക്കുന്നവയിൽ, നഗരത്തെ അപേക്ഷിച്ച്, ഏതു പ്രത്യേകതയാണ് ഒരു ഗ്രാമ പ്രദേശത്തിനുണ്ടായിരിക്കേണ്ടത്?

A. കാർഷികോൽപാദനം കുറവായിരിക്കും

B. ജനസംഖ്യ കൂടുതലായിരിക്കും

C. മലിനീകരണം കുറവായിരിക്കും

D. വ്യവസായ സ്ഥാപനങ്ങൾ കൂടുതലായിരിക്കും

68. മറ്റു രാജ്യങ്ങളെ അപേക്ഷിച്ച് ഇന്ത്യയിലാണ് ഇരുമ്പയിരിനു വ്യവസായങ്ങൾ കൂടുതലായി കാണപ്പെടുന്നത്. ഇതിന്റെ അടിസ്ഥാനം എന്ത്?

A മൂലധനം കൂടുതൽ അളവിൽ ലഭ്യമായതിനാൽ

B. ഗതാഗതം താരതമ്യേന കുറവായതിനാൽ

C. തൊഴിൽ ലഭ്യത കൂടുതലായതിനാൽ

D. ഇരുമ്പയിര് ധാരാളം ലഭ്യമായതിനാൽ

69. കൃഷിയുടെയും വ്യവസായത്തിന്റെയും വളർച്ച ഗതാഗതത്തിന്റെ വളർച്ചയുമായി എങ്ങിനെ താരതമ്യപ്പെടുത്താം?

A. കാർഷിക-വ്യാവസായിക വളർച്ചയും ഗതാഗതവളർച്ചയും തമ്മിൽ ഒരു ബന്ധവുമില്ല

B. കാർഷിക-വ്യാവസായിക വളർച്ചയ്ക്കനുസരിച്ച് ഗതാഗത വളർച്ചയും ഉണ്ടാവുന്നു

C. കാർഷിക-വ്യാവസായിക വളർച്ചക്കനുസരിച്ച് ഗതാഗതവളർച്ച മന്ദഗതിയിലാവുന്നു

D. കാർഷിക-വ്യാവസായിക വളർച്ചക്കനുസരിച്ച് ഗതാഗതരംഗത്ത് വളർച്ച മുരടിക്കുന്നു

70. ഇന്തയിലെ ഇറക്കുമതിയും കയറ്റുമതിയും തമ്മിൽ, താഴെ പറയുന്നവയിൽ, ഏതു തരത്തിലുള്ള ബന്ധമാണ് നമുക്ക് ദർശിക്കാൻ കഴിയുക?

A. ഇറക്കുമതിയിലും കയറ്റുമതിയിലും വർഷം തോറും വർദ്ധനവുണ്ടാകുന്നു.

B. ഇറക്കുമതിയും കയറ്റുമതിയും വർഷം തോറും കുറഞ്ഞു വരുന്നു.

C. വർഷം തോറും ഇറക്കുമതി വർദ്ധിച്ചുവരികയും കയറ്റുമതി കുറഞ്ഞുവരികയും ചെയ്യുന്നു

D. വർഷം തോറും കയറ്റുമതി വർദ്ധിച്ചു വരികയും ഇറക്കുമതി കുറഞ്ഞുവരികയും ചെയ്യുന്നു

71. ഒരു രാജ്യത്തിലെ പ്രകൃതിവിഭവങ്ങളും മറ്റുധാതുക്കളും വളരെ പ്രാധാന്യമർഹിക്കുന്നതാണ്. ഈ പ്രസ്താവനയുടെ അടിസ്ഥാനത്തിൽ താഴെ കൊടുത്തിരിക്കുന്നവയിൽ ഏറ്റവും അനുയോജ്യമായ നിഗമനം ഏത്?

A. പ്രകൃതി വിഭവങ്ങളും ധാതുക്കളും സുലഭ്യമായതിനാൽ സംരക്ഷിക്കേണ്ടതില്ല

B. പ്രകൃതി വിഭവങ്ങളും ധാതുക്കളും എളുപ്പം നശിക്കുന്നവയാണ്

C. പ്രകൃതി വിഭവങ്ങളും ധാതുക്കളും കാര്യക്ഷമമായ രീതിയിൽ ഉപയോഗിക്കേണ്ടതുണ്ട്

D. പ്രകൃതി വിഭവങ്ങൾ ധാതുക്കളേക്കാൾ പ്രാധാന്യമർഹിക്കുന്നതാണ്

72. കൃഷിയുടെയും ചരക്കുഗതാഗതത്തിന്റെയും വളർച്ചകൾ തമ്മിലുള്ള പരസ്പര സ്വാധീനം താഴെ പറയുന്നവയിൽ ഏത് വിധത്തിലുള്ളതാണ്?

A. ചരക്കു ഗതാഗതത്തിന്റെ വളർച്ചക്കനുസരിച്ച് കാർഷികരംഗത്തു പുരോഗതിയുണ്ടാവുന്നില്ല

B. കാർഷിക വളർച്ചയും ചരക്കു ഗതാഗതരംഗത്തെ വളർച്ചയും തമ്മിൽ പരസ്പരം സ്വാധീനം ചെലുത്തുന്നില്ല.

D. കൃഷിയുടെയും ചരക്കുഗതാഗതരംഗത്തെയും വളർച്ചകൾ വിപരീതാനുപാതത്തിലാണ്.

73. കാലാവസ്ഥാ വ്യതിയാനങ്ങളുടെ സ്വാധീനവും കൃഷിയുടെ വ്യാപനവും തമ്മിൽ പരസ്പര ബന്ധമുണ്ട്. ഈ പ്രസ്താവനയുടെ അടിസ്ഥാനത്തിൽ താഴെ കൊടുത്തിരിക്കുന്നവയിൽ ഏറ്റവും അനുയോജ്യമായ നിഗമനം ഏത്?

A. കൃഷിയുടെ വ്യാപനത്തിൽ കാലാവസ്ഥാ വ്യതിയാനങ്ങൾ ഒരു സ്വാധീനവും ചെലുത്തുന്നില്ല.

B. കൃഷിയുടെ വ്യാപനം പൂർണ്ണമായും കാലാവസ്ഥാ വ്യതിയാനങ്ങളെ ആശ്രയിച്ചിരിക്കുന്നു.

C. കാലാവസ്ഥാ വ്യതിയാനത്തിൽ കൃഷിയുടെ വ്യാപനം വലിയ പങ്കാണ് വഹിക്കുന്നത്.

D. കാലാവസ്ഥാ വ്യതിയാനങ്ങൾ, കൃഷിയുടെ വ്യാപനത്തെ സ്വാധീനിക്കുന്ന ഒരു പ്രധാന ഘടകമാണ്.

74. വ്യവസായങ്ങളുടെ നിലനില്പ് അതിനാവശ്യമായ അസംസ്കൃതവസ്തുക്കളുടെ ലഭ്യതയുമായി എങ്ങിനെ ബന്ധപ്പെട്ടിരിക്കുന്നു?

A. വ്യാവസായിക വളർച്ചയും അസംസ്കൃത വസ്തുക്കളുടെ ലഭ്യതയുമായി ബന്ധമില്ല

B. അസംസ്കൃത വസ്തുക്കളുടെ ലഭ്യതയ്ക്കനുസരിച്ച് വ്യവസായ പുരോഗതിയുണ്ടാവുന്നു.

C. വ്യാവസായിക പുരോഗതിക്കനുസരിച്ച് അസംസ്കൃതവസ്തുക്കളുടെ ലഭ്യതയും വർദ്ധിക്കുന്നു.

D. അസംസ്കൃത വസ്തുക്കളുടെ ഉപയോഗം കുറച്ചുകൊണ്ട് വ്യവസായ പുരോഗതി കൈവരിക്കാവുന്നതാണ്.

75. മുമ്പ് കാലത്തെ അപേക്ഷിച്ച്, ഇപ്പോൾ നമുക്ക് യാത്രചെയ്യേണ്ട സ്ഥലങ്ങൾ തമ്മിലുള്ള ദൂരവും യാത്ര ചെയ്യേണ്ട സമയവും കുറഞ്ഞതായി തോന്നുന്നു. ഈ പ്രസ്താവനയെ നിങ്ങളെങ്ങിനെ ന്യായീകരിക്കും?

A. കാലം കഴിയുന്തോറും സ്ഥലങ്ങൾ തമ്മിലുള്ള ദൂരം കുറഞ്ഞുവരുന്നു.

B. ഗതാഗതരംഗത്തുണ്ടായ പുരോഗതിമൂലമാണ് ഇങ്ങിനെ തോന്നുന്നത്.

C. ഇപ്പോൾ നാം ദീർഘദൂര യാത്രകൾ കുറച്ചുമാത്രമേ നടത്തുന്നുള്ളൂ

D. കാലാവസ്ഥയിലുള്ള മാറ്റംമൂലം അങ്ങിനെ സംഭവിക്കാറുണ്ട്

76. വിദേശവസ്തുക്കളുടെ ഇറക്കുമതി പൂർണ്ണമായും നിരോധിക്കേണ്ടതാണ് - ഈ പ്രസ്താവനയോട് നിങ്ങൾ എങ്ങിനെ പ്രതികരിക്കും?

A. വിദേശവസ്തുക്കൾ നമ്മുടെ കാലാവസ്ഥയ്ക്ക് ഒട്ടും യോജിച്ചതല്ല

B. വിദേശവസ്തുക്കൾക്ക് വമ്പിച്ച വിലയാണ് ഈടാക്കുന്നത്

C. വിദേശ വസ്തുക്കളുടെ ഇറക്കുമതി നമ്മുടെ ഉൽപന്നങ്ങളുടെ വിപണനത്തെ ബാധിക്കുന്നുണ്ട്.

D. വിദേശവസ്തുക്കൾ രണ്ടുതരം പൗരന്മാരെ സൃഷ്ടിക്കുന്നുണ്ട്

77. പരസ്യങ്ങളുടെ ആധിക്യം നമ്മുടെ നിത്യജീവിതത്തിൽ ചെലുത്തുന്ന സ്വാധീനം നാൾക്കുനാൾ വർദ്ധിച്ചുവരികയാണ്. ഈ പ്രസ്താവനയോട് നിങ്ങൾ എങ്ങിനെ പ്രതികരിക്കും?

A. പരസ്യങ്ങൾ നമ്മുടെ നിത്യജീവിതത്തിന്റെ ഒരവിഭാജ്യഘടകമാണ്.

B. പരസ്യങ്ങൾ ആവാമെങ്കിലും അവ നമ്മുടെ ചിന്തയെ കെണിയിൽ പെടുത്തുന്നവയായിരിക്കരുത്.

C. ആധുനിക മനുഷ്യന്റെ നിലനില്പ് തന്നെ പരസ്യത്തിലാണ്.

D. ആധുനിക വാർത്താവിനിമയ മാദ്ധ്യമങ്ങളുടെ വളർച്ചയ്ക്കനുസരിച്ച് പരസ്യത്തിന്റെ സ്വാധീനത്തിലും വർദ്ധനവ് അത്യാവശ്യമാണ്.

78. കൃഷിയും വ്യവസായവും തമ്മിൽ അഭേദ്യമായ ബന്ധമുണ്ട്. ഈ പ്രസ്താവനയോട് നിങ്ങൾക്കുള്ള കാഴ്ചപ്പാടെന്ത്?

A. കൃഷിയില്ലാതെ വ്യവസായവും, വ്യവസായമില്ലാതെ കൃഷിയും ഉണ്ടാവാം.

B. കൃഷിയും വ്യവസായവും പരസ്പരം ബന്ധിതമാണ്

C. കൃഷിയുടെ സഹായമില്ലാതെ വ്യവസായത്തിന് വളരാനാവും

D. കാർഷികവികസനത്തിന് വ്യാവസായികവളർച്ചയുമായി യാതൊരു ബന്ധമില്ല

79. ഒരു വാർത്താവിനിമയോപാധി എന്ന നിലയിൽ ടെലിവിഷൻ ഒരനുഗ്രഹമാണ്. ഈ പ്രസ്താവനയോട് നിങ്ങൾ എങ്ങിനെ പ്രതികരിക്കും?

A. നമ്മുടെ സമയം കവർന്നെടുക്കുന്നു എന്നതാണ് ടെലിവിഷന്റെ മെച്ചം

B. വിനോദപരിപാടികൾക്ക് ടെലിവിഷൻ വളരെ ഉപകാരപ്രദമാണ്

C. വാർത്തകൾ ലഭ്യമാക്കുന്നതിനും പുതിയ പുതിയ അറിവുകൾ നേടുന്നതിനും ടെലിവിഷൻ ഉപകാരപ്രദമാണ്.

D. വിദ്യാർത്ഥികൾക്കുള്ള പരിപാടികൾ ടെലിവിഷനിൽ കുറവാണ്.

80. വ്യാവസായിക വികസനത്തിനനുസരിച്ച് നമ്മുടെ പരിസ്ഥിതിയുടെ നിലനില്പ് തന്നെ അപകടത്തിലാണ്. ഈ പ്രസ്താവന നിങ്ങളെങ്ങിനെ ന്യായീകരിക്കുന്നു.

A. വ്യാവസായികവൽക്കരണവും പരിസ്ഥിതിസംരക്ഷണവും ഒരുമിച്ചു പോകില്ല

B. പരിസ്ഥിതി സംരക്ഷണത്തേക്കാൾ പ്രധാനപ്പെട്ടതാണ് വ്യാവസായികവൽക്കരണം

C. മനുഷ്യന്റെ ഇഷ്ടത്തിനനുസരിച്ച് പരിസ്ഥിതിയെ ചൂഷണം ചെയ്യുന്നതിൽ തെറ്റില്ല

D. പരിസ്ഥിതിയുടെ നിലനിൽപിന് ഭീഷണിയാവാത്ത വ്യാവസായിക വികസനം ആവശ്യമാണ്.

42

Appendix VA

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE (FOR STANDARD VII PUPILS)

DRAFT FORM

Dr. P.K. SUDHEESH KUMAR **HAMEED, A.**

Instructions:

- It is a test in Social Science. Don't write anything in the question paper. Separate response sheet is provided to mark the answers.
- For each question, four answers are given as **A, B, C** and **D**. Only one among them is right. After finding out the right answer for each question, mark (**X**) it on the respective alphabet in the response sheet.
- If wrongly answered, for changing the answer, draw a rectangle (☐) around the first answer and put (**X**) mark in the right place.
- Answer all the questions.

Example: What is the name of the coin of Italy?

A. Lira C. Dinar
B. Yen D. Rouble

Question No. 1	~~A~~	B	C	D

1. In which year train service began in India?
   A. 1753 B. 1458 C. 1853 D. 1643
2. Where was the first railway tunnel in India came into existence?
   A. Assam B. Bombay C. Madras D. Calcutta
3. In which district Karippur Airport is situating at?
   A. Kozhikode B. Malappuram C. Thrissur D. Kannur
4. From which Portuguese port, Vasco Da Gama began his voyage?
   A. Formosa B. New York C. Spain D. Lisbun
5. Which is the most important port of India?
   A. Calcutta B. Vaishak C. Bombay D. Madras

6. What is the name of the coin of Japan?
   A. Mark B. Dollar C. Yen D. Tanka
7. Which is first satellite launched by India?
   A. Scylab B. Prithwi C. Aryabhatta D. Agni
8. Among the following, who invented the telephone?
   A. Issac Newton B. Graham Bel C. Farade D. Ampier
9. Which country is the leading in the number of newspaper readers?
   A. Sri Lanka B. India C. America D. Japan
10. What was the method used by us in the past, for the transportation of goods?
    A. Bullock-cart B. Tractor C. Trolly D. Train
11. In which sports item, P.T. Usha had participated?
    A. Volleyball B. Cycling C. Hokey D. Athletics
12. Which country stands first in the mining of Aluminium in the world?
    A. Canada B. Japan C. America D. Italy
13. Which country, in the world, is the leading in the production of gold?
    A. Chili B. Australia C. Ghana D. South Africa
14. Which was the length of the Indian Railway in the year 1990-91?
    A. 62367 km B. 54859 km C. 64447 km D. 58312 km
15. Which is the important ship building centre of India?
    A. Kochi B. Calcutta C. Vaishak D. Bombay
16. Which state in India stands first in the production of rubber?
    A. Karnataka B. Assam C. Tamil Nadu D. Kerala
17. Which is the country in the world having the highest number of Industrial companies?
    A. China B. Britain C. America D. India
18. Among the following, who is the predecessor of Pen?
    A. Iron stile B. Palmyra leaf C. Wooden plain D. Paper
19. Which is the ore of Aluminium?
    A. Lignite B. Bauxite C. Cyst D. Clay
20. What is the name of the travel account of C.H. Mohammed Koya?
    A. Hajj Trip B. Description of my Hajj Trip
    C. Our Hajj Trip D. My Hajj Trip
21. What is meant by the term 'Express Highway'?
    A. The highway on which journey in high speed is possible.
    B. The highway which connects India from North to South and East to West.
    C. The new railway line, only for express trains.

D. The highway which connects India to Pakistan.

22. Among the following, which National Highway (NH) is passing through our locality?

A. National Highway 1 B. National Highway 17

C. National Highway 27 D. National Highway 47

23. Which was the incident that became a milestone in the history of transportation?

A. The use of bullock-cart B. The invention of aeroplane.

C. The invention of wheel D. The use of ship

24. What is the peculiarity of 'supersonic' flights?

A. It is useful in the journeys to space

B. It travels in greater speed than sound

C. It is useful in carrying maximum quantity.

D. Travel expense is too less in this.

25. What is the biggest item of import to India?

A. Petroleum products B. Pearls

C. Machines D. Chemicals

26. What is the biggest item of export from India?

A. Coir products B. Textile items

C. Coffee D. Mineral resources

27. What differentiate Bombay from other airports of India?

A. It is the most busy airport in India.

B. It is the least busy airport in India.

C. It is the place with more industries.

D. It is the airport in which the charge of transportation is low.

28. Among the following, which peculiarity makes the petroleum industry different from others?

A. It is the industry having the highest possibility of export.

B. It is the industry which needs the lowest capital investment.

C. It is the most profitable industry.

D. It is the industry under the complete control of the Govt. of India.

29. What is the present exchange rate of U.S. dollar to Indian rupee?

A. Rs.11 B. Rs.0.35 C. Rs.43 D. Rs.23

30. What is the expansion of BBC?

A. Britania Biscuit Company B. British Broadcasting Corporation

C. Business Broadcasting Corporation D. British Business Corporation

31. What is meant by the term 'EURO'?
    A. The common coin of Europe
    B. The common coin of West European countries
    C. The coin of United Nations Organisation
    D. American Dollar
32. What is the peculiarity of 'International Dollar'?
    A. It is the coin of Asia
    B. It is the coin of America
    C. It is the coin reputed by the world
    D. It is the coin reputed in Europe only
33. Which country is having a coin of 'Rupee' like India?
    A. Kuwait
    B. Bangladesh
    C. Tibet
    D. Sri Lanka
34. Which type of organisation is the SAARC?
    A. Organisation for Trade
    B. Organisation for regional cooperation
    C. Organisation for economic cooperation
    D. Organisation for peace
35. Which is not included in the G-8 nations?
    A. Japan
    B. Malesia
    C. Germany
    D. Russia
36. Which is the organisation in which India is a member?
    A. SAARC
    B. OPEC
    C. ASEAN
    D. NATO
37. Among the following instruments, what is the use of 'remote sensing'?
    A. It helps to know the amount of rain
    B. It helps to understand the course of waves
    C. It helps to know the atmospheric pressure
    D. It helps to predict climatic changes
38. What is the importance of Radio as a communication media?
    A. The communication media used by most of the people of India
    B. The communication media used by the least people of India
    C. The communication media used by the common people of India
    D. The communication media used by the rich people of India.
39. What is the full form of STD?
    A. Subscriber's Trunk Depot System
    B. Subscriber's Trunk Dialing System
    C. Sagar Trade Department and Systems
    D. Substantial Trunk Dialing System
40. What is the peculiarity of 'Associate press'?
    A. A British Broadcasting agency
    B. An American Broadcasting agency

C. A German Broadcasting agency D. An Indian broadcasting agency

41. In which category among the following, 'Thomsons' is included?
    A. Broadcasting Agency B. Pharmaceutical Agency
    C. Advertisement Agency D. Insurance Agency
42. Among the following descriptions, which one is related to internet?
    A. It is a world wide chain of Television.
    B. It is a world wide chain of Newspapers
    C. It is a world wide chain of Television.
    D. It is a world wide chain of computers.
43. What makes Assam different from other states?
    A. The largest Mica producing state of India.
    B. The largest petroleum producing state of India.
    C. The important port of India.
    D. The largest bauxite producing state of India.
44. Among the following, what is the importance of Orissa?
    A. The most densely populated state of India.
    B. The head quarters of Indian Railway
    C. The highest gold producing state of India.
    D. The highest manganese producing state of India.
45. Which product is related to 'Fiat' company
    A. Coca-cola B. Lorry C. Train Engine D. Car
46. What is the peculiarity of 'KELTRONE'?
    A. A foreign company B. A private company
    C. An Indian company D. A handicraft company
47. What differentiate Uttar Pradesh from other Indian states?
    A. It is the state which stands first in educational development.
    B. It is the state in which sugar industry is centralised.
    C. It is the state in which the production of cotton is centralised.
    D. It is the state in which the production of rubber is centralised.
48. What is the peculiarity of Indian Oil Corporation?
    A. It is the largest petroleum producing company in the world.
    B. It is the largest private company in India.
    C. It is the Centre of Indian Oil industry.
    D. It is the Indian company which is included in the largest industrial companies of the world.

49. What is the importance of Bhopal in the industrial map of India?
    1. The largest petroleum producing area in India.
    2. The capital of the state of Madhya Pradesh.
    3. The place in which, Union Carbide, an American company, is situating.
    4. The most important industrial centre of India.

50. Among the following, which is right about 'Maruti Suzuki'?
    A. An Indian company.
    B. A foreign company.
    C. A combined venture of an Indian company and foreign company.
    D. An American company.

51. What is the reason behind the exportation of flowers and vegetables by airways?
    A. They are costly items
    B. They are easily perishable items
    C. They are items with low weight
    D. They are items used by the rich

52. What type of change can be seen in the length of Indian Railways?
    A. The length of railway increases year by year.
    B. The length of railway decreases year by year.
    C. There is increases and decrease in the length of railway through years.
    D. Railway is being electrified.

53. Comparing with other seasons, on what basis, it is said that cotton clothes have to be used in the summer season?
    A. As cotton clothes are economically very cheap in summer season.
    B. As cotton clothes provides more air circulation.
    C. As cotton clothes have less weight in summer season.
    D. As cotton clothes are more available in summer season.

54. From the table given below find out the month in which the deficit of trade was the lowest?

Year & Month	Export	Import	Deficit of trade
March 1999	14,414	15,185	771
April 1999	11,431	13,655	2,224
May 1999	11,163	15,051	3,858

    A. March 1999
    B. April 1999
    C. May 1999
    D. March and April 1999.

55. How can you substantiate the opinion that there is a decrease in the value of Indian Rupee?
    A. As the price of products is decreasing through years.

B. As the price of products is increasing through years.

C. As there is no change in the price of products

D. As products are more available in the market.

56. If the population of economically developed countries is decreasing through years, what is the position of the population of India?

A. The population of India is increasing through years.

B. The population of India is decreasing through years.

C. The population of India is increasing and decreasing in consecutive intervals.

D. There is no change taking place in the population of India.

57. If iron has been used in the modern times for developing machines and others, what was the qualitative change that had taken place in the past, as a result of the use of iron?

A. Helped in the development of iron and steel industries

B. Helped in the spread of Agriculture

C. Economic development had taken place

D. Caused for the increase of wars.

58. What is the important factor which helps the states of Bihar and Orissa to be the leading in the number of steel industries in India, comparing with other states?

A. As there is the availability of more transportation facilities

B. As there is more capital investment

C. As there is availability of iron ore in abundance

D. As the states are leading in education

59. If there is some instruments like Cycle, Muttock and Loud speaker, on what basis you may select 'muttock'?

A. As it helps in the profitable use of time

B. As it decreases the expenditure

C. As it increases the muscle strength of legs.

D. As it increases the efficiency of hands

60. Stock-Exchange is an institution related with the buying and selling of shares. Then, what type of change is happening in the value of the shares in different times?

A. The value of shares always keeps static.

B. The value of shares always increasing

C. The value of shares always decreasing

D. The value of shares is increasing and decreasing consecutively.

61. What is the merit of ship in carrying goods than aeroplane?

A. It is having high speed.

B. It can carry huge quantity of goods

C. Increased efficiency of fuel D. It can carry more passengers

62. What is the important limitation behind the backwardness of India in the field of agricultural and industrial development?

A. In availability of raw materials B. The abundance of raw materials

C. The inefficient use of raw materials D. Inavailability of labourers.

63. If a person from Kozhikode calls to Thiruvananthapuram and Malappuram for a time duration of five minutes each, on what basis the call to Thiruvananthapuram require more charge?

A. There is no change in the pulse rate as the distance increases.

B. There is no relationship between distance and pulse rate.

C. There is an increase in the pulse rate according to the increase in distance.

D. There is a decrease in the pulse rate according to the increase in distance.

64. The deficit of Trade in our country is increasing by year. What suggestion you can have in this regard?

A. By decreasing export and increasing import.

B. By decreasing import and increasing export.

C. By increasing both export and import.

D. By stopping the export and import.

65. Why do you select air route, if you assume that you have to travel from Karippur to Bombay?

A. As it is suitable for the rich to travel

B. As the comforts are more than in ship.

C. As the fair is low.

D. As it takes a very limited time.

66. The mechanisation of Indian agriculture is increasing day by day. What will be its negative effect?

A. The production of agricultural machines will increase

B. It will make available new types of food crops.

C. Unemployment in the field of agriculture will increase

D. There will be no negative effect.

67. Among the following, compared with a town, what peculiarity will make a rural area?

A. Agricultural production will be low.

B. Population will be high.

C. Population will be low

D. More industries will be there.

68. Comparing with other nations of the world, more iron and steel industries are seen in India. What is the reason behind it?
    A. As the capital is available in great quantity.
    B. As the cost of transportation is comparatively low.
    C. As the availability of labour is increased.
    D. As there is the availability of greater amount of iron ore.
69. How can you compare the growth in agriculture and industry with the growth in transportation?
    A. There is no relation between Agricultural-Industrial growth with growth in transportation
    B. There is a growth in Transportation in relation to growth in agriculture and industry.
    C. The growth rate of transportation decreases with the growth in agriculture and industry.
    D. The growth of transportation stagnate with the growth of agriculture and industry.
70. What type of relation can be seen in the export and import of India?
    A. There is an increase in the export and import of India through years.
    B. Export and import of India is decreasing through years.
    C. There is an increase in import and a decrease in export through years.
    D. There is an increase in the export and decrease in the import through years.
71. The natural resources and other minerals of a country is very important. On the basis of this statement choose the correct inference from the following?
    A. Natural resources and minerals need not to be conserved because of their constant availability.
    B. Natural resources and minerals are decaying easily.
    C. Natural resources and minerals should be utilised in an efficient way.
    D. Natural resources are more important than minerals.
72. What type of mutual influence is there in the growth of agriculture and transportation of goods?
    A. There is no increase in the development in the agricultural field corresponding to the increase in the growth in the transportation of goods.
    B. There is development in the transportation of goods, corresponding to the growth of agricultural field.
    C. There is no mutual influence exists between the growth of agriculture and growth in the field of agriculture.
    D. The growth of agriculture and the growth in the transportation of goods are in opposite direction.

73. There is a mutual relationship between the influence of climatic changes and the spread of agriculture. On the basis of this statement, which is the most suitable inference?
    A. Climatic changes have no influence on the spread of agriculture.
    B. The spread of agriculture is entirely based on the influence of climatic changes.
    C. The spread of agriculture plays a key role in the climatic changes.
    D. Climatic changes is one of the important factor which influence the spread of agriculture.
74. How, the existence of industries related with the availability of the raw materials needed?
    A. There is no relation between the availability of raw materials and the growth of industries.
    B. There is progress in the growth of industries in accordance with the availability of raw materials.
    C. There is an increase in the availability of raw materials in relation into the progress in industry.
    D. Progress in industry may be attained by decreasing the use of raw materials.
75. It is now felt that, there is a decrease in the time and length of journey needed for travelling from one place to another. How will you justify this statement?
    A. The length between the places is decreases when time passes.
    B. It is attributed to the development in transportation.
    C. Now we have limited our long journeys.
    D. It may happened as a result of climatic change.
76. Import of foreign goods must be completely banned. How will you react to this statement?
    A. Foreign goods are not suitable to our climate.
    B. Foreign goods affords great price.
    C. Import of foreign goods effect the sale of indegeneous products.
    D. Foreign goods creates two types of citizens.
77. The influence made by the abundance of advertisement in our daily life is increasing day by day. How will you respond to this statement?
    A. Advertisements are an indivisible part of our daily life.
    B. Our thoughts must not be trapped by advertisements though it permissible.
    C. The existence of modern man is mainly on advertisement.
    D. An increase in the influence of advertisement is a necessity in accordance with the growth of modern communication media.

78. There is an unending relation between agriculture and industry. What is your attitude towards this statement?
    A. There may be industry without agriculture and agriculture without industry.
    B. Agriculture and industry are related each other.
    C. Industry can grow without the help of agriculture.
    D. Agricultural development is not related to industrial development in any way.
79. As a means of communication and broadcasting, television is a blessing. How will you react to this statement?
    A. The merit of television is that it overwhelm our time
    B. Television is very useful for amusements
    C. Television is useful in having new knowledge and providing news.
    D. The programs for the students in television is limited.
80. In association with the industrial development even the existence of our environment is in danger. How will you justify this statement?
    A. Industrialisation and preservation of environment do not go hand in hand.
    B. Industrialisation is important than the preservation of environment.
    C. There is no fault in the exploitation of environment as men likes.
    D. Industrial development, which will not hamper the existence of environment, is needed.

Appendix VB

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE

RESPONSE SHEET

പേര്..... ക്ലാസ്സ് ..... നമ്പർ .....

സ്ക്കൂൾ: ....ഡിവിഷൻ.....ആൺകുട്ടി/പെൺകുട്ടി

ക്രമനമ്പർ	A	B	C	D	ക്രമനമ്പർ	A	B	C	D
1.					21.				
2.					22.				
3.					23.				
4.					24.				
5.					25.				
6.					26.				
7.					27.				
8.					28.				
9.					29.				
10.					30.				
11.					31.				
12.					32.				
13.					33.				
14.					34.				
15.					35.				
16.					36.				
17.					37.				
18.					38.				
19.					39.				
20.					40.				

ക്രമനമ്പർ	A	B	C	D	ക്രമനമ്പർ	A	B	C	D
41.					61.				
42.					62.				
43.					63.				
44.					64.				
45.					65.				
46.					66.				
47.					67.				
48.					68.				
49.					69.				
50.					70.				
51.					71.				
52.					72.				
53.					73.				
54.					74.				
55.					75.				
56.					76.				
57.					77.				
58.					78.				
59.					79.				
60.					80.				

Appendix VC

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE

RESPONSE SHEET

Name..... Class..... No.....

School: ..... Division..... ....Boy/Girl .....

Sl.No	A	B	C	D	Sl.No	A	B	C	D
1.					21.				
2.					22.				
3.					23.				
4.					24.				
5.					25.				
6.					26.				
7.					27.				
8.					28.				
9.					29.				
10.					30.				
11.					31.				
12.					32.				
13.					33.				
14.					34.				
15.					35.				
16.					36.				
17.					37.				
18.					38.				
19.					39.				
20.					40.				

Sl.No	A	B	C	D	Sl.No	A	B	C	D
41.					61.				
42.					62.				
43.					63.				
44.					64.				
45.					65.				
46.					66.				
47.					67.				
48.					68.				
49.					69.				
50.					70.				
51.					71.				
52.					72.				
53.					73.				
54.					74.				
55.					75.				
56.					76.				
57.					77.				
58.					78.				
59.					79.				
60.					80.				

Appendix VD

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE

(Draft Form)

SCORING KEY

Sl. No.	Answers	Sl. No.	Answers	Sl.No.	Answers	Sl.No.	Answers
1	C	21	A	41	C	61	B
2	D	22	C	42	C	62	C
3	B	23	D	43	B	63	D
4	D	24	B	44	D	64	B
5	C	25	A	45	D	65	D
6	A	26	B	46	C	66	C
7	C	27	A	47	B	67	B
8	B	28	D	48	D	68	D
9	D	29	C	49	C	69	B
10	A	30	B	50	C	70	A
11	D	31	B	51	B	71	C
12	C	32	C	52	A	72	B
13	D	33	D	53	B	73	D
14	A	34	B	54	A	74	B
15	B	35	C	55	B	75	B
16	D	36	A	56	A	76	C
17	C	37	D	57	B	77	B
18	A	38	B	58	C	78	B
19	B	39	D	59	D	79	C
20	D	40	D	60	D	80	D

Appendix VI

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE (FOR STANDARD VII PUPILS)

FINAL FORM

Dr. P.K. SUDHEESH KUMAR HAMEED. A.

നിർദ്ദേശങ്ങൾ:

- ഇതൊരു സോഷ്യൽ സയൻസ് പരീക്ഷയാണ്. ചോദ്യക്കടലാസിൽ ഒന്നും എഴുതരുത്. ഉത്തരങ്ങൾ അടയാളപ്പെടുത്തുന്നതിന് പ്രത്യേകം ഷീറ്റ് തന്നിരിക്കുന്നു.
- എല്ലാ ചോദ്യങ്ങൾക്കും **A,B,C,D** എന്നിങ്ങനെ നാല് ഉത്തരങ്ങൾ വീതം കൊടുത്തിരിക്കുന്നു. അവയിൽ ഒന്നുമാത്രമാണ് ശരി. ഉത്തരക്കടലാസിൽ ഓരോ ചോദ്യ നമ്പറിനു നേരെയും **A,B,C,D** എന്നിങ്ങനെ രേഖപ്പെടുത്തിയിരിക്കുന്നു. ശരിയുത്തരം കണ്ടുപിടിച്ചശേഷം ഉത്തരക്കടലാസിൽ ശരിയുത്തരത്തെ സൂചിപ്പിക്കുന്ന അക്ഷരത്തിൽ **'X'** അടയാളം രേഖപ്പെടുത്തുക.
- നിങ്ങൾ ആദ്യം അടയാളപ്പെടുത്തിയ ചിഹ്നം തെറ്റായ സ്ഥാനത്താണെങ്കിൽ, സ്ഥാനം മാറ്റുന്നതിന് അതിനു ചുറ്റും ഒരു സമചതുരം (☐) വരയ്ക്കുകയും ശരിയായ സ്ഥാനത്ത് **'X'** ചിഹ്നം രേഖപ്പെടുത്തുകയും ചെയ്യുക.
- എല്ലാ ചോദ്യങ്ങൾക്കും ഉത്തരം രേഖപ്പെടുത്താൻ ശ്രദ്ധിക്കുക.

മാതൃക: ഇറ്റലിയിലെ നാണയത്തിന്റെ പേരെന്ത്?

A. ലിറ B. യെൻ

C. ദിനാർ D. റൂബിൾ

A ✓	B	C	D

1. ഇന്ത്യയിൽ ആദ്യമായി ഭൂഗർഭറെയിൽവെ നിലവിൽ വന്നത് എവിടെയാണ്?

A. ആസ്സാം B. ബോംബെ C. മദ്രാസ് D. കൽക്കത്ത

2. പോർട്ടുഗീസിലെ ഏതു തുറമുഖത്തിൽ നിന്നുമാണ് വാസ്കോഡഗാമ തന്റെ കപ്പൽയാത്ര ആരംഭിച്ചത്?

A. ഫോർമോസ B. ന്യൂയോർക്ക് C. സ്പെയിൻ D .ലിസ്ബൺ

3. ജപ്പാനിലെ നാണയത്തിന്റെ പേരെന്ത്?

A. യെൻ B. ഡോളർ C. മാർക്ക് D. ടാക

4. താഴെ പറയുന്നവരിൽ ടെലിഫോൺ കണ്ടുപിടിച്ചത് ആരാണ്?

A. ഐസക് ന്യൂട്ടൺ B. ഗ്രാഹാംബെൽ C. ഫാരഡെ D. ആമ്പിയർ

5. ചരക്കുഗതാഗതത്തിന് മുമ്പ്കാലത്ത് നാം ഉപയോഗിച്ചിരുന്ന പ്രധാന മാർഗ്ഗം എന്തായിരുന്നു?

A. കാളവണ്ടി B. ട്രാക്ടർ C. ട്രോളി D. തീവണ്ടി

6. അലൂമിനിയം ഖനനത്തിൽ ലോകത്തിൽ ഒന്നാംസ്ഥാനത്ത് നിൽക്കുന്ന രാഷ്ട്രം ഏതാണ്?

A. കാനഡ B. ജപ്പാൻ C. അമേരിക്ക D. ഇറ്റലി

7. ലോകത്തിൽ ഏറ്റവും കൂടുതൽ സ്വർണ്ണം ഉൽപാദിപ്പിക്കുന്ന രാഷ്ട്രം ഏതാണ്?

A. ചിലി B. ഓസ്ട്രേലിയ C.ഘാന D. ദക്ഷിണാഫ്രിക്ക

8. ലോകത്തിൽ ഏറ്റവും കൂടുതൽ വ്യവസായ കമ്പനികൾ സ്ഥിതി ചെയ്യുന്ന രാഷ്ട്രം ഏതാണ്?

A. ചൈന B. ബ്രിട്ടൻ C.അമേരിക്ക D. ഇന്ത്യ

9. അലൂമിനിയത്തിന്റെ അയിര് ഏതാണ്?

A. ലിഗൊറ്റ് B. ബോക്സൈറ്റ് C. സിസ്റ്റ് D. കളിമണ്ണ്

10. സി.എച്ച്. മുഹമ്മദ് കോയയുടെ യാത്രാവിവരണത്തിന്റെ പേരെന്ത്?

A. ഹജ്ജ് യാത്ര B. എന്റെ ഹജ്ജ് യാത്രാവിവരണം

C. ഞങ്ങളുടെ ഹജ്ജ് യാത്ര D. എന്റെ ഹജ്ജ് യാത്ര

11. താഴെ പറയുന്നവയിൽ ഏത് ദേശീയപാതയാണ് നമ്മുടെ പ്രദേശത്തു കൂടി കടന്നുപോകുന്നത്?

A. ദേശീയപാത 1 B. ദേശീയപാത 27

C. ദേശീയപാത 17 D. ദേശീയപാത 47

12. ഇന്ത്യയിലെ ഏറ്റവും വലിയ ഇറക്കുമതി ഇനം ഏതാണ്?

A. പെട്രോളിയം ഉൽപന്നങ്ങൾ B. മുത്തുകൾ
C. യന്ത്രങ്ങൾ D. രാസവസ്തുക്കൾ

13. താഴെ കൊടുത്തിരിക്കുന്നവയിൽ ഏതു പ്രത്യേകതയാണ് പെട്രോളിയം വ്യവസായത്തെ മറ്റുള്ളവയിൽ നിന്നു വ്യത്യസ്തമാക്കുന്നത്?

A. കയറ്റുമതി സാധ്യത കൂടുതലുള്ള വ്യവസായമാണ്.

B. ഏറ്റവും കുറഞ്ഞ മുതൽ മുടക്ക് ആവശ്യമായ വ്യവസായമാണ്.

C. ഏറ്റവും ലാഭകരമായ വ്യവസായമാണ്.

D. ഭാരതസർക്കാരിന്റെ പൂർണ്ണനിയന്ത്രണത്തിലിരിക്കുന്ന വ്യവസായമാണ്.

14. 'യൂറോ' എന്നതുകൊണ്ട് ഉദ്ദേശിക്കുന്നതെന്ത്?

A. യൂറോപ്പിലെ പൊതുനാണയം

B. പശ്ചിമ യൂറോപ്യൻ രാജ്യങ്ങളിലെ പൊതുനാണയം

C. ഐക്യരാഷ്ട്രസഭയുടെ നാണയം

D. അമേരിക്കൻ ഡോളർ

15. ഏതു രാജ്യത്താണ് ഇന്ത്യയെപ്പോലെ രൂപ എന്ന നാണയം നിലവിലുള്ളത്?

A. കുവൈത്ത് B. ബംഗ്ലാദേശ് C. തിബറ്റ് D. ശ്രീലങ്ക

16. 'റിമോട്ട് സെൻസിംഗി'ന്റെ ഉപയോഗമെന്ത്?

A. മഴ അളക്കുന്നതിന് സഹായിക്കുന്നു

B. കാറ്റിന്റെ ഗതി മനസ്സിലാക്കുന്നതിന് സഹായിക്കുന്നു

C. വായുവിന്റെ മർദ്ദം അളക്കുന്നതിന് സഹായിക്കുന്നു

D. കാലാവസ്ഥ പ്രവചനത്തിന് സഹായിക്കുന്നു

17. STD എന്നതിന്റെ പൂർണ്ണരൂപമെന്ത്?

A. Subscriber's Trunk Depot System

B. Substantial Trunk Dialing System

C. Sagar Trade Department and System

D. Subscriber's Trunk Dialing System

18. 'അസോസിയേറ്റ് പ്രസ്സി'ന്റെ പ്രത്യേകതയെന്ത്?

A. ഒരു ബ്രിട്ടീഷ് വാർത്താ വിതരണ ഏജൻസിയാണ്

B. ഒരു അമേരിക്കൻ വാർത്താ വിതരണ ഏജൻസിയാണ്

C. ഒരു ജർമ്മൻ വാർത്താ വിതരണ ഏജൻസിയാണ്

D. ഒരു ഇന്ത്യൻ വാർത്താ വിതരണ ഏജൻസിയാണ്

19. 'തോംസൺസ്' ഏതു വിഭാഗത്തിലാണ് ഉൾപ്പെടുന്നത്?

A. വാർത്താവിതരണ ഏജൻസി

B. ഫാർമസ്യൂട്ടിക്കൽ ഏജൻസി

C. പരസ്യ ഏജൻസി

D. ഇൻഷുറൻസ് ഏജൻസി

20. താഴെ പറയുന്നവയിൽ ഒറീസയുടെ പ്രത്യേകതയെന്ത്?

A. ഇന്ത്യയിൽ ഏറ്റവും കൂടുതൽ ജനസാന്ദ്രതയുള്ള സംസ്ഥാനമാണ്.

B. ഇന്ത്യൻ റെയിൽവെയുടെ ആസ്ഥാനമാണ്.

C. ഏറ്റവും കൂടുതൽ സ്വർണ്ണം ഉൽപാദിപ്പിക്കുന്ന സംസ്ഥാനമാണ്.

D. മാംഗനീസ് ഉൽപാദനത്തിൽ ഒന്നാം സ്ഥാനത്തു നിൽക്കുന്ന സംസ്ഥാനമാണ്.

21. 'ഫിയറ്റ്' കമ്പനി ഏത് ഉൽപന്നവുമായാണ് ബന്ധപ്പെട്ടിരിക്കുന്നത്?

A. കൊക്കക്കോള B. ലോറി

C. തീവണ്ടി എഞ്ചിൻ D. കാർ

22. 'കെൽട്രോണി'ന്റെ പ്രത്യേകത എന്ത്?

A. ഒരു വിദേശ കമ്പനിയാണ് B. ഒരു സ്വകാര്യ സ്ഥാപനമാണ്

C. ഒരു ഇന്ത്യൻ കമ്പനിയാണ് D. ഒരു കരകൗശല സ്ഥാപനമാണ്

23. 'ഇന്ത്യൻ ഓയിൽ കോർപ്പറേഷ'ന്റെ പ്രത്യേകത എന്ത്?

A. ലോകത്തിൽ കൂടുതൽ പെട്രോൾ ഉൽപാദിപ്പിക്കുന്ന കമ്പനിയാണ്.

B. ഇന്ത്യയിലെ ഏറ്റവും വലിയ സ്വകാര്യ വ്യവസായ കമ്പനിയാണ്.

C. ഇന്ത്യയിലെ എണ്ണ വ്യവസായത്തിന്റെ ആസ്ഥാനമാണ്

D. ലോകത്തിലെ വൻകിട വ്യവസായ കമ്പനികളിൽ പെടുന്ന ഇന്ത്യൻ കമ്പനിയാണ്.

24. ഇന്ത്യയുടെ വ്യവസായ ഭൂപടത്തിൽ ഭോപ്പാലിന്റെ സ്ഥാനമെന്ത്?

A. ഇന്ത്യയിൽ ഏറ്റവും കൂടുതൽ പെട്രോളിയം ഖനനം ചെയ്യുന്ന സ്ഥലമാണ്.

B. മദ്ധ്യപ്രദേശ് സംസ്ഥാനത്തിന്റെ തലസ്ഥാന നഗരിയാണ്.

C. അമേരിക്കൻ കമ്പനിയായ യൂണിയൻ കാർബൈഡ് സ്ഥിതി ചെയ്യുന്ന സ്ഥലമാണ്.

D. ഇന്ത്യയിലെ ഏറ്റവും പ്രധാനപ്പെട്ട വ്യവസായ കേന്ദ്രമാണ്.

25. താഴെ പറയുന്നവയിൽ 'മാരുതി സുസുക്കി'യെക്കുറിച്ച് ശരിയായതേത്?

A. ഇന്ത്യൻ കമ്പനിയാണ്

B. വിദേശ കമ്പനിയാണ്

C. ഇന്ത്യൻ കമ്പനിയും വിദേശകമ്പനിയും സംയുക്തമായിട്ടുള്ളതാണ്.

D. അമേരിക്കൻ കമ്പനിയാണ്.

26. ഇന്ത്യയുടെ തീവണ്ടിപ്പാതയുടെ നീളത്തിൽ, താഴെ പറയുന്നവയിൽ, ഏതു തരത്തിലുള്ള മാറ്റമാണ് ദർശിക്കാൻ കഴിയുക?

A. തീവണ്ടിപ്പാതയുടെ നീളം വർഷം തോറും വർദ്ധിച്ചു വരുന്നു.

B. തീവണ്ടിപ്പാതയുടെ നീളം വർഷം തോറും കുറഞ്ഞു വരുന്നു

C. തീവണ്ടിപ്പാതയുടെ നീളത്തിൽ വർദ്ധനവും കുറവും ഉണ്ടാവുന്നു.

D. തീവണ്ടിപ്പാതകൾ വൈദ്യുതീകരിക്കപ്പെട്ടു വരുന്നു.

27. മറ്റുകാലങ്ങളെ അപേക്ഷിച്ച്, വേനൽക്കാലത്ത് പരുത്തി വസ്ത്രങ്ങളാണ് ധരിക്കാൻഏറ്റവും അനുയോജ്യം എന്ന് പറയുന്നതിന്റെ അടിസ്ഥാനം എന്ത്?

A. വേനൽക്കാലത്ത് പരുത്തി വസ്ത്രങ്ങളുടെ വില വളരെ കുറവായതിനാൽ.

B. പരുത്തി വസ്ത്രങ്ങൾ വായു സഞ്ചാരം സുതാര്യമാക്കും എന്നതിനാൽ.

C. പരുത്തി വസ്ത്രങ്ങൾക്ക് വേനൽക്കാലത്ത് ഭാരം കുറവാണെന്നതിനാൽ.

D. പരുത്തി വസ്ത്രങ്ങൾ വേനൽക്കാലത്ത് കൂടുതൽ ലഭ്യമാണെന്നതിനാൽ.

28. ഇന്ത്യിയിലെ മറ്റു സംസ്ഥാനങ്ങളെ അപേക്ഷിച്ച് ലോഹ വ്യവസായങ്ങൾ ഏറ്റവും കൂടുതലായി കാണപ്പെടുന്ന സംസ്ഥാനമാവാൻ ബീഹാറിനെയും ഒറീസ്സയെയും സഹീയിക്കുന്ന പ്രധാന ഘടകമെന്ത്?

A. ഗതാഗത സൗകര്യങ്ങൾ കൂടുതൽ ലഭ്യമായതിനാൽ

B. മുതൽമുടക്ക് കൂടുതൽ ലഭ്യമായതിനാൽ

C. ഇരുമ്പയിര് വർദ്ധിച്ച ചോചിൽ ലഭ്യമായതിനാൽ

D. വിദ്യാഭ്യാസപരമായി മുന്നിൽ നിൽക്കുന്ന സംസ്ഥാനങ്ങളായതിനാൽ

29. സൈക്കിൾ, തൂമ്പ, ഉച്ചഭാഷിണി എന്നീ ഉപകരണങ്ങളിൽ നിങ്ങൾ തൂമ്പയാണ് തിരഞ്ഞെടുക്കുന്നതെങ്കിൽ അതിന്റെ അടിസ്ഥാനമെന്ത്?

A. ജോലിസമയം ലാഭിക്കാൻ സഹായിക്കുന്നു എന്നതിനാൽ

B. സാമ്പത്തിക ചിലവ് കുറക്കുന്നു എന്നതിനാൽ

C. കാലിലെ പേശികളുടെ ബലം വർദ്ധിഷിക്കുന്നു എന്നതിനാൽ

D. കൈകളുടെ കാര്യക്ഷമത വർദ്ധിഷിക്കുന്നു എന്നതിനാൽ

30. ഓഹരികളുടെ വാങ്ങൽ-വിൽപനകളുമായി ബന്ധപ്പെട്ട സ്ഥാപനമാണ് സ്റ്റോക്ക് എക്സ്ചേഞ്ച്. വ്യത്യസ്ത സമയങ്ങളിൽ ഓഹരികളുടെ മൂല്യത്തിൽ ഏതു തരത്തിലുള്ള മാറ്റമാണ് സംഭവിക്കുന്നത്?

A. ഓഹരിയുടെ വില എല്ലാ സമയത്തും സ്ഥിരമായി നിൽക്കുന്നു.

B. ഓഹരികളുടെ വില എല്ലായ്പ്പോഴും വർദ്ധിച്ചു വരുന്നു

C. ഓഹരികളുടെ വില എല്ലായ്പ്പോഴും കുറഞ്ഞു വരുന്നു.

D. ഓഹരിയുടെ വില ചില സമയങ്ങളിൽ വർദ്ധിക്കുകയും മറ്റു ചില സമയങ്ങളിൽ കുറയുകയും ചെയ്യുന്നു.

31. നമ്മുടെ രാജ്യത്തിലെ വാണിജ്യക്കമ്മി വർഷം തോറും വർദ്ധിച്ചുവരികയാണല്ലോ.ഇതിന് നിങ്ങൾക്കെന്തു പരിഹാരമാർഗ്ഗമാണ് നിർദ്ദേശിക്കാനുള്ളത്?

A. കയറ്റുമതി കുറച്ച് ഇറക്കുമതി വർദ്ധിപ്പിക്കുക

B. ഇറക്കുമതി കുറച്ച് കയറ്റുമതി വർദ്ധിപ്പിക്കുക

C. ഇറക്കുമതിയും കയറ്റുമതിയും വർദ്ധിപ്പിക്കുക

D. ഇറക്കുമതിയും കയറ്റുമതിയും നിർത്തൽ ചെയ്യുക

32. കരിപ്പൂരിൽ നിന്നും ബോംബെയിലേക്ക് യാത്ര ചെയ്യണമെങ്കിൽ നിങ്ങൾവിമാനമാർഗ്ഗമാണ് സ്വീകരിക്കുക എന്നു സങ്കൽപ്പിക്കുക. എന്തുകൊണ്ട്?

A. വിമാനം സമ്പന്നരുടെ യാത്രക്കുമാത്രം യോജിച്ചതായതുകൊണ്ട്

B. കഷ്ടിനെ അപേക്ഷിച്ച് സുഖസൗകര്യങ്ങൾ കൂടുതലായതുകൊണ്ട്

C. യാത്രാചിലവ് കുറഞ്ഞതായതിനാൽ

D. വിമാനയാത്രയ്ക്ക് കുറഞ്ഞസമയം മതി എന്നതിനാൽ

33. ഇന്ത്യൻ കാർഷികരംഗത്തുള്ള യന്ത്രവൽക്കരണം നാൾക്കുനാൾ വർദ്ധിച്ചു വരികയാണ്. ഇതിന്റെ വിപരീതഫലം എന്തായിരിക്കും?

A. കാർഷികോപകരണങ്ങളുടെ ഉൽപാദനം വർദ്ധിക്കും

B. പുതിയതരം ഭക്ഷ്യവിളകൾ ലഭ്യമാവും

C. കാർഷിക രംഗത്ത് തൊഴിലില്ലായ്മ വർദ്ധിക്കും

D. കാർഷ്കോൽപന്നങ്ങളുടെ ഉൽപാദനം വർദ്ധിക്കും

34. മറ്റു രാജ്യങ്ങളെ അപേക്ഷിച്ച് ഇന്ത്യയിലാണ് ഇരുമ്പുരുക്കു വ്യവസായങ്ങൾ കൂടുതലായി കാണപ്പെടുന്നത്. ഇതിന്റെ അടിസ്ഥാനം എന്ത്?

A മൂലധനം കൂടുതൽ അളവിൽ ലഭ്യമായതിനാൽ

B. ഗതാഗതം താരതമ്യേന കുറവായതിനാൽ

C. തൊഴിൽ ലഭ്യത കൂടുതലായതിനാൽ

D. ഇരുമ്പയിര് ധാരാളം ലഭ്യമായതിനാൽ

35. ഒരു രാജ്യത്തിലെ പ്രകൃതിവിഭവങ്ങളും മറ്റുധാതുക്കളും വളരെ പ്രാധാന്യമർഹിക്കുന്നതാണ്. ഈ പ്രസ്ഥാവനയുടെ അടിസ്ഥാനത്തിൽ താഴെ കൊടുത്തിരിക്കുന്നവയിൽ ഏറ്റവും അനുയോജ്യമായ നിഗമനം ഏത്?

A. പ്രകൃതി വിഭവങ്ങളും ധാതുക്കളും സദാലഭ്യമായതിനാൽ സംരക്ഷിക്കേണ്ടതില്ല

B. പ്രകൃതി വിഭവങ്ങളും ധാതുക്കളും എളുപ്പം നശിക്കുന്നവയാണ്

C. പ്രകൃതി വിഭവങ്ങളും ധാതുക്കളും കാര്യക്ഷമമായ രീതിയിൽ ഉപയോഗിക്കേണ്ടതുണ്ട്

D. പ്രകൃതി വിഭവങ്ങൾ ധാതുക്കളേക്കാൾ പ്രാധാന്യമർഹിക്കുന്നതാണ്

36. കൃഷിയുടെയും ചരക്കുഗതാഗതത്തിന്റെയും വളർച്ചകൾ തമ്മിലുള്ള പരസ്പര സ്വാധീനം താഴെ പറയുന്നവയിൽ ഏത് വിധത്തിലുള്ളതാണ്?

A. ചരക്കു ഗതാഗതത്തിന്റെ വളർച്ചക്കനുസരിച്ച് കാർഷികരംഗത്തു പുരോഗതിയുണ്ടാവുന്നില്ല

B. കാർഷിക വളർച്ചയും ചരക്കു ഗതാഗതരംഗത്തെ വളർച്ചയും തമ്മിൽ പരസ്പരം സ്വാധീനം ചെലുത്തുന്നില്ല.

D. കൃഷിയുടെയും ചരക്കുഗതാഗതരംഗത്തെയും വളർച്ചകൾ വിപരീതാനുപാതത്തിലാണ്.

37. വ്യവസായങ്ങളുടെ നിലനില്പ് അതിനാവശ്യമായ അസംസ്കൃതവസ്തുക്കളുടെ ലഭ്യതയുമായി എങ്ങിനെ ബന്ധപ്പെട്ടിരിക്കുന്നു?

A. വ്യാവസായിക വളർച്ചയും അസംസ്കൃത വസ്തുക്കളുടെ ലഭ്യതയുമായി ബന്ധമില്ല

B. അസംസ്കൃത വസ്തുക്കളുടെ ലഭ്യതയ്ക്കനുസരിച്ച് വ്യവസായ പുരോഗതിയുണ്ടാവുന്നു

C. വ്യാവസായിക പുരോഗതിക്കനുസരിച്ച് അസംസ്കൃതവസ്തുക്കളുടെ ലഭ്യതയും വർദ്ധിക്കുന്നു.

D. അസംസ്കൃത വസ്തുക്കളുടെ ഉപയോഗം കുറച്ചുകൊണ്ട് വ്യവസായ പുരോഗതി കൈവരിക്കാവുന്നതാണ്

38. പരസ്യങ്ങളുടെ ആധിക്യം നമ്മുടെ നിത്യജീവിതത്തിൽ ചെലുത്തുന്ന സ്വാധീനം നാൾക്കുനാൾ വർദ്ധിച്ചുവരികയാണ്. ഈ പ്രസ്ഥാവനയോട് നിങ്ങൾ എങ്ങിനെ പ്രതികരിക്കും?

A. പരസ്യങ്ങൾ നമ്മുടെ നിത്യജീവിതത്തിന്റെ ഒരവിഭാജ്യഘടകമാണ്.

B. പരസ്യങ്ങൾ ആവാമെങ്കിലും അവ നമ്മുടെ ചിന്തയെ കെണിയിൽ പെടുത്തുന്നവയായിരിക്കരുത്.

C. ആധുനിക മനുഷ്യന്റെ നിലനില്പ് തന്നെ പരസ്യത്തിലാണ്.

D. ആധുനിക വാർത്താവിനിമയ മാദ്ധ്യമങ്ങളുടെ വളർച്ചയ്ക്കനുസരിച്ച് പരസ്യത്തിന്റെ സ്വാധീനത്തിലും വർദ്ധനവ് അത്യാവശ്യമാണ്.

39. ഒരു വാർത്താവിനിമയോപാധി എന്ന നിലയിൽ ടെലിവിഷൻ ഒരനുഗ്രഹമാണ്. ഈ പ്രസ്ഥാവനയോട് നിങ്ങൾ എങ്ങിനെ പ്രതികരിക്കും?

A. നമ്മുടെ സമയം കവർന്നെടുക്കുന്നു എന്നതാണ് ടെലിവിഷന്റെ മെച്ചം

B. വിനോദപരിപാടികൾക്ക് ടെലിവിഷൻ വളരെ ഉപകാരപ്രദമാണ്

C. വാർത്തകൾ ലഭ്യമാക്കുന്നതിനും പുതിയ പുതിയ അറിവുകൾ നേടുന്നതിനും ടെലിവിഷൻ ഉപകാരപ്രദമാണ്.

D. വിദ്യാർത്ഥികൾക്കുള്ള പരിപാടികൾ ടെലിവിഷനിൽ കുറവാണ്.

40. വ്യാവസായിക വികസനത്തിനനുസരിച്ച് നമ്മുടെ പരിസ്ഥിതിയുടെ നിലനില്പ് തന്നെ അപകടത്തിലാണ്. ഈ പ്രസ്ഥാവന നിങ്ങളെങ്ങിനെ ന്യായീകരിക്കുന്നു.

A. വ്യാവസായികവൽക്കരണവും പരിസ്ഥിതിസംരക്ഷണവും ഒരുമിച്ചു പോകില്ല

B. പരിസ്ഥിതി സംരക്ഷണത്തെക്കാൾ പ്രധാനപ്പെട്ടതാണ് വ്യാവസായികവൽക്കരണം

C. മനുഷ്യന്റെ ഇഷ്ടത്തിനനുസരിച്ച് പരിസ്ഥിതിയെ ചൂഷണം ചെയ്യുന്നതിൽ തെറ്റില്ല

D. പരിസ്ഥിതിയുടെ നിലനിൽപിന് ഭീഷണിയാവാത്ത വ്യാവസായിക വികസനം ആവശ്യമാണ്.

Appendix VIA

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE (FOR STANDARD VII PUPILS)

FINAL FORM

Dr. P.K. SUDHEESH KUMAR HAMEED, A.

Instructions:

- It is a test in Social Science. Don't write anything in the question paper. Separate response sheet is provided to mark the answers.
- For each question, four answers are given as **A, B, C** and **D**. Only one among them is right. After finding out the right answer for each question, mark (**X**) it on the respective alphabet in the response sheet.
- If wrongly answered, for changing the answer, draw a rectangle (☐) around the first answer and put (**X**) mark in the right place.
- Answer all the questions.

Example: What is the name of the coin of Italy?

A. Lira C. Dinar
B. Yen D. Rouble

Question No. 1	~~A~~ X	B	C	D

1. Where was the first railway tunnel in India came into existence?
   A. Assam B. Bombay C. Madras D. Calcutta
2. From which Portuguese port, Vasco Da Gama began his voyage?
   A. Formosa B. New York C. Spain D. Lisbun
3. What is the name of the coin of Japan?
   A. Mark B. Dollar C. Yen D. Tanka
4. Among the following, who invented the telephone?
   A. Issac Newton B. Graham Bel C. Farade D. Ampier
5. What was the method used by us in the past, for the transportation of goods?
   A. Bullock-cart B. Tractor C. Trolly D. Train

6. Which country stands first in the mining of Aluminium in the world?

A. Canada B. Japan C. America D. Italy

7. Which country, in the world, is the leading in the production of gold?

A. Chili B. Australia C. Ghana D. South Africa

8. Which is the country in the world having the highest number of Industrial companies?

A. China B. Britain C. America D. India

9. Which is the ore of Aluminium?

A. Lignite B. Bauxite C. Cyst D. Clay

10. What is the name of the travel account of C.H. Mohammed Koya?

A. Hajj Trip B. Description of my Hajj Trip

C. Our Hajj Trip D. My Hajj Trip

11. Among the following, which National Highway (NH) is passing through our locality?

A. National Highway 1 B. National Highway 17

C. National Highway 27 D. National Highway 47

12. What is the biggest item of import to India?

A. Petroleum products B. Pearls

C. Machines D. Chemicals

13. Among the following, which peculiarity makes the petroleum industry different from others?

A. It is the industry having the highest possibility of export.

B. It is the industry which needs the lowest capital investment.

C. It is the most profitable industry.

D. It is the industry under the complete control of the Govt. of India.

14. What is meant by the term 'EURO'?

A. The common coin of Europe

B. The common coin of West European countries

C. The coin of United Nations Organisation

D. American Dollar

15. Which country is having a coin of 'Rupee' like India?

A. Kuwait B. Bangladesh C. Tibet D. Sri Lanka

16. Among the following instruments, what is the use of 'remote sensing'?

A. It helps to know the amount of rain

B. It helps to understand the course of waves

C. It helps to know the atmospheric pressure

D. It helps to predict climatic changes

17. What is the full form of STD?
    A. Subscriber's Trunk Depot System
    B. Subscriber's Trunk Dialing System
    C. Sagar Trade Department and Systems
    D. Substantial Trunk Dialing System
18. What is the peculiarity of 'Associate press'?
    A. A British Broadcasting agency
    B. An American Broadcasting agency
    C. A German Broadcasting agency
    D. An Indian broadcasting agency
19. In which category among the following, 'Thomsons' is included?
    A. Broadcasting Agency
    B. Pharmaceutical Agency
    C. Advertisement Agency
    D. Insurance Agency
20. Among the following, what is the importance of Orissa?
    A. The most densely populated state of India.
    B. The head quarters of Indian Railway
    C. The highest gold producing state of India.
    D. The highest manganese producing state of India.
21. Which product is related to 'Fiat' company
    A. Coca-cola B. Lorry C. Train Engine D. Car
22. What is the peculiarity of 'KELTRONE'?
    A. A foreign company
    B. A private company
    C. An Indian company
    D. A handicraft company
23. What is the peculiarity of Indian Oil Corporation?
    A. It is the largest petroleum producing company in the world.
    B. It is the largest private company in India.
    C. It is the Centre of Indian Oil industry.
    D. It is the Indian company which is included in the largest industrial companies of the world.
24. What is the importance of Bhopal in the industrial map of India?
    1. The largest petroleum producing area in India.
    2. The capital of the state of Madhya Pradesh.
    3. The place in which, Union Carbide, an American company, is situating.
    4. The most important industrial centre of India.
25. Among the following, which is right about 'Maruti Suzuki'?
    A. An Indian company.
    B. A foreign company.

C. A combined venture of an Indian company and foreign company.

D. An American company.

26. What type of change can be seen in the length of Indian Railways?

A. The length of railway increases year by year.

B. The length of railway decreases year by year.

C. There is increases and decrease in the length of railway through years.

D. Railway is being electrified.

27. Comparing with other seasons, on what basis, it is said that cotton clothes have to be used in the summer season?

A. As cotton clothes are economically very cheap in summer season.

B. As cotton clothes provides more air circulation.

C. As cotton clothes have less weight in summer season.

D. As cotton clothes are more available in summer season.

28. What is the important factor which helps the states of Bihar and Orissa to be the leading in the number of steel industries in India, comparing with other states?

A. As there is the availability of more transportation facilities

B. As there is more capital investment

C. As there is availability of iron ore in abundance

D. As the states are leading in education

29. If there is some instruments like Cycle, Muttock and Loud speaker, on what basis you may select 'muttock'?

A. As it helps in the profitable use of time

B. As it decreases the expenditure

C. As it increases the muscle strength of legs.

D. As it increases the efficiency of hands

30. Stock-Exchange is an institution related with the buying and selling of shares. Then, what type of change is happening in the value of the shares in different times?

A. The value of shares always keeps static.

B. The value of shares always increasing

C. The value of shares always decreasing

D. The value of shares is increasing and decreasing consecutively.

31. The deficit of Trade in our country is increasing by year. What suggestion you can have in this regard?

A. By decreasing export and increasing import.

B. By decreasing import and increasing export.

C. By increasing both export and import.

D. By stopping the export and import.

32. Why do you select air route, if you assume that you have to travel from Karippur to Bombay?

A. As it is suitable for the rich to travel

B. As the comforts are more than in ship.

C. As the fair is low.

D. As it takes a very limited time.

33. The mechanisation of Indian agriculture is increasing day by day. What will be its negative effect?

A. The production of agricultural machines will increase

B. It will make available new types of food crops.

C. Unemployment in the field of agriculture will increase

D. There will be no negative effect.

34. Comparing with other nations of the world, more iron and steel industries are seen in India. What is the reason behind it?

A. As the capital is available in great quantity.

B. As the cost of transportation is comparatively low.

C. As the availability of labour is increased.

D. As there is the availability of greater amount of iron ore.

35. The natural resources and other minerals of a country is very important. On the basis of this statement choose the correct inference from the following?

A. Natural resources and minerals need not to be conserved because of their constant availability.

B. Natural resources and minerals are decaying easily.

C. Natural resources and minerals should be utilised in an efficient way.

D. Natural resources are more important than minerals.

36. What type of mutual influence is there in the growth of agriculture and transportation of goods?

A. There is no increase in the development in the agricultural field corresponding to the increase in the growth in the transportation of goods.

B. There is development in the transportation of goods, corresponding to the growth of agricultural field.

C. There is no mutual influence exists between the growth of agriculture and growth in the field of agriculture.

D. The growth of agriculture and the growth in the transportation of goods are in opposite direction.

37. How, the existence of industries related with the availability of the raw materials needed?

A. There is no relation between the availability of raw materials and the growth of industries.

B. There is progress in the growth of industries in accordance with the availability of raw materials.

C. There is an increase in the availability of raw materials in relation into the progress in industry.

D. Progress in industry may be attained by decreasing the use of raw materials.

38. The influence made by the abundance of advertisement in our daily life is increasing day by day. How will you respond to this statement?

A. Advertisements are an indivisible part of our daily life.

B. Our thoughts must not be trapped by advertisements though it permissible.

C. The existence of modern man is mainly on advertisement.

D. An increase in the influence of advertisement is a necessity in accordance with the growth of modern communication media.

39. As a means of communication and broadcasting, television is a blessing. How will you react to this statement?

A. The merit of television is that it overwhelm our time

B. Television is very useful for amusements

C. Television is useful in having new knowledge and providing news.

D. The programs for the students in television is limited.

40. In association with the industrial development even the existence of our environment is in danger. How will you justify this statement?

A. Industrialisation and preservation of environment do not go hand in hand.

B. Industrialisation is important than the preservation of environment.

C. There is no fault in the exploitation of environment as men likes.

D. Industrial development, which will not hamper the existence of environment, is needed.

Appendix VIB

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE

RESPONSE SHEET

പേര്..... ക്ലാസ്സ് ..... നമ്പർ .....

സ്ക്കൂൾ: ....ഡിവിഷൻ.....ആൺകുട്ടി/പെൺകുട്ടി

Sl. No.	A	B	C	D
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Sl. No.	A	B	C	D
21				
22				
23				
24				
25				
26				
27				
28				
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30				
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32				
33				
34				
35				
36				
37				
38				
39				
40				

Appendix VIC

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE

RESPONSE SHEET

Name: ..... Class ..... No. .....
School: ..... Division ..... Boy/Girl .....

Sl. No.	A	B	C	D
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Sl. No.	A	B	C	D
21				
22				
23				
24				
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Appendix VID

UNIVERSITY OF CALICUT
DEPARTMENT OF EDUCATION

ACHIEVEMENT TEST IN SOCIAL SCIENCE
(Final Form)

SCORING KEY

Sl. No.	Answers
1	D
2	D
3	A
4	B
5	A
6	C
7	D
8	C
9	B
10	D
11	C
12	A
13	D
14	B
15	D
16	D
17	D
18	D
19	C
20	D

Sl. No.	Answers
21	D
22	C
23	D
24	C
25	C
26	A
27	B
28	C
29	D
30	D
31	B
32	D
33	C
34	D
35	C
36	B
37	B
38	B
39	C
40	D

Appendix VII

DEPARTMENT OF EDUCATION

UNIVERSITY OF CALICUT

GENERAL DATA SHEET

നിർദ്ദേശങ്ങൾ :

താഴെപ്പറയുന്ന ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിച്ച് ഉത്തരം എഴുതേണ്ടിടത്ത് എഴുതുക. ഉത്തരങ്ങൾ കൊടുത്തിട്ടുള്ളിടത്ത് ശരിയായ ഉത്തരത്തിനെതിരെ ശരി അടയാളം ഇടുക.

1. പേര് .....
2. ആൺകുട്ടി/പെൺകുട്ടി
3. സ്കൂൾ/സ്ഥാപനം .....
4. തിയ്യതി .....
5. കുടുംബാംഗങ്ങളെക്കുറിച്ചുള്ള വിവരം താഴെ [1] മുതൽ [9] വരെയുള്ള കോളങ്ങളിൽ സൂചിപ്പിക്കാവുന്നതാണ്. അതിൽ ആവശ്യമുള്ള കോളത്തിൽ ശരി [✓] അടയാളപ്പെടുത്തുക.

അംഗങ്ങൾ	അക്ഷരാഭ്യാസം ഇല്ല	Std. I to IV	Std. IV to VII	Std. VIII to X	Pre University, Pre Degree, T T C Intermediate	BA, BSc, Bcom Eng. Diploma etc.	MA, MSc, MEd, BL. BSc [Engg], MSc [Engg], MBBS, BSc [Tech], Ph. D. etc.	തൊഴിലിന്റെ പേര്	വ്യക്തിഗത വരുമാനം
	1	2	3	4	5	6	7	8	9
പിതാവ് (രക്ഷാകർത്താവ്)									
മാതാവ്									

Appendix VIIA

DEPARTMENT OF EDUCATION
UNIVERSITY OF CALICUT

GENERAL DATA SHEET

Instructions:

Read the questions carefully, given below and write down the answers wherever necessary. Put a tick mark (✓) against the correct answer, where the answers are given.

1. Name .....

2. Boy/Girl .....

3. School/Institution .....

4. Date .....

5. The informations about the family members canbe indicated in the columns given below from 1 to 9. Put a tick mark (✓) in the necessary columns.

Members	Illiterate	Std. I to IV	Std. IV to VII	Std. VIII to X	Pre University, Pre-Degree, TTC, Inter-mediate	B.A., B.Sc., B.Com. Eng. Diploma etc.	M.A. M.Sc., M.Ed. BL., B.Sc., (Engg) M.Sc., (Engg.), M.B.B.S., B.Sc., (Tech), Ph.D. etc.	If any occupation the name of the occuaption	Monthly Income
	1	2	3	4	5	6	7	8	9
Father (Guardian)									
Mother									

NB NH 50

Appendix VIII

UNIVERSITY OF CALICUT

DEPARTMENT OF EDUCATION

CLASSROOM INTERACTION RATING SCALE

Dr. P.K.SUDHEESH KUMAR HAMEED.A.

	Sl.No	Interaction Patterns	Always	Occasionally	Never
Inter-group interaction	1	Participates in individual discussion			
	2	Participates in group discussion			
	3	Considers the opinions and ideas of others			
	4	Participates in making group decisions			
	5	Accept and abide group decisions			
	6	Assumes responsibilities in carrying out group plans			
	7	Assumes leadership at appropriate times			
	8	No interaction			
Intra-group interaction	1	Exchange of ideas and materials			
	2	Considers the opinions and ideas of other groups			
	3	Accept and abide the decisions of other groups			
	4	No interaction			
Student-Teacher interaction	1	Exchange ideas and materials			
	2	Communication			
	3	Individual interaction			
	4	Group interaction			
	5	Interaction to the whole class			
	6	No interaction			
	7	Individual reward			
	8	Group reward			
	9	Whole class reward			
	10	No reward			