

**RELATIONSHIP BETWEEN CONCEPT MAPPING
AND STUDY HABITS AMONG SECONDARY
SCHOOL STUDENTS**

**A
DISSERTATION**

Submitted to Barkatullah University, Bhopal

**In Partial Fulfillment of the Requirement for the Degree of
Master of Education (RIE)**

Session 2011-12

Guide

**Mr. Anand Valmiki
Assistant Professor
Department of Education**

Co-Guide

**Dr. C. Siva Sankar
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Research Scholar

Amita Dhankher

विद्यया ऽ मृतमश्नुते



एन सी ई आर टी
NCERT

REGIONAL INSTITUTE OF EDUCATION

(National Council of Educational Research and Training)

Shyamla Hills, Bhopal - 462013 (M.P.)

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DECLARATION

I do hereby declare that this study entitled "Relationship between Concept Mapping and Study Habits among Secondary School Students" has been undertaken by me in partial fulfillment of the requirement for the Degree of Master of Education.

I have completed this study under the guidance of Mr. Anand Valmiki, Assistant Professor, and under the co- guidance of Dr. C. Siva Shankar, Assistant Professor, Regional Institute of Education, Bhopal.

I further declare that this dissertation has not been submitted earlier by me or others for any degree either in the Barkatullah University or any other university.

Place: Bhopal

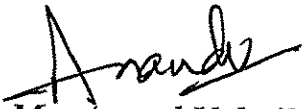
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CERTIFICATE

This is to certify that Mrs. Amita Dhankher a student of M.Ed (RIE) course in the year 2011-2012 of Regional Institute of Education (NCERT), Bhopal has worked under my guidance and supervision for her dissertation titled "Relationship between Concept Mapping and Study Habits among Secondary School Students." I further certify that this work is original and worthy of presentation in partial fulfillment of the requirement of Degree of Master of Education of Barkatullah University, Bhopal (M.P).

Guide



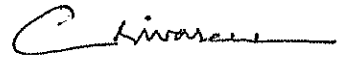
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Date: 10th April 2012

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CHAPTER-I
INTRODUCTION

CHAPTER – I

INTRODUCTION

1.1 INTRODUCTION

'Each child is a natural learner, and each child is inherently capable of regulating his/her own learning'.

National Curriculum Framework 2005 (NCF 2005)

Human beings are meaning makers. From a very early age the human brain endeavors to construct order from apparent chaos. The development and sharing of this personalized meaning is a goal of the approach to teaching and learning embodied within Human constructivism. (*sensu Mintzes et al., 1998*). Shambaugh (1995) supported this approach and described the classroom use of a range of visual tools which aid the construction of understanding. Within the broad range of visual construction devices or graphic organizers', the research literature has been so consistently positive for concept mapping.

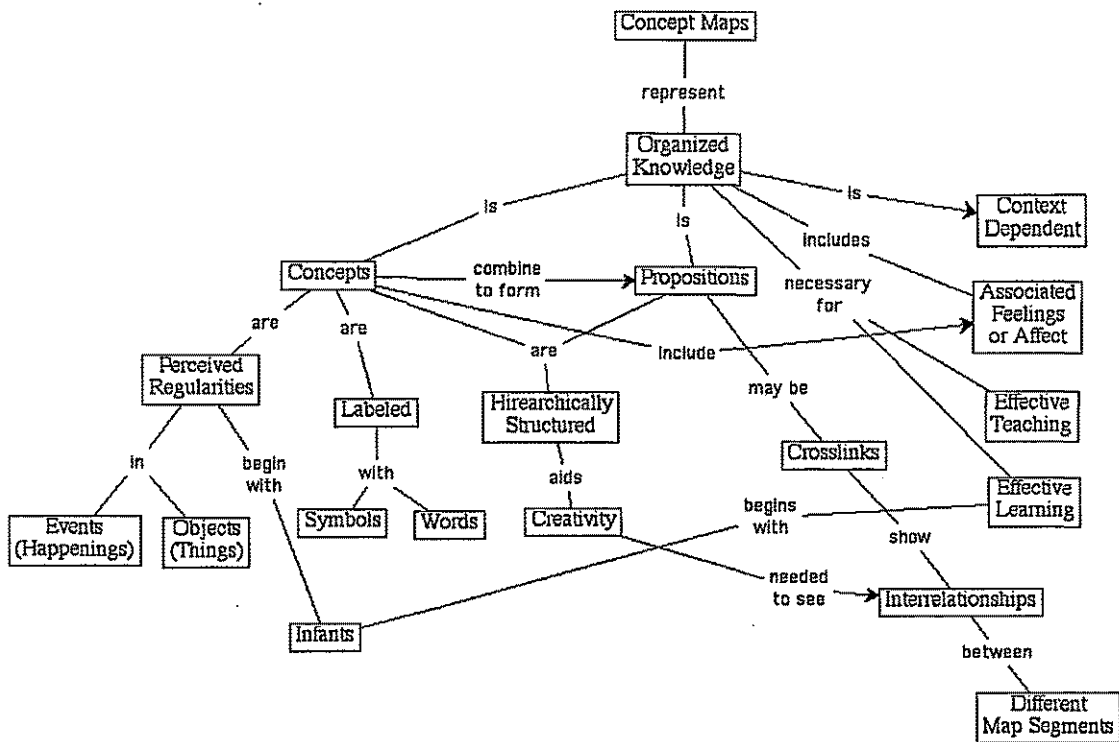
1.2 THEORY AND RESEARCH REGARDING CONCEPT MAPPING

Concept maps are spatial representations of concepts and their interrelationships that are intended to represent the knowledge structures that humans store in their minds (Jonassen, Beissner, & Yacci, 1993). *Joseph D. Novak* of Cornell University is considered to be the one who, in the 1960s, started the systematic use of concept mapping for learning. His work was based on two important ideas in *Ausubel's* (1968) *assimilation theory of cognitive learning*.

Most new learning occurs through derivative and correlative subsumption of new concept meanings under existing concept or propositional frameworks. Learning that is meaningful involves reorganization of existing beliefs or integration of new information with existing information. The theoretical framework that supports the use of concept mapping is consistent with constructivist epistemology and cognitive psychology. Constructivism is a major influence in current education.

Concept maps include concepts, usually enclosed in circles or boxes of some type, and relationships between concepts indicated by a connecting line linking two concepts. Words on the line referred to as linking words or linking phrases, specify the relationship between the two concepts. *Concepts are a perceived regularity in events or objects, or records of events or objects, designated by a label.* The label for most concepts is a word, although sometimes symbols (such as + or %) and sometimes more than one word are also used. The core element of a concept map is a *proposition*. *Propositions are statements about some object or event in the universe, either naturally occurring or constructed. Propositions contain two or more concepts connected using linking words or phrases to form a meaningful statement.* Sometimes these are called semantic units, or units of meaning. Figure 1.2.1 shows an example of a concept map that describes the structure of concept maps and illustrates the above characteristics.

Figure 1.2.1 A Concept Map about Concept Mapping



Although concept maps are generally represented hierarchically (Novak 1998) with the most general concept at the top and more specific concepts arranged below, variations of this theme can take in the form of cyclic, chain, spider and network formats (Canas, 2003; Hibbered, Tones & Morris, 2002; Ruiz-Primo & Shavelson, 1996).

Research indicates that concept mapping is an effective learning strategy that precipitates meaningful learning in child (Roth & Roychoudhury, 1993; Stice & Alvarez, 1987) and adult (McClure & Bell, 1990; Novak & Gowin, 1984) learners, and in a *variety of domains*, such as genetics and ecology (Okebukola, 1990; Okebukola & Jegede, 1988), physics (Moreira, 1979; Pankratius, 1990), chemistry (Novak & Gowin, 1984; Schreiber & Abegg, 1991), and reading comprehension (Armbruster & Anderson, 1980; Briscoe & LaMaster, 1991; Peresich,

Meadows, & Sinatra, 1990; Reutzel, 1985; Ruddell & Boyle, 1989; Sheldon, 1984; Weinstein & Mayer, 1986). Additionally, there is some evidence that concept mapping is a useful strategy for ESL (English as a second language) students (Block, 1986; Carrell, Pharis, & Liberto, 1989; Kamhi-Stein, 1993; Knight, Padron, & Waxman, 1985; Koumy & Salam, 1999). Heinze-Fry and Novak (1990) suggest that meaningful learning is facilitated because concepts are seen not as isolated entities, but as existing in a network of relationships.

The benefits of concept mapping tools across several content areas (social studies, mathematics, Spanish as a second language, vocabulary, reading, and writing), multiple grade levels (first through senior high school), and different student populations (regular education students and students with learning disabilities) have been verified in the following several experimental studies. Four studies (Alvermann & Boothby, 1983; Alvermann & Boothby, 1986; Armbruster et al., 1991; Griffin et al., 1995) in the area of social studies used concept mapping tool to help students organize information from expository texts and comprehend content area reading. All four studies were conducted with either fourth- or fifth-grade students. Findings from these studies concluded that concept mapping tool helped students *select, organize, and recall* relevant *information*, as measured by posttests. Students were also able to transfer thinking and learning skills to novel situations and content. One experimental study (Braselton & Decker, 1994) with sixth-grade mathematics students found concept mapping tools to be advantageous in the improvement of students' problem-solving skills. Another study (DeWispelaere & Kossack, 1996) in a junior high and high school Spanish as a second language class found that concept mapping tool

improved students' higher order thinking skills as measured by performance on chapter quizzes, tests, and student projects.

Likewise, three studies (Bos & Anders, 1992; Ritchie & Volkl, 2000; Griffin et al., 1995) examined the effects of graphic organizers on retention and recall. Overall findings of the three studies indicated that graphic organizers are a helpful method for improving student retention and recall of information for both elementary and junior high students with learning disabilities, as well as upper elementary students (fifth and sixth grade). Follow-up tests at various intervals following instruction found that students retained information they learned via graphic organizers. In one study, graphic organizers were also found to help students transfer retention.

Several studies suggest that concept map scores do not correlate significantly with traditional measures of learning such as multiple choice tests. Novak, Gowin, and Johansen (1983) showed that mapping scores were not significantly related to students' SAT scores. These findings suggest that a concept map taps into a substantially different dimension of learning than conventional classroom assessment techniques. It is likely that many techniques commonly used in college science courses focus largely on rote aspects of learning. The interpretation from these studies is that traditional evaluation tools (quizzes, tests, final grades) capture some aspects of conceptual structure, and concept maps capture other aspects.

1.3 PSYCHOLOGICAL AND PHILOSOPHICAL FOUNDATIONS OF CONCEPT MAPS

The fundamental idea of concept mapping approach that comes from *Ausubel's cognitive psychology* is that learning takes place by the assimilation of new concepts and propositional frameworks held by the learner. This knowledge structure held by a learner is also referred to as the individual's cognitive structure. Novak in his book 'Learning how to learn' states that meaningful learning involves the assimilation of new concepts and propositions into existing cognitive structure where prior knowledge is the base to establish knowledge structure. So a teacher only motivates the students to incorporate new meaning into their prior knowledge rather than simply memorizing concepts, definitions or propositional statements. It facilitates metacognition i.e. individuals' awareness and ability to monitor their own thinking processes.

In philosophical point of view, concept mapping is based on epistemology that deals with the nature of knowledge creation, where new knowledge creation is a constructive process involving both the student's knowledge and emotions to create new meaning and new way to represent knowledge structure.

1.4 CONCEPT MAPPING: A CONSTRUCTIVIST APPROACH IN NCF (2005)

The NCERT's National Curriculum Framework 2005 (NCF 2005) has spawned much literature, debate and discussion, especially in the arena of constructivism – its validity in the context of the Indian classroom, as well as what it should look like on the classroom floor in India. Among the literature that was produced as a direct response to

NCF 2005 is a book titled *Constructivist Approaches to Teaching and Learning: A Handbook for Teachers of Secondary Stage* published by the NCERT (2006) edited by Santosh Sharma. The handbook, which is a compilation of articles on Constructivism, Learner Centered Approaches, and Problem Solving (all 3 authored by Santosh Sharma), Experiential Learning (V.D. Bhatt), Concept Mapping (Manjula P. Rao), Investigatory Approach (Manjula P. Rao and B. P. Bhatt), Creative Writing (Shobhana N.), and Social Inquiry Approach (Savita Kaushal), discusses in-depth the idea of the constructivist classroom in the Indian context and then attempts to provide concrete teaching strategies and activities that would be useful to teachers to achieve the objectives of the curriculum while espousing the constructivism agenda of NCF 2005.

1.5 TECHNOLOGY AS A TOOL TO SUPPORT CONCEPT MAPPING

NCF (2005) has stated that “*Technology should be used with more conscious educational purpose, as a cognitive tool, and as a means to facilitate more meaningful learning rather than an end in itself*” - to support the constructivist teaching practices.

NCF suggested integrating technology with all the constructivist approaches including concept mapping. There are several free software tools that can be used for concept-mapping or mind-mapping. While Inspiration (and Kidspiration for younger children) is the de-facto concept-mapping tool used in schools in the West, it is not free. *CmapTools* is a free tool designed by the Institute for Human and Machine Cognition (with Joseph D. Novak, ‘the father of concept maps’), that brings together the strengths of concept-mapping with the power of technology, particularly the Internet.

‘Mindmapping’ software such as Freemind, Mindomo, bubbl.us, and mindmeister are also freely downloadable from the Internet and several of them allow for “collaborative mind mapping.” Most of all, they are all very easy-to-use tools - children especially take no time at all to master them.

1.6 CONCEPT MAPPING AND TEACHER EDUCATION

The NCF 2005 requires a teacher to be a facilitator of children’s learning in a manner that the child is helped to construct her knowledge. It also opens out possibilities for the teacher to participate in the construction of syllabus, textbooks and teaching learning materials. Such roles demand that teachers be equipped with a better understanding of curriculum, subject content and pedagogy on the one hand and community and school structures and management on the other.

Concept maps are flexible tool that can be used in a variety of educational settings (Stewart, Van-Kirk, & Rowell, 1979). For example, they can play a significant role in curriculum development, learning, and teaching (Novak, 1984). Concept maps are useful in science curriculum planning for separating significant from trivial content (Starr & Krajcik, 1990) and in focusing the attention of curriculum designers on teaching concepts and distinguishing the intended curriculum from instructional techniques that serve as vehicles for learning (Stewart et al., 1979). Furthermore, concept maps have been used as *assessment tools* to identify both valid and invalid ideas held by students (Canas&Novak), *instructional tool* to organize their ideas in preparation for instruction (Martin, 1994), *learning tool* to make students metacognitively aware (Telaro, 1990) and as a *revision tool* in which large amounts of information can be condensed (Talor, 1993). Thus by reading the map from top to bottom, an instructor can:

- Gain insight into the way students view a scientific topic;
- Examine the valid understandings and misconceptions students hold.
- Assess the structural complexity of the relationships students depict.

In addition to these applications in assessment, faculty has also used concept maps as a way to encourage students to reflect on their own knowledge and to work together and share their understandings in collaborative group settings.

As stated before concept mapping is a highly flexible tool that can be adapted for use by almost any group of learner. It is an efficient mental tool in understanding students' creative thinking and academic learning. In educational system students need the ability of concept mapping to improve their academic achievement in a desired way. It has been found that when first introduced to concept mapping the attitudes of teachers and students are generally positive. Many students have found positive correlation between concept map building ability and student's academic performance but we must also recognize student's existing study habits also form part of student's knowledge framework.

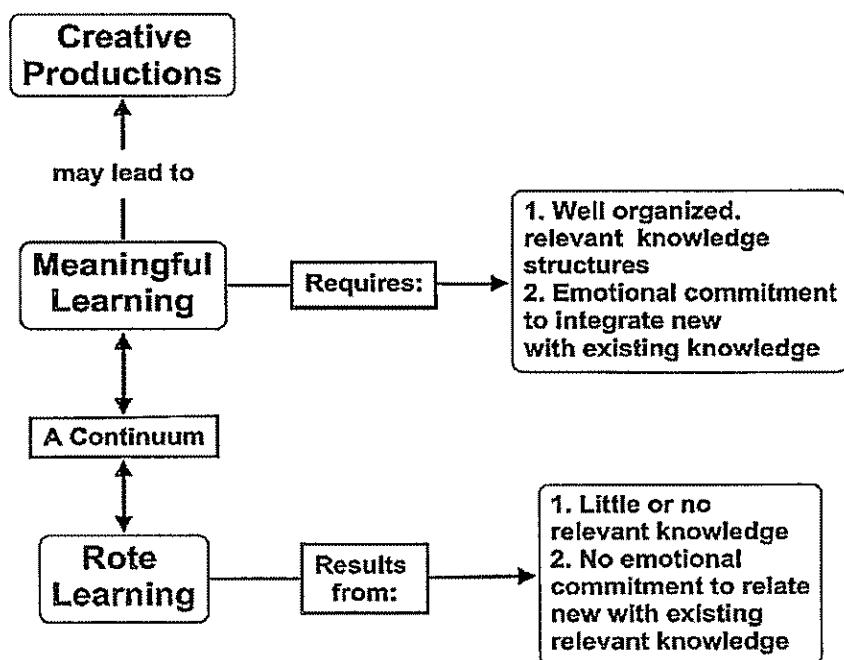
A lack of recognition of a student's existing study habits may cause problem if meaningful learning is not part of his/ her agenda.

Ausubel made the very important distinction between rote learning and meaningful learning. Meaningful learning requires three conditions

- The material to be learned must be conceptually clear and presented with language and examples relatable to the learner's prior knowledge.

- The learner must possess relevant prior knowledge. This condition is easily met after age 3 for virtually any domain of subject matter (Mac- namara, 1982).
- The learner should choose to learn meaningfully i.e., by incorporating new meanings into their prior knowledge

As noted above, it is important to recognize an individual's study habits; because individuals, vary in the quantity and quality of the relevant knowledge they possess, and in the strength of their motivation to seek ways to incorporate new knowledge into relevant knowledge they already possess, the rote-meaningful distinction is not a simple dichotomy but rather a continuum. Creativity can be seen as a very high level of meaningful learning. These ideas are shown in Figure 1.6. .2



In our society academic achievement is considered as a key criterion to judge one's total potentialities and capacities. Hence academic achievement occupies a very important place in education as well as in the learning process. There are several factors which influence the academic performance of students out of which study habits is the most crucial one. *Study habits refer to the activities carried out by learners during the learning process of improving learning. Study habits are intended to elicit and guide one's cognitive processes during learning.* Psychologists have discovered that many students perform poorly in their academic work not because they do not possess the mental ability to do well but because they do not know or do not use the most effective methods of studying (Bakare, 1977).

1.7 THEORY AND RESEARCH REGARDING STUDY HABITS

In School, high academic performance has been attributed to students' effective study habits. This is the reason why the teacher tries to adopt many techniques to help the students to learn. *The learner's Dictionary* has defined study as a **“mental effort to obtain knowledge.”** This means that studying is an art of learning which helps the individual not only to acquire knowledge but also the skill and the habit to study. *Narramore (1974)* defined habit as **“a pattern of activity which, through repetition, has been learned to the point that it has become automatic and can be carried on with a minimum of conscious effect.”** Effective study habit refers to a situation in which a learner studies regularly to achieve maximum success in his school work. Study habit, therefore, refers to learning which leads to the achievement of a learners' goal, through a prescribed pattern of steady behaviour.

Studying is a skill. Being successful in school requires a high level of study skills. Students must first learn these skills, practice them and develop effective study habits in order to be successful. Very often the study habits and practices developed and used in high school do not work for students in college. Good study habits include many different skills: *time management, self-discipline, concentration, memorization, organization, and effort.* Desire to succeed is important, too.

Good (1973) define the term study habits as: **“The student’s way of study whether systematic, efficient or inefficient etc.”** Good study habits are perceived to be the determinants of the academic performance. That is why efforts are made to develop and improve study habits in students.

A great deal of evidence is present to show the positive correlation between study habits and academic achievement. Ansari (1980) found that study habits and study attitudes are both significant variables which determine the academic performance of the students. Russell and Petrie (1992) have cited a research study aimed to find out the relationship between study habits and student attitude and academic performance (cumulative GPA) of college students. Findings of this study indicate a positive correlation between study attitude, study habit and academic achievement. National Assessment of Educational Progress (NAEP) in 1994 conducted a study to find out the relationship between study habits and academic achievement. Findings of the study revealed a positive correlation between study habit and academic achievements of elementary and secondary school students. Onwuegbuzie (2001) also conducted a series of studies to find out relationship between study habits and academic success and reported positive relationship between study habits and academic success. The main objective of the study was to

examine the effect of guidance services on students study attitudes, study habits and academic achievement.

Novak (1981 b) and Santhanam (1998) have given an indication of probable relationship between concept mapping and study habits. Novak (1981 b) pointed out that 'some students who are whizzes at rote memorization object to concept maps, for rote learning has little value in concept mapping'. Santhanam et.al (1998) reported that teachers preferred to introduce concept mapping earlier in students' academic carrier so that they can easily integrate it into their developing study strategies.

Hence there is a need to identify the connection between concept mapping and study habits which in turn will give insightful strategy to learning society.

1.8 NEED OF THE STUDY

In educational system students need the ability of concept mapping related to concepts of multidiscipline so that they can improve their academic achievement in a desired way.

Concept maps are graphical diagram that can be used in meaningful way. It mainly focuses on human constructivism, meaningful learning, active learning and metacognition.

A number of studies have been carried out on the effectiveness of concept mapping as a visual learning tool/ technique. (Jena 2010, Basque and Lavoic 2006, Kinchin 2000, Keith 1984). Relationship of concept mapping (as a tool/ technique) has been established with academic achievement in different disciplines. (Sonia Sthapak 2011, Yunus Karakuyu 2010, Nnamdi and Okechuhwu 2006, Askin Asan 2001). Ruiz



and Shavleson (1996) has characterized problem and issues in the use of concept maps in science.

To enhance the quality of education it is necessary to improve the study habits of school students. Quality of education is reflected by 'academic achievement' and therefore lot of studies has been done to explore the relationship between these two variables.

Relationship between study habits and academic achievement has been observed by (Nuthana and Yenagi 2009, Sleight and Mavis 2006, Gettinger and Seibert 2002, Anna Meze 2001, Deb, Grewal and Pal 1990).

Effects of group counseling, motivation, scholastic aptitude and volitional tactics on study habits have been done by (Deimann and Zhu. 2005, Yahaya 2004, Keller, Aluja and Blanch 2004).

From the above said, it is evident that there are considerable amount of researches conducted on study habits and academic achievement of school students on the other hand, the effect of concept mapping on academic performance has been established in educational research world wide.

However, research studies exploring the relationship between concept mapping and study habits have not so far been conducted. This research study is an attempt to open up the new frontier of educational research, i.e. exploring the relationship between concept mapping and study habits of secondary school students.

The present study presumes that the outcomes of the research study would throw light on the significance of the relationship that may exists between concept mapping and study habits and would help teachers,

parents and students in generating more vital learning environments at school and at home.

1.9 STATEMENT OF THE PROBLEM

Relationship between concept mapping and study habits among secondary school students.

1.10 OPERATIONAL DEFINITION OF THE KEY TERMS

OPERATIONAL DEFINITION OF CONCEPT MAPPING –

According to **Novak and Gowin (1984)** “Concept maps are graphical diagrams that can be used to organize knowledge in meaningful way.” **Martin (1994)** has defined the term as “Concept maps are two dimensional representations of cognitive structures showing the hierarchies and the interconnections of concepts involved in a discipline or sub discipline”.

In the present study concept mapping is referred as meaningful learning which identifies important concepts of environmental studies with different levels from simple to complex and also describes the relationship between those environmental concepts with linking words.

OPERATIONAL DEFINITION OF STUDY HABITS

According to **Percival and Ellington (1984)** “Study habits refer to the method or techniques of effective learning which in turn involve a set of study skills as organization of time, effective use of time, reading skills, essay writing, report writing skills, note taking, examination techniques and even job hunting skills.” **Good (1973)** define the term as “The student’s way of study whether systematic, efficient or inefficient etc.”

In the present study, study habits include home environment and planning of work, reading and note taking habits, planning of subjects, habits of concentration, preparation for examinations, general habits and attitudes, school environment.

OPERATIONAL DEFINITION OF STUDENT

Wikipedia, the free encyclopedia has defined students as “A student is a learner or someone who attends an educational institution.”

In the present study a student is a person who is studying at a school, specially a secondary school.

1.11 RESEARCH QUESTIONS

- What relationship exists between concept mapping and study habits?
- Do study habits have any influence on student’s concept mapping ability?
- Is concept mapping dependent /independent of study habits?

1.12 OBJECTIVES OF THE STUDY

- To study the relationship between concept mapping and study habits of secondary school students.
- To study the level of concept mapping ability among secondary school students.
- To study the level of study habits among secondary school students.
- To study the significant difference if any, in concept mapping ability among secondary school students with regard to gender.

- To study the significant difference if any, in concept mapping ability among secondary school students with regard to school management.
- To study the significant difference if any, in concept mapping ability among secondary school students with regard to medium of Instruction
- To study the significant difference if any, in concept mapping ability among secondary school students with regard to parental education.
- To study the significant difference if any, in study habits among secondary school students with regard to gender.
- To study the significant difference if any, in study habits among secondary school students with regard to school management.
- To study the significant difference if any, in study habits among secondary school students with regard to medium of instruction.
- To study the significant difference if any, in study habits among secondary school students with regard to parental education.

1.13 HYPOTHESES

- H_01 There is no significant relationship between concept mapping and study habits of secondary school students.
- H_02 There is no significant difference in concept mapping ability among secondary school students with regard to gender.
- H_03 There is no significant difference in concept mapping ability among secondary school students with regard to school management

H_04 There is no significant difference in concept mapping ability among secondary school students with regard to medium of instruction

H_05 There is no significant difference in concept mapping ability among secondary school students with regard to parental education.

H_06 There is no significant difference in study habits among secondary school students with regard to gender

H_07 There is no significant difference in study habits among secondary school students with regard to school management

H_08 There is no significant difference in study habits among secondary school students with regard to medium of instruction

H_09 There is no significant difference in study habits among secondary school students with regard to parental education.

1.14 DELIMITATION

- The study was limited to Bhopal district area only.
- The study was limited to concept mapping of environmental studies.
- The study was limited to 9th standard CBSE affiliated coeducation school student of Bhopal.
- This study was limited to four independent variables (Gender, School management, Medium of Instruction, Parental Education) and two dependent variables (Concept mapping, Study habits).

CHAPTER - II

REVIEW OF

RELATED LITERATURE

CHAPTER – II

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

Research takes advantage of the knowledge which has accumulated in the past as a result of constant human endeavor. It can never be undertaken in isolation of the work that has already been done on the problems which are directly or indirectly related to a study proposed by a researcher. A careful review of the research journal, books, dissertations, thesis and other sources of information on the problem to be investigated is one of the important steps in the planning of any research study. A review of related literature must precede any well planned research study. *Good, Barr and Scates (1972)*, pointed out that reviewing assist in avoiding the risk of duplication ; identifying appropriate research methods; searching theories, explanations and hypotheses, valuable in formatting the research design; locating data for making comparisons and interpretation; having a vision of totality of field to be investigated.

2.2 PURPOSE OF THE REVIEW

Review of the related literature, besides, allowing the researcher to acquaint himself with current knowledge in the field or area in which he is going to conduct his research, serves the following specific purposes.

- The review of related literature enables the researcher to define the limits of his field.
- By reviewing the related literature, the researcher can avoid unfruitful and useless problem area.

- By reviewing the related literature, the researcher can avoid unintentional duplication of well established findings.
- The review of related literature gives the researcher an understanding of the research methodology which refers to the way the study is to be conducted.
- The advantage of reviewing the related literature is to provide insight into the statistical methods through which validity of results is to be established.
- The final and important specific reason for reviewing the related literature is to know about the recommendation of the previous researchers listed in their studies for further research.

Thus the literature in any field forms the foundation upon which all future work must be built. If we fail to build this foundation of knowledge provided by the review of literature, our work is likely to be shallow and will often duplicate work, that have already been done better by someone else.

The insights and knowledge gained by the review inevitably lead to a better designed project and greatly improve the chances of obtaining important and sufficient result.

2.3 REVIEW OF LITERATURE

In this chapter, the researcher attempts to review of literature that has been generated elsewhere on two crucial themes i.e., ‘study habit’ and ‘concept mapping’.

From past 3 decades research on concept mapping has been conducted across the world and those results were highly helpful. The literature suggests that the findings of research on concept mapping facilitated the teachers, students and parents in enhancing students

learning and achievement. At the same time research studies on study habits have been immensely useful to propel the learning and achievement orientations among students.

..D - 355

2.4 RESEARCHES ON CONCEPT MAPPING-

1) **Keith (1984)** conducted a concept mapping exercise with a group of public school teachers for the purpose of formulating a plan to integrate computer technology into a conventional educational setting. The exercise involved the generation of conceptual entities through a structured brainstorming session, and a session in which participants subjectively rated the brainstormed entities according to perceived similarities between them. This was followed by a multidimensional scaling and hierarchical cluster analysis of the similarity ratings, and interpretation of the map.

Initial results indicated that there was a confounding effect on the final map because of perceived semantic groupings based on surface characteristics which were not germane to the intended focus of the conceptualization exercise. The paper describes a method that was used to control the effects of these strong, but experimentally irrelevant, category-based associations which subjects in this study made among certain items in a subset of the data. The initial map is presented along with the final map which shows the effect of the attempt to correct for this methodological.

2) **Ruiz – Prime and Shavelson (1996)** has characterized a concept map as an assessment tool as: A task that elicits evidence bearing a student's knowledge structure in a domain. A format for the student's response and, a scoring system by which the student's concept map can be evaluated accurately and consistently. Based on this definition, multiple concept-mapping techniques were

found from the myriad to task, response formate, and scoring system variations identified in the literature. Moreover, little attention has been paid to the reliability and validity of these variations. The review led us to arrive at the following conclusions : (a) an integrative working cognitive theory is needed to begin to limit this variation in concept mapping techniques for assessment purpose (b) before concept maps are used for assessment and before map scores are reported to teachers, students, the public, and policy makers, research needs to provide reliability and validity information on the effect of different mapping techniques and (c) research on students' facility in using concept maps, on training techniques, and on the effect on teaching is needed if concept map assessments are to be used in classrooms and in large scale accountability systems.

- 3) **Kinchin (2000)** has conducted a case study on concept mapping in biology. In this study concept mapping value, in planning, teaching, revision and assessment, and the attitudes of students and teachers towards its use are discussed. Comments made are illustrated with excerpts from interviews with teachers and students who were involved in classroom concept mapping exercises. The use of expert maps for scoring is described and some of the pitfalls are considered. Finally the value of concept mapping as an aid to reflective practice is discussed.
- 4) **Chularut and DeBacker (2003)** have investigated the effectiveness of concept mapping used as a learning strategy with students in English as a Second Language classroom. Seventy-nine ESL students participated in the study. Variables of interest were students_ achievement when learning from English language text,

students_ reported use of self-regulation strategies (self-monitoring and knowledge acquisition strategies), and students self-efficacy for learning from English-language text. A randomized pre-test–post-test control group design was employed. The findings showed a statistically significant interaction of time, method of instruction, and level of English proficiency for self-monitoring, self-efficacy, and achievement. For all four outcome variables, the concept mapping group showed significantly greater gains from pre-test to post-test than the individual study group. The findings have implications for both practice and research.

- 5) **Basque and Lavoic (2006)** have presented a review of research trends on collaborative concept mapping in education. An overview of theoretical frame work methodology and main results of 39 published studies is presented.
- 6) **Okoye and Okechukwu (2006)** have examined the effect of concept-mapping and problem-solving teaching strategies on achievement in genetics among Nigerian Secondary School Students. The method used for the study was a quasi-experimental pre-test post-test treatment design. One hundred and thirteen senior secondary three (S.S. III) students randomly selected from three mixed secondary schools located in Delta North Senatorial District of Delta State, Nigeria were used as subjects for the study. The experimental group was taught, selected topics in Genetics using concept mapping and problem-solving strategies while the control group was taught using the traditional lecture method. The result of the study showed that the experimental group performed significantly better in Genetics than the control group and that gender does not affect students' achievement in genetics.

- 7) **Doorn and Brien (2007)** in their study, attempts to find out the gains from concept mapping techniques in statistics. Experimental design was followed for this study that involves a single instructor teaching two sections of the same statistics course over the same semester. Both cover the same material in the same way with the exception that concept mapping is used in one section, but not the other. Assignment of learning outcomes is done to the use of pre test and post test understanding of statistical concepts. The researcher track changes in student's study habit over the semester through additional survey but find out weak evidences about concept mapping effectiveness in aiding student learning of statistics.
- 8) **Jena (2010)** in his article have presented the theoretical foundation and origin of concept maps and inferred that if used properly, concept map promotes meaningful learning and enhances student's actual performance. The article has discussed in detail the designing and implementation of concept map activity.
- 9) **Karakuyu (2010)** conducted a study to investigate the effect of students' concept mapping on their physics achievement and attitudes toward physics lesson. 58 ninth-grade students from the two classes, were enrolled to general physics course in a high school in Turkey. One of the classes was randomly chosen as experimental group (28), constructed electricity concept map and the other was control (30) group, did not receive any presentation on concept mapping. Data were collected via the pre- and post-administration of the Physics Achievement Electricity Test (PAET) and Concept Maps Attitude Scale towards Physics (CMASTP). The study conducted in six weeks in a class that met two times a

week. The material covered was about electricity. Results showed that while there were no significant differences in the attitude and achievement between the experimental and control groups. However, the experimental group students were observed to have a tendency of more positive attitude than the control group students. Results also showed that drawing concept map instruction was more effective than traditional instruction in improving physics achievement of the participating students.

- 10) **Sthapak (2011)** has conducted a study to find out the effect of concept mapping on the academic success of students. The study was conducted by survey method of 99 students of 8th grade with the objective to find the relationship between scholastic achievements and cross domain concept mapping ability for which the researcher used a self made inventory. Results showed that there exists a positive significant relationship between cross domain concept mapping ability and academic achievement. The investigator here has operationalised cross domain as interdisciplinary knowledge.

2.5 SUMMARY OF THE REVIEWED RESEARCHES ON CONCEPT MAPPING

A number of studies have been carried out on the effectiveness of concept mapping as a visual, mental, instructional, assessment, revision tool (*Jena 2010, Basque and Lavoic 2006, Kinchin 2000, Keith 1984*). Relationship of concept mapping (as a tool/ technique) has been established with academic achievement in different disciplines. (*Sonia Sthapak 2011, Karakuyu 2010, Doora and Brien 2007 Nnamdi and Okechuhwu 2006, Chularut and DeBacker (2003). Askin Asan*

2001).Ruiz and Shavleson (1996) has characterized problem and issues in the use of concept maps in science.

2.6 RESEARCHES ON STUDY HABITS -

- 11) **Ochanya (2011)** in his study has focused on the need for the students to form good study habits for excellent performance. The researcher has discussed various different methods of studying to develop productive study habits.
- 12) **Yahaya (2004)** in his study tried to investigate the relative effectiveness of group counseling, SQ3R and the combination of the two treatment packages in improving the study habit of secondary school students in Ilorin. The results indicated that the three treatment packages were effective in improving students study habits but the combination of group counseling and SQ3R techniques (Survey, Question, Reading, Retention and Revision) was the most effective.
- 13) **Gettinger and Seibert (2002)** has described an information processing perspective on the contribution of study skills to academic competence, and has identified evidence based strategies, that are effective in helping students to improve their study skills. Using an information processing framework, study skills are grouped into clusters (1) Repetition based skills (2) Procedural study skills (3) Cognitive based skills (4) Metacognitive skills. Pros and cons of concept maps are discussed in detail under cognitive based skills. Key elements of effective study strategy training are delineated.
- 14) **Aluja and Blanch (2004)** in their study analyzed the relationships among Cattellian personality factors, scholastic aptitudes, study

habits and academic achievement. A total of 887 volunteer students from primary education (453 males and 434 females), enrolled in 29 public schools, participated in this research. It was found that the scholastic aptitudes were the most predictive variables of achievement, while the personality traits had a low direct contribution to academic achievement, although the students with higher scores on socialized personality traits showed better study habits than those students with lower scores on personality socialization traits. The relationship between personality and academic achievement seems to be mediated by study habits. Moreover, females obtained higher academic achievement scores than males. These differences could be explained by the fact that females showed a more socialized personality pattern and better study habits.

- 15) **Keller, Deimann and Liu (2005)** have studied the effect of integrated motivational and volitional tactics on Study habits, Attitudes, and Performance. The study has incorporated an integrated set of motivational and volitional “study tip” strategies that were implemented over a four week period to one of three groups, the “distributed” group. All of the strategies were delivered at the beginning of the four weeks to a second group. The “bundled” group. A third group, together with both of the message groups received placebo messages to control for potential novelty effects of receiving unexpected emails. The primary findings was that students who opened the study tip emails increased their study time, maintained confidence, and improved their test scores compared to those who did not open them. Thus it became clear that the study tips were more beneficial for students who displayed

volitional deficiencies the students who were in need of additional study tips, as well as motivational deficiencies. This has positive implications for sending motivational and volitional study tips directly to students while they are in the process of studying a course.

- 16) **Hussain (2006)** has examined the effect of guidance services on students study attitude, study habits and academic achievements. An experimental study was devised for the purpose. The results of the study indicated that the guidance services have significant effect on the student's study attitude, study habits and academic achievement.
- 17) **Sleight and Mavis (2006)** through their research study highlights the relationship between study aid use and exam performance of second year medical students. The study tried to answer the following questions by taking into consideration concept mapping and time on task theories (a) To what extent did students use study aids (b) how did students use study aids to prepare for an exam (c) to what extent did study habit and study aid use relate to exam performance. The study revealed that the study habits were more similar than different when compared by exam performance. A majority of students used aids as a memory aid or for review, but students who performed in the top third of the class were less likely to use them at all. Pre existing differences related to academic achievement and study strategies were found when students at the top, middle and bottom of exam performance were compared.
- 18) **Nimavathi and Ganadevan (2009)** tried to find out the impact of multimedia on the development of study habit of secondary school students. The pre test and post test equivalent group design was

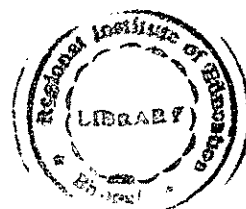
followed for the study. Tools used are (a) researcher developed multimedia program (b) study habits inventory standardized by B.V. Patel. The study shows that the students learning with the help of multimedia are fared better in their study habit than the students learning to conventional method.

- 19) **Nuthana and Yenagi (2009)** have examined the influence of study habits, self concept on academic achievements of boys and girls. The study is an attempt to find out the gender difference if any, on the factor affecting academic achievement. Findings of the study are: (a) the association of study habits of girls with academic achievement was significant. (b) The association of study habits of boys with academic achievement was not significant. (c) Correlation coefficient between self concept and academic achievement were positive and highly significant.

2.7 SUMMARY OF THE REVIEWED RESEARCHES ON STUDY HABITS-

Relationship between study habits and academic achievement has been observed by (*Ochanya 2011, Nuthana and Yenagi 2009, Sleight and Mavis 2006, Hussain 2006, Gettinger and Seibert 2002*)

Effects of group counseling, motivation, scholastic aptitude, multimedia and volitional tactics on study habits have been done by (*Nimavathi and Ganadevan 2009, Deimann and Zhu. 2005, Yahaya 2004, Keller, Aluja and Blanch 2004*).



2.8 CONCLUSION-

From the above said, it is evident that there are considerable amount of researches conducted on study habits and academic achievement of school students on the other hand, the effect of concept mapping on academic performance has been established in educational research worldwide.

However, research studies exploring the relationship between concept mapping and study habits have not, so far been conducted. This research study is an attempt to open up the new frontier of educational research, i.e. exploring the relationship between concept mapping and study habits of secondary school students.

The present study presumes that the outcomes of the research study would throw light on the significance of the relationship that may exists between concept mapping and study habits and would help teachers, parents and students in generating more vital learning environments at school and at home.

CHAPTER-III
RESEARCH
METHODOLOGY

CHAPTER – III

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology involves the systematic procedure by which the researcher starts from initial identification of the problem to its final conclusion. The role of methodology is to carry on the research work in a scientific and valid manner.

A good deal of objectivity and reliability of a research report depends upon the methods used for the investigation. They indicate the various steps of the plan, which are to be adopted in solving a research problem. It is, therefore very important that a researcher must have a thorough understanding of all research methods - their strengths, limitations, applications and appropriateness.

The present chapter is concerned with the details of the techniques adopted in the study. It describes the methodological aspects of the study. It elaborates the sampling technique employed, the tool used, sources of data and its collection, procedure of scoring and statistical techniques used.

3.2 METHOD-

Descriptive research is used to obtain information concerning the current status of the phenomenon to describe 'what exists' with respect to variable or conditions in a situation. Descriptive studies describe a given state of affairs as fully and carefully as possible. In Educational research, the primary descriptive methodology is the survey. According to *Kerlinger (1986)* "*Survey research studies large and small population*

‘or universe’ by selecting and studying sample chosen from the population to discover the relative incidence, distribution and interrelations of sociological and psychological variable.” All surveys involve 3 basic characteristics: (a) the collection of information (b) from a sample(c) by asking questions, in order to describe some aspects of the population of which the group is a part.

Survey research is considered important for studying attitudes, abilities, beliefs and knowledge etc. with maximal accuracy at the economical rate. The method has wide scope and interdisciplinary value. As Cambell and Katona (1953) have put it “Some researches provide raw material for a vast increasing gross disciplinary research”.

Hence in order to accomplish the objectives of the present study, Descriptive survey method was considered suitable for finding relationship between concept mapping ability and study habits.

3.3 POPULATION

Population is the collection of all the items of interests in a particular study.

The population of the present study is IX standard students studying in CBSE affiliated coeducation school students of Bhopal.

3.4 SAMPLE

“Sample is a part taken from the population which represents the population wholly and truly”. *Kerlinger*

“An optimum survey is one which fulfills the requirement of efficiency representativeness, reliability and flexibility. The sample should be small enough to avoid unnecessary expenses and large enough to avoid intolerable sampling error”. *Parten*

- In the present work school is the unit of study and out of all the C.B.S.E. affiliated schools in Bhopal, two were randomly picked namely Jawahar Navodaya Vidhyalaya from the Government sector and Jawahar Lal Nehru School from the Private sector. Out of many sections one section was randomly chosen from each school respectively.
- In the present study a sample of 105 students of class IX was drawn from 2 schools of Bhopal. The distribution of the sample is shown in the table below:

Table - 3.4.1 showing distribution of sample

S. No.	Name Of the School	Boys	Girls	Total
1	Jawahar Navodaya Vidhyalaya	34	23	57
2	Jawahar Lal Nehru School	33	15	48
Total		67	38	105

3.5 VARIABLES

“Any measurable attribute of objects, things or beings is called variable.”
D’Amato(1970)

A variable is any characteristic or quality that varies among the members of a particular group. Several kinds of variables are studied in educational researches, the most common being independent and dependent variables. An independent variable is a variable presumed to affect or influence other variable. When independent variable is directly manipulated by the experimenter it is called as Type E independent variable whereas when independent variable is not manipulated

experimentally by the experimenter, rather, it is manipulated through selection, it is known as Type S independent variable. Dependent variable is a variable about which the investigator makes prediction. It is a variable presumed to be affected by one or more independent variable.

In the present study, the variables are confined to following two types, namely-

- **Dependent Variables**

- a) Concept mapping

- b) Study habits

- **Independent Variables**

- a) Gender

- b) School Management

- c) Medium of Instruction

- d) Parental Education

3.6 RESEARSH TOOLS

Following tools were used to study the study habits and concept mapping ability.

- 1) Study Habits Inventory (SHI)

- 2) Concept Mapping Ability Test (CMAT)

STUDY HABITS OF INVENTORY

Researcher used study habits inventory constructed and standardized by Dr. B V Patel to know the current level of study habits of students. The tool is in English as well as Hindi language. The inventory consists of 45 statements which fall into 7 areas.

- Home environment & planning
- Reading and Note taking

- Planning of subjects
- Habits of concentrations
- Preparation for examination
- General habits & attitudes
- School environment

SCORING SYSTEM

Each statement was scaled on 5 point scale. The five points are: 1) Always, 2) Often, 3) Sometimes, 4) Seldom, 5) Never.

In case of the item depicting good study habits, the student were given 5 marks if he / she puts a tick in the column of Always, 4,3,2 and 1 marks were to be given if he puts the tick mark in the column of often, sometimes, seldom and never respectively.

In case of the statement depicting bad study habits the scores were assigned in the reverse order.

After completing the scoring grand total marks were obtained and the students were categorized into five categories as –

Table – 3.6.1 showing distribution of scores in study habit inventory

S. No.	Category	Grade	Limits of Score
1	Good	A	Score 199 and Above
2	Above Average	B	Score between 180 and 198
3	Average	C	Score between 160 and 179
4	Below Average	D	Score between 140 and 159
5	Poor	E	Score 139 and below

Reliability = 0.79 (by Test Retest Method), 0.82 (by Split Half Method)

Validity = 0.40 (with teacher's opinion), 0.50 (with examination marks)

CONCEPT MAPPING ABILITY TEST (CMAT)

Concept map was developed by the researcher in English as well as Hindi language to measure the concept map building ability of IX grade students. The test falls under the category of power test. The test consists of 5 levels and 9 questions. The test is confined to environment related concept maps only.

- Level 1 - consists of a skeleton map and concepts. Subject has to fill in the map with the given concept.
- Level 2 - consists of a skeleton map and linking words. Subject has to fill in the map with the given linking words.
- Level 3 - consists of a skeleton map, concepts and linking words. Subject has to fill in the map with the given concept and linking words.
- Level 4 - subject had to construct a concept map by finding out the concepts and linking words from the given paragraph.
- Level 5 – subject had to construct a concept map from the given topic.

SCORING SYSTEM

For each correct concept and linking word 1 mark was allotted to the subject. 2 marks were given for each valid cross link. Criterion maps, made by experts were used to compare the students' map.

After completing the scoring grand total marks were obtained and the students were categorized into five categories as –

**Table – 3.6.2 showing distribution of scores in concept mapping
ability Test**

S. No.	Category	Grade	Limits of Score
1	Good	A	Score between 156 to 125
2	Above Average	B	Score between 125 and 94
3	Average	C	Score between 94 and 63
4	Below Average	D	Score between 63 and 32
5	Poor	E	Score 32 and below

TRYOUT

In an attempt to establish reliability of the tool, the tool was administered on 10 students of the same school (other section). After analyzing the test, a discussion was held with the students and teachers. The researcher tried to record the reactions of each learner, their difficulties and comments. Time taken on each item was also noted. Consequently, based on the results of the try out necessary improvement and modifications were done.

3.7 DATA COLLECTION

Seventeen days (1st Jan to 17th Jan, 2012) were given to researcher for field work. Students of class IX of C.B.S.E. schools of Bhopal city were chosen for data collection. The researcher got acquainted with the school administration, teachers, and established rapport with the students.

Before administration of test, students were motivated and psychologically prepared by the researcher to do their almost sincerely respond to the test items. Students were assured that the test would not

measure their intelligence and the whole process had nothing to do with their school achievement. Also, students were assured that their names will be kept confidential .

Orientation program was conducted to by the researcher to acquaint the students with the concept map construction process.

3.8 DATA ANALYSIS

In this study percentage, t-test and correlation are used to analyze the data.

- Descriptive statistics (percentage) is used to know the level of study habits and concept map ability among secondary school students.
- Correlation r (Pearson product moment method) is used to know the relationship between concept mapping and study habits of secondary school students.
- t-test is used to know the concept map ability among secondary school students with regard to gender, school management, medium of instruction and parental education.
- t-test is used to know the study habits among secondary school students with regard to gender, school management, medium of instruction and parental education.

CHAPTER-IV
DATA ANALYSIS
AND
INTERPRETATIONS

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATIONS

4.1 INTRODUCTION

The data thus collected was subjected to appropriate statistical procedure to test the hypotheses with which this study was initiated. The details of the statistical technique employed for analysis of data, results obtained through this analysis and the decisions regarding the rejection and non-rejection of hypothesis are presented in this chapter. Statistics is a body of mathematical techniques or processes for gathering, organizing, analysis and interpreting numerical data. Since research yields such quantitative data, statistics is a basic of measurement, evaluation, and research. The word statistical data describes group behavior or group characteristics abstracted from a number of individual observations, which are combined to make generalization possible. Statistical methods go to the fundamental purposes of description and analysis. By statistics we can analyse and interpret the data and can draw conclusions.

Interpretation of data refers to that important part of the investigation, which is associated with the drawing of inferences from the collected facts after analytical study. It is extremely useful and important part of the study because it makes possible use of collected data. Statistical facts by themselves have no utility; it is interpretation that makes it possible for us to utilize collected data in various fields of activity.

4.2 ANALYSIS OF DATA

“Analysis is the ordering- the breaking down of data into constituent parts in order to obtain answer to research question”.

F.N.Kerlinger(1964)

Analysis of data is done according to objectives and hypotheses.

4.3 DESCRIPTIVE ANALYSIS

OBJECTIVE NO. 1

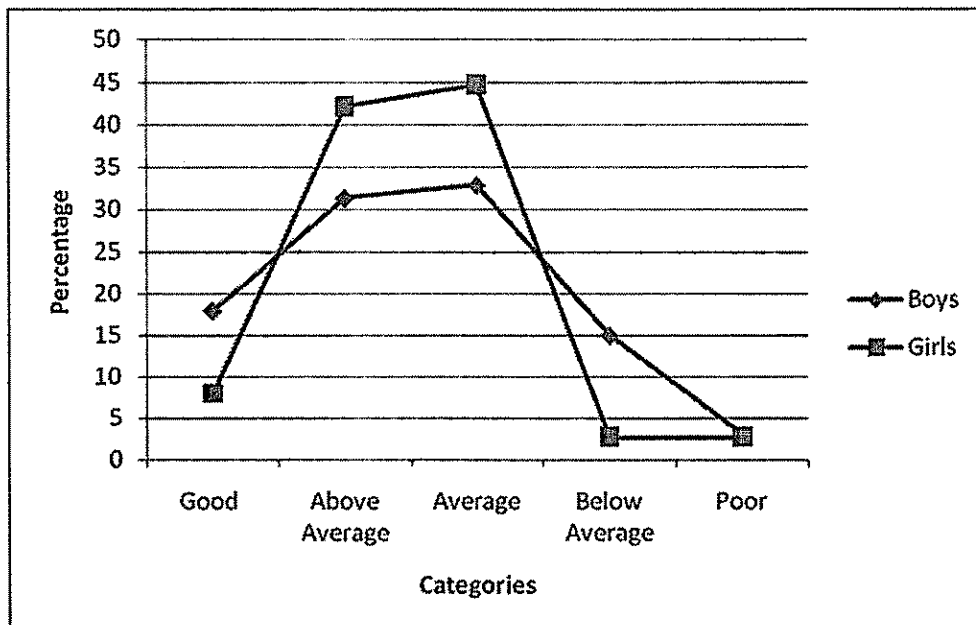
In the present study the first objective is to study the level of concept mapping ability among secondary school students with regard to gender.

To find levels, number and percentage are considered with respect to gender.

Table - 4.3.1 showing number and percentage of boys and girls with respect to levels and score range of Concept Mapping Ability Test (CMAT)

Score Range	Levels	Grade	Gender			
			No. of Boys (N=67)	%	No. of Girls (N=38)	%
156-125	Good	A	12	17.91	3	07.89
125-94	Above Average	B	21	31.34	16	42.11
94-63	Average	C	22	32.84	17	44.74
63-32	Below Average	D	10	14.93	1	02.63
32-1	Poor	E	02	02.99	1	02.63

Graph - 4.3.1 showing comparison between percentages and categories in Concept Mapping Ability Test (CMAT)



RESULTS AND INTERPRETATION-

From the table 4.3.1, it is clear that maximum percentage of boys (32.84%) and girls (44.74%) fall under average category. However 17.91% of boys are good at concept mapping ability in comparison to 7.89% of girls. Poor category consists of 2.99% boys and 2.68% of girls.

From the graph 4.3.1, it is clear that most of the boys and girls are in the category of average. Very few boys and girls have attained the category of poor.

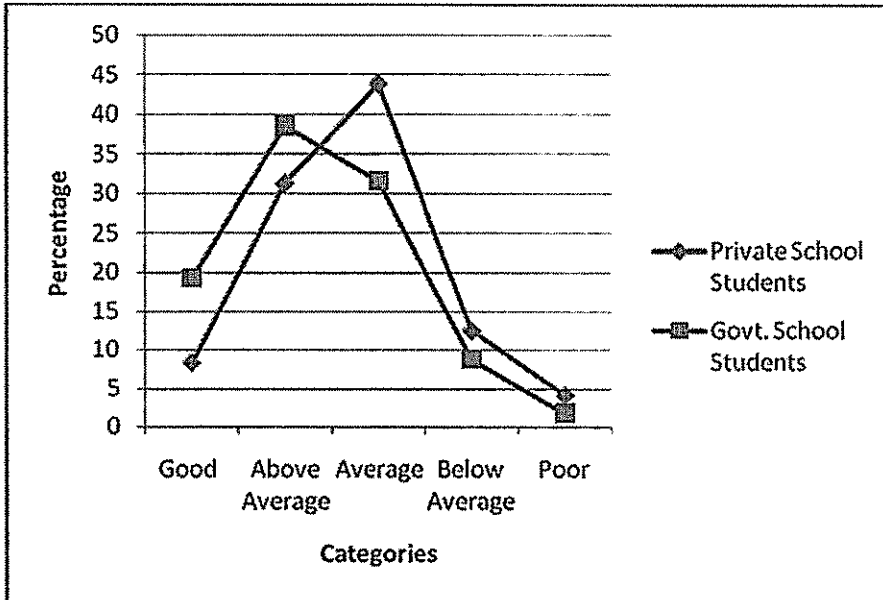
OBJECTIVE NO. 2

In the present study the second objective is to study the level of concept mapping ability among secondary school students with regard to school management. To find levels, number and percentage are considered with respect to school management.

Table - 4.3.2 showing number and percentage of private and government school students with respect to levels and score range of Concept Mapping Ability Test (CMAT)

Score Range	Levels	Grade	School Management			
			Private School Students (N=48)	%	Govt. School Students (N=57)	%
156-125	Good	A	4	08.33	11	19.30
125-94	Above Average	B	15	31.25	22	38.60
94-63	Average	C	21	43.75	18	31.58
63-32	Below Average	D	6	12.50	5	08.77
32-1	Poor	E	2	04.17	1	01.75

Graph - 4.3.2 showing comparison between percentages and categories in Concept Mapping Ability Test (CMAT)



RESULTS AND INTERPRETATION-

From the table 4.3.2, it is clear that maximum percentage of private school students (43.75%) fall under average category whereas maximum percentage of government school students(38.60%) are above average in concept mapping ability.19.30% of government school students are good at concept mapping ability in comparison to8.33% of private school students.

From the graph-4.3.2, it is clear that most of the private school students are in the category of average while most of the government school students fall under the category of above average. Very few students have attained the category of poor.

OBJECTIVE NO. 3

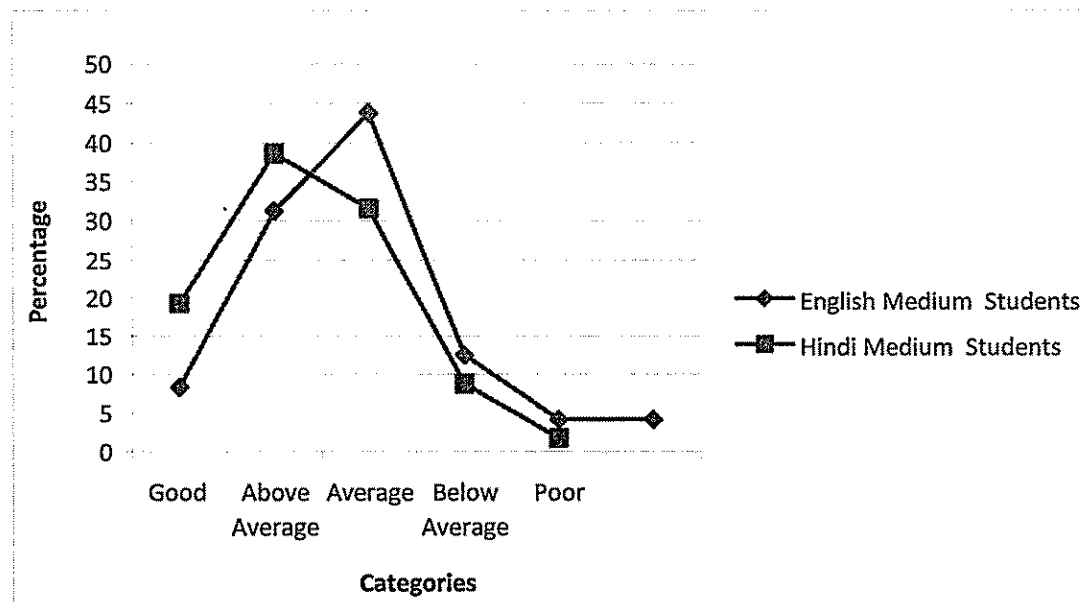
In the present study the third objective is to study the level of concept mapping ability among secondary school students with regard to medium of instruction.

To find levels, number and percentage are considered with respect to medium of instruction.

Table - 4.3.3 showing number and percentage of English and Hindi medium students with respect to levels and score range of Concept Mapping Ability Test (CMAT)

Score Range	Levels	Grade	Medium of Instruction			
			English Medium Students (N=48)	%	Hindi Medium Students (N=57)	%
156-125	Good	A	4	08.33	11	19.30
125-94	Above Average	B	15	31.25	22	38.60
94-63	Average	C	21	43.75	18	31.58
63-32	Below Average	D	6	12.50	5	08.77
32-1	Poor	E	2	04.17	1	01.75

Graph - 4.3.3 showing comparison between percentages and categories in Concept Mapping Ability Test (CMAT)



RESULT AND INTERPRETATION-

From the table 4.3.3, it is clear that maximum percentage of English medium students (43.75%) fall under average category whereas maximum percentage of Hindi medium students (38.60%) are above average in concept mapping ability. 19.30% of Hindi medium students are good at concept mapping ability in comparison to 8.33% of English medium students. 4.17% of English medium students are poor at concept mapping ability in contrast to 1.75% Hindi medium students.

From the graph-4.3.3, it is clear that most of the English medium students are in the category of average while most of the Hindi medium students fall under the category of above average. Very few students have attained the category of poor.

OBJECTIVE NO. 4

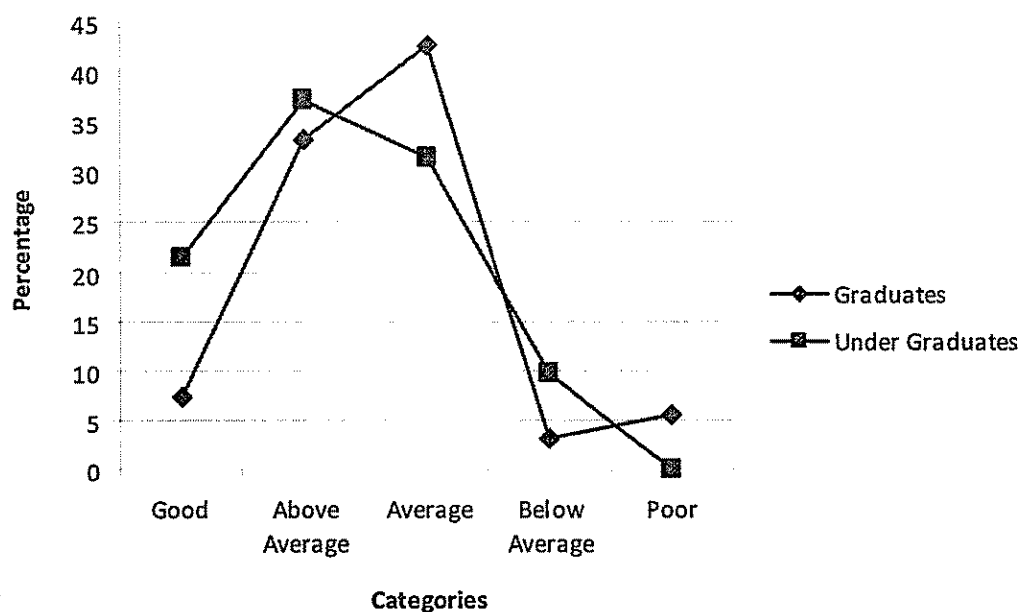
In the present study the fourth objective is to study the level of concept mapping ability among secondary school students with regard to parental education.

To find levels, number and percentage are considered with respect to parental education

Table - 4.3.4 showing number and percentage of students whose parents are graduate and under graduate with respect to levels and score range of Concept Mapping Ability Test (CMAT)

Score Range	Levels	Grade	Parental Education			
			Graduates (N=54)	%	Under Graduates (N=51)	%
156-125	Good	A	4	07.41	11	21.57
125-94	Above Average	B	18	33.33	19	37.25
94-63	Average	C	23	42.60	16	31.37
63-32	Below Average	D	06	03.24	05	09.80
32-1	Poor	E	03	05.55	00	00.00

Graph - 4.3.4 showing comparison between percentages and categories in Concept Mapping Ability Test (CMAT)



RESULTS AND INTERPRETATION-

From the table 4.3.4, it is clear that maximum percentage of graduate parents' children (42.60%) fall under average category whereas maximum percentage of undergraduate parents' children (37.25%) are above average in concept mapping ability. 21.57% of undergraduate parents' children are good at concept mapping ability in comparison to 7.41% of graduate parents' children. 5.55% of graduate parents' children are poor at concept mapping ability in contrast to undergraduate parents' children.

From the graph-4.3.4, it is clear that most of the students whose parents are graduate have attained the category of average, while most of the students whose parents are under graduate fall under the category of above average. Very few students are in the category of poor.

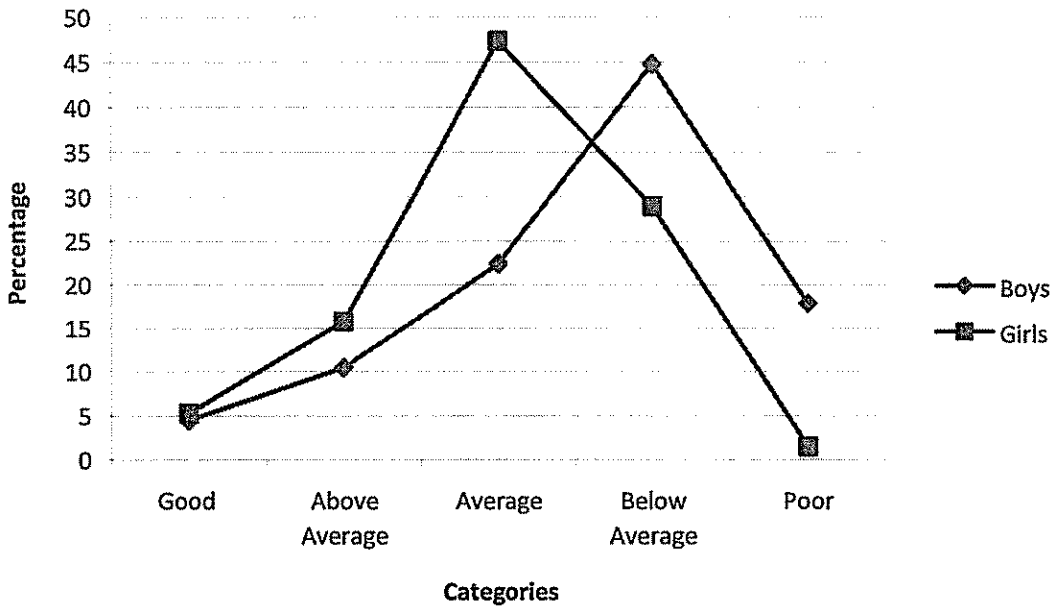
OBJECTIVE NO. 5

In the present study the fifth objective is to study the level of study habits among secondary school students with regard to gender. To find levels, number and percentage are considered with respect to gender.

Table - 4.3.5 showing number and percentage of boys and girls with respect to levels and score range of Study Habit Inventory (SHI)

Score Range	Levels	Grade	Gender			
			No. of Boys (N=67)	%	No. of Girls (N=38)	%
Score 199 and Above	Good	A	03	04.47	02	05.26
Score between 180 and 198	Above Average	B	07	10.45	06	15.79
Score between 160 and 179	Average	C	15	22.39	18	47.37
Score between 140 and 159	Below Average	D	30	44.78	11	28.95
Score 139 and below	Poor	E	12	17.91	01	01.49

Graph - 4.3.5 showing comparison between percentages and categories in Study Habit Inventory (SHI)



RESULTS AND INTERPRETATION-

From the table 4.3.5, it is clear that maximum percentage of boys (44.78%) fall under below average category whereas maximum percentage of girls(47.37%) are average in their study habits. 4.47% of boys and5.26% of girls are having good study habits,whereas17.91%of boysand1.49% of girls are having poor study habits.

From the graph 4.3.5, it is clear that most of the girls are in average category while most of the boys have attained the category of below average. Very few girls fall under the category of poor in comparison of their counterparts.

OBJECTIVE NO. 6

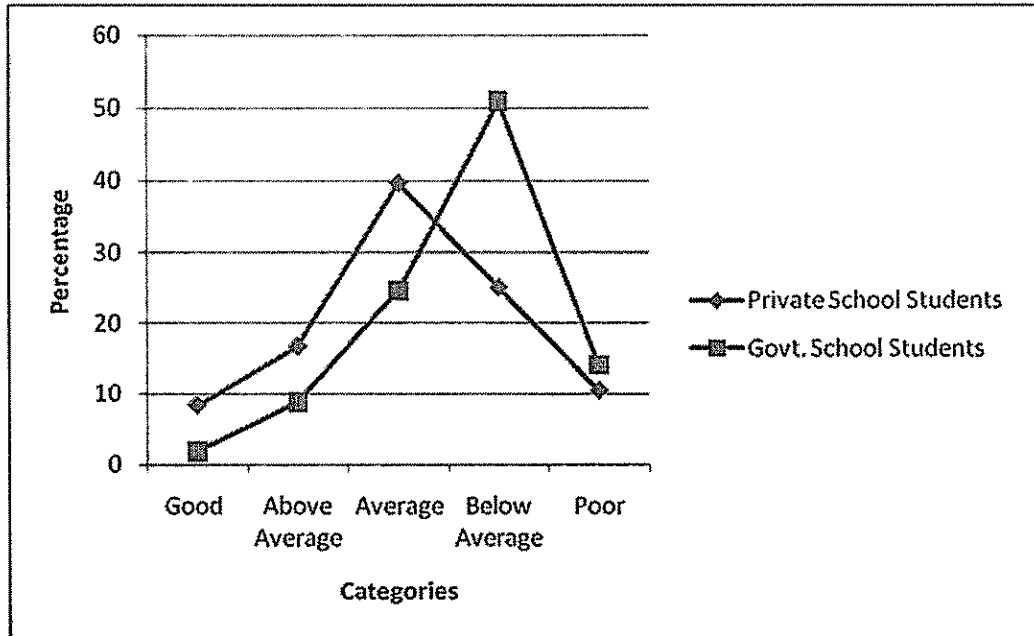
In the present study the sixth objective is to study the level of study habits among secondary school students with regard to school management.

To find levels, number and percentage are considered with respect to school management.

Table - 4.3.6 showing number and percentage of private and government school students with respect to levels and score range of Study Habit Inventory (SHI)

Score Range	Levels	Grade	School Management			
			Private School Students (N=48)	%	Govt. School Students (N=57)	%
Score 199 and Above	Good	A	04	08.33	1	01.75
Score between 180 and 198	Above Average	B	08	16.66	5	08.77
Score between 160 and 179	Average	C	19	39.58	14	24.56
Score between 140 and 159	Below Average	D	12	25.00	29	50.87
Score 139 and below	Poor	E	05	10.42	08	14.03

Graph - 4.3.6 showing comparison between percentages and categories in Study Habit Inventory (SHI)



RESULTS AND INTERPRETATION-

From the table 4.3.6, it is clear that maximum percentage of private school students (39.58%) fall under average category whereas maximum percentage of government school students (50.87 %) are below average in their study habits. 8.83% of private school students and only 1.75% of government school students are having good study habits, whereas 10.42% private school students and 14.03% of government school students are having poor study habits.

From the graph-4.3.6, it is clear that most of the private school students have attained the category of average while most of the government school students are in the category of below average. Very few students fall under the category of good.

OBJECTIVE NO.7

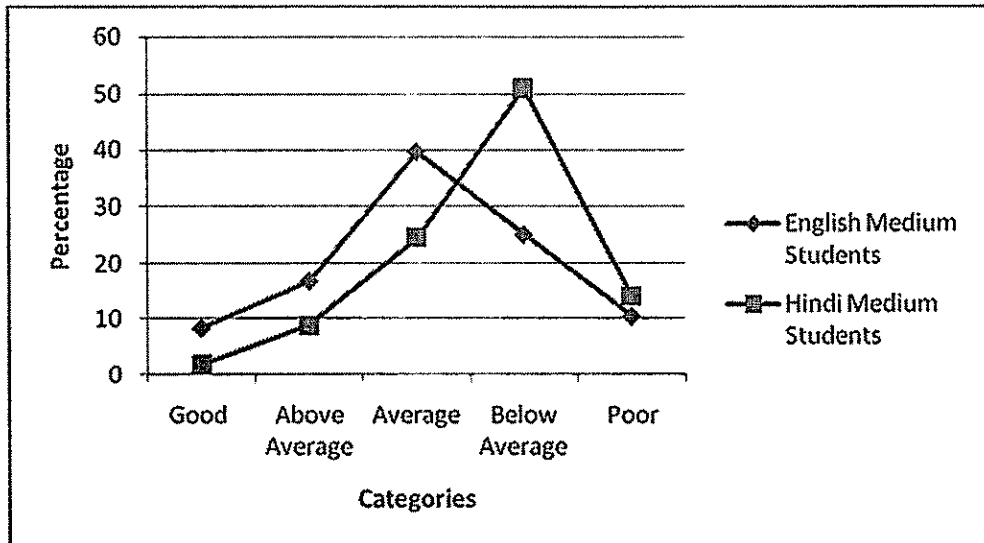
In the present study the seventh objective is to study the level of study habits among secondary school students with regard to medium of instruction.

To find levels, number and percentage are considered with respect to medium of instruction.

Table - 4.3.7 showing number and percentage of English and Hindi medium students with respect to levels and score range of Study Habit Inventory (SHI)

Score Range	Levels	Grade	Medium of Instruction			
			English Medium Students (N=48)	%	Hindi Medium Students (N=57)	%
Score 199 and Above	Good	A	04	08.33	1	01.75
Score between 180 and 198	Above Average	B	08	16.66	5	08.77
Score between 160 and 179	Average	C	19	39.58	14	24.56
Score between 140 and 159	Below Average	D	12	25.00	29	50.87
Score 139 and below	Poor	E	05	10.42	08	14.03

Graph - 4.3.7 showing comparison between percentages and categories in Study Habit Inventory (SHI)



RESULTS AND INTERPRETATION-

From the table 4.3.7, it is clear that maximum percentage of English medium students (39.58%) fall under average category whereas maximum percentage of Hindi medium students (50.87 %) are below average in their study habits. 8.83% of English medium students and only 1.75% of Hindi medium students are having good study habits, whereas 10.42% of English medium students and 14.03% of Hindi medium students are having poor study habits.

From the graph-4.3.7, it is clear that most of the English medium students have attained the category of average while most of the Hindi medium students are in the category of below average. Very few students fall under the category of good.

OBJECTIVE NO.8

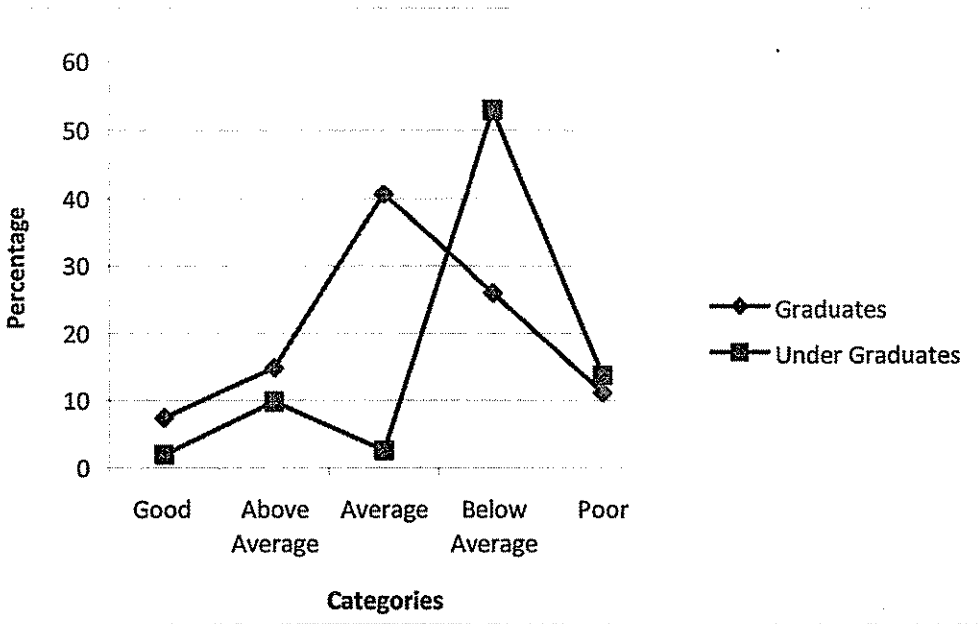
In the present study the eighth objective is to study the level of study habits among secondary school students with regard to parental education.

To find levels, number and percentage are considered with respect to parental education.

Table - 4.3.8 showing number and percentage of students whose parents are graduate and under graduate with respect to levels and score range of Study Habit Inventory (SHI)

Score Range	Levels	Grade	Parental Education			
			Graduates (N=54)	%	Under Graduates (N=51)	%
Score 199 and Above	Good	A	04	07.41	01	01.96
Score between 180 and 198	Above Average	B	08	14.81	05	09.80
Score between 160 and 179	Average	C	22	40.74	11	2.57
Score between 140 and 159	Below Average	D	14	25.93	27	52.94
Score 139 and below	Poor	E	06	11.11	07	13.73

Graph - 4.3.8 showing comparison between percentages and categories in Study Habit Inventory (SHI)



RESULTS AND INTERPRETATION

From table 4.3.8, it is clear that maximum percentage of graduate parent’s children (40.74%) fall under average category whereas maximum percentage of undergraduate parents’ children (52.94%) are below average in their study habits. 7.41% of graduate parents’ children and only 1.96% of undergraduate parents’ children are having good study habits, whereas 11.11% of graduate parent’s children and 13.73% of undergraduate parents’ children are having poor study habits.

From the graph 4.3.8, it is clear that most of the students whose parents are graduate have attained the category of average while most of the students whose parents are under graduate fall under the category of below average. Very few students fall under the category of good.

4.4 INFERENCIAL ANALYSIS

HYPOTHESIS 1

In the present study first hypothesis is: **There is no significant relationship between concept mapping ability and study habits of secondary school students.**

Table - 4.4.1 showing co-relation coefficient between concept mapping and study habits

Variable	No. of Students	df	r
Concept mapping	105	103	0.00931 [@]
Study habits	105	103	

[@] Not significant

RESULTS AND INTERPRETATION-

From the table 4.3.1, it is evident that the value of coefficient of correlation ($r = .00931^{\text{@}}$) is not significant at 5% level of confidence with known degree of freedom ($df=103$). Hence, the formulated null hypothesis is accepted. It indicates that there exists no relationship between concept mapping and study habits of secondary school students. This statement is strongly supported by Santhanam et al. (1998), which reflects that the students who are good at using concept mapping are those who are not well defined with study habits. Novak (1981) pointed out that 'some students who are whizzes at rote memorization object to concept maps, for rote learning has little value in concept mapping.' On the contrary, Doorn (2007) in his study: "Assessing the gains from concept mapping in introductory statistics" found weak evidence of effectiveness of concept mapping in aiding students learning of statistics. However, the self reported results from students suggested some

improvement in their study habits as a result of introducing students to concept mapping.

HYPOTHESIS 2

In the present study second hypothesis is: **There is no significant difference in concept mapping ability of secondary school students with regard to gender.**

Table- 4.4.2 showing mean, SD, t- values of dimensions of concept mapping with regard to gender

Factors/ Levels	Gender				't'
	Boys (n=67)		Girls (n=38)		
	Mean	S.D	Mean	S.D	
Level 1	19.90	02.98	21.07	02.83	1.99*
Level 2	09.33	02.61	10.05	01.54	1.77@
Level 3	21.06	07.05	21.16	09.34	0.06@
Level4	31.13	13.19	34.76	11.59	1.47@
Level5	16.57	14.04	16.13	08.72	0.20@
OVER ALL	97.99	29.41	103.11	22.60	0.99@

*significant at 0.05 level

@not significant

RESULTS AND INTERPRETATION-

From the table 4.4.2, it is evident that the value of critical ratio ($t = 0.99$) is not significant at 5% level of confidence with known degree of freedom ($df = 103$). Hence, the formulated null hypothesis is accepted. It indicates that there exists no significant difference in concept mapping ability of secondary school students with regard to gender. Hence boys and girls did not differ significantly in their concept mapping ability. The 't' scores on levels of concept mapping showed that both groups differed significantly on level 1 ($t = 1.99$; at 0.05 level of significance) where girls performed better than boys with mean score (21.07 and 19.90) respectively. The same level of concept mapping is also framed by other authors namely Markham et al. (1994), Schreiber and Abegg (1991), Wallace and Mintzes (1990), Fischer (1990) and Lay- Dopyera and Beyerbach (1983). Other levels like level 2 ($t = 1.77$), level 3 ($t = 0.06$), level 4 ($t = 1.47$), level 5 ($t = 0.20$) were found to be non significant at 0.05 level of significance. The results are in conformity with Sthapak (2011) and Okoye (2006) who reported that concept mapping ability is independent of sex. The result is also supported by Aluja, Colon, Abad and Espinosa (2000) which stated that there is no global difference in scholastic aptitude favouring any gender.

From the overall mean values it is evident that girls (Mean: 103.11) are higher than boys (Mean: 97.99) in concept mapping ability test.

HYPOTHESIS 3

In the present study third hypothesis is: **There is no significant difference in concept mapping ability among secondary school students with regard to school management** .

Table- 4.4.3 showing mean, SD, t- values of dimensions of concept mapping with regard to school management

Factor/ Levels	School management				't'
	Private (n=48)		Government (n=57)		
	Mean	S.D	Mean	S.D	
Level1	20.31	03.43	20.33	02.66	0.03@
Level 2	10.37	01.90	08.92	02.41	3.44**
Level 3	21.46	07.55	20.78	08.25	0.44@
Level4	29.38	12.93	35.03	12.01	2.30*
Level5	11.81	10.48	20.28	12.52	3.77**
OVERALL	93.33	27.07	105.31	26.19	2.29*

**significant at 0.01 level

*significant at 0.05 level

@not significant

RESULTS AND INTERPRETATION-

From the table 4.4.3, it is evident that the value of critical ratio ($t = 2.99^*$) is significant at 5% level of confidence with known degree of freedom ($df = 103$). Hence, the formulated null hypothesis is rejected. It indicates that there exists significant difference in concept mapping ability of secondary school students with regard to school management. The students of government school are better in concept mapping than

private school students with mean scores (105.31 and 93.33) respectively. The 't' scores on levels of concept mapping showed that both group differed significantly on level 2($t= 3.44$; at 0.01 level of significance) where private school students performed better than government school students with mean score (10.37 and 08.92 respectively).The same level of concept mapping is also framed by other authors namely Baker et al. (1991) and Mc Clure & Bell (1990) .Other levels like level 4 ($t = 2.30^*$) and level 5 ($t = 3.77^{**}$) are also significant at 0.05 and 0.01 level of significance respectively. Level 3 with ($t = 0.44$) is not significant. As, much of the previous work suggests that private school students are good at concept mapping than government school students (Sthapak,2005).One possible explanation to the result is in the findings of Novak, Gowin and Johansen (1983) which suggests that a concept map taps into the substantially different dimensions of learning (meaningful learning) than conventional classroom assessment techniques. It is likely that many techniques commonly used in private schools courses focuses largely on rote aspects of learning to achieve target oriented academic success in contrast to their counterpart from government school.

From the overall mean values it is evident that government school students (Mean: 105.31) are better than private school students (Mean: 93.33) in concept mapping ability test.

HYPOTHESIS 4

In the present study fourth hypothesis is: **There is no significant difference in concept mapping ability among secondary school students with regard to medium of instruction.**

Table- 4.4.4 showing mean, SD, t- values of dimensions of concept mapping with regard to medium of instruction

Factor/ Levels	Medium of instruction				't'
	English medium (n=48)		Hindi medium (n=57)		
	Mean	S.D	Mean	S.D	
Level1	20.31	03.43	20.33	02.66	0.03@
Level 2	10.37	01.90	08.92	02.41	3.44**
Level 3	21.46	07.55	20.78	08.25	0.44@
Level4	29.38	12.93	35.03	12.01	2.30*
Level5	11.81	10.48	20.28	12.52	3.77**
TOTAL	93.33	27.07	105.31	26.19	2.29*

**significant at 0.01 level

*significant at 0.05 level

@not significant

RESULTS AND INTERPRETATION-

From the table 4.4.4, it is evident that the value of critical ratio ($t = 2.99^*$) is significant at 5% level of confidence with known degree of freedom ($df = 103$). Hence, the formulated null hypothesis is rejected. It indicates that there exists significant difference in concept mapping ability of secondary school students with regard to medium of instruction. The students of Hindi medium are better in concept mapping than English medium students with mean scores (105.31 and 93.33 respectively). The 't' scores on levels of concept mapping showed that both group differed significantly on level 2 ($t = 3.44$; at 0.01 level of significance) where

English medium students performed better than Hindi medium students with mean score (10.37 and 08.92 respectively).

Other levels like level 4 ($t = 2.30^*$) and level 5 ($t = 3.77^{**}$) are also significant at 0.05 and 0.01 level of significance respectively. The level 4 of concept mapping is also framed by other authors namely Wilson (1994) and Novak et al. (1983); level 5 is constructed by Lomask et al. (1992) and Barenholz & Tamir (1992). Level 3 ($t = 0.44$) is not significant. Whereas *Sthapak (2005)* suggested that English medium students are good at concept mapping than Hindi medium students. It can be inferred that lack of motivation (William James, 1990), background proficiency with the subject matter (Bernstein, 2011), child attitude (Vaidya, 1984) or language could be one of the barrier in assimilating new concepts and propositions into existing concept propositional framework held by the English medium students.

From the overall mean values it is evident that Hindi medium students (Mean: 105.31) are higher than English medium students (Mean: 93.33) in concept mapping ability test.

HYPOTHESIS 5

In the present study fifth hypothesis is: There is no significant difference in concept mapping ability among secondary school students with regard to parental education.

Table- 4.4.5 showing mean, SD, t- values of dimensions of concept mapping with regard to parental education.

Factor/ Levels	Parental education				't'
	Graduates (n=54)		Undergraduates (n=51)		
	Mean	S.D	Mean	S.D	
Level1	20.49	02.54	20.16	03.43	0.56@
Level 2	08.88	02.32	10.25	02.08	3.18**
Level 3	21.07	08.09	21.11	07.80	0.26@
Level4	35.47	11.80	29.59	12.95	2.42*
Level5	20.64	12.66	12.40	10.65	3.61**
OVERALL	93.53	27.76	106.50	25.03	2.51*

**significant at 0.01 level

*significant at 0.05 level

@not significant



RESULTS AND INTERPRETATION-

From the table 4.4.5, it is evident that the value of critical ratio ($t = 2.51^*$) is significant at 5% level of confidence with known degree of freedom ($df = 103$). Hence, the formulated null hypothesis is rejected. It indicates that there exists significant difference in concept mapping ability of secondary school students with regard to parental education. Under graduate parents children are better in concept mapping than Graduate parents children with mean scores (106.50 and 93.53) respectively. The 't' scores on levels of concept mapping showed that both group differed significantly on level 2 ($t = 3.18$; at 0.01 level of significance) where under graduate parents children performed better than

graduate parents children with mean score (10.25 and 8.88 respectively). Other levels like level 4 ($t = 2.42^*$) and level 5 ($t = 3.61^{**}$) are also significant at 0.05 and 0.01 level of significance respectively. The level 4 of concept mapping is also framed by other authors namely Wilson (1994) and Novak et al. (1983); level 5 is constructed by Lomask et al. (1992) and Barenholz & Tamir (1992). Level 3 ($t=0.44$) is not significant. Hence it is proved that most of the levels of CMAT (concept mapping ability test) are able to evaluate the concept mapping ability of secondary school students, except level 3 which showed low discrimination power and therefore needs modifications in terms of concepts selection. Sthapak (2005) found that parental education have significant role in concept mapping ability of eighth graders. It can be inferred from the findings of Heath (1985), Talor et al.(1988), Teale (1986) and Snow et al.(1991 that parental involvement plays more important role than parental education, income and occupation in a child's educational success.

From the overall mean values it is evident that students whose parents are under graduate (Mean: 106.50) are higher than students whose parents are graduates (Mean: 93.53) in concept mapping ability test.

HYPOTHESIS 6

In the present study sixth hypothesis is: There is no significant difference in study habits among secondary school students with regard to gender.

Table- 4.4.6 showing mean, SD, t- values of dimensions of study habits with regard to gender.

Factors	Gender				't'
	Boys(n=67)		Girls(n=38)		
	Mean	S.D	Mean	S.D	
Home environment and planning	23.73	04.17	25.86	02.96	3.04**
Reading and note taking	34.41	05.46	37.65	04.63	3.22**
Planning of subjects	18.14	03.93	18.05	03.17	0.92@
Concentration	13.35	03.13	13.21	03.44	0.20@
Preparation of examination	18.41	03.38	18.71	03.39	0.44@
Habits and attitudes	28.03	05.43	31.36	03.72	3.71**
School environment	20.93	04.08	22.42	03.25	2.74**
over all study habits	156.83	28.99	159.01	84.85	0.153@

**significant at 0.01 level

*significant at 0.05 level

@not significant

RESULTS AND INTERPRETATION-

Table 4.4.6, shows that 't' value of 0.153 is not significant at both the levels of significance (0.05 and 0.01 level). It leads to the inference that secondary level male and female students do not differ significantly on their overall study habits. The 't' scores on dimensions of study habits showed that both group differed significantly on Home environment and planning, Reading and note taking, Habits and attitudes and School

environment ($t = 3.04, 3.22, 3.71$ & 2.74 at 0.01 level of significance respectively) were girls performed better than boys with mean scores (25.86 and 23.75 ; 37.65 and 34.41 ; 31.36 and 28.03 ; 22.42 and 20.43 respectively).while other dimensions like planning of subjects, concentration and preparation of examination were found to be non significant at both the levels. So boys and girls did not differ significantly on overall study habits as the t value of 0.153 is found to be attributed to highly competitive nature of the present education .Both the groups might have put equal amount of efforts towards developing study habits; while girls being more participatory, calm responsible sensitive, self disciplined and anxious than boys (Aluja and Blanch, 2004) scored higher in study habits measures 1,2,6 and 7. The result of the study is in conformity with the study of Nuthana and Yenagi (2009) who reported that study habits are independent of sex.

From the overall mean values it is evident that girls (Mean: 159.01) are better than boys (Mean: 156.83) in study habits.

HYPOTHESIS 7

In the present study seventh hypothesis is: **There is no significant difference in study habits among secondary school students with regard to school management.**

Table- 4.4.7 showing mean, SD, t- values of dimensions of study habits with regard to school management.

Factors	School management				't'
	Private (n=48)		Government(n=57)		
	Mean	S.D	Mean	S.D	
Home environment and planning	25.31	04.07	23.66	03.81	2.13*
Reading and note taking	31.21	05.70	35.07	05.13	1.14@
Planning of subjects	19.06	03.31	17.28	03.79	2.56*
Concentration	14.73	02.54	22.00	03.23	12.90**
Preparation of examination	18.35	03.95	18.38	03.01	0.04@
Habits and attitudes	28.92	05.48	29.64	04.79	0.71@
School environment	21.87	04.87	26.45	02.57	5.86**
over all study habits	164.64	22.29	157.80	17.27	1.73@

**significant at 0.01 level

*significant at 0.05 level

@not significant

RESULTS AND INTERPRETATION-

Table 4.4.7 shows that, 't' value of 1.73 is not significant at both the levels of significance (0.05 and 0.01 level). It leads to the inference that secondary level private and government school students do not differ significantly on their overall study habits. The 't' scores on dimensions of study habits showed that both groups differed significantly on Home environment and planning, planning of subjects ($t = 2.13$ and 2.56 at 0.05

level of significance respectively)were private school students performed better than government school students with mean scores (25.31 and 23.66; 19.06 and 17.28 respectively) while factors like concentration and School environment is significant at 0.01level of significance with($t = 12.90$ and 5.86 respectively) where government school students performed better than private school students with mean scores (22.00 and 14.73, 26.45and 21.87 respectively).While other dimensions like Reading and note taking, Preparation of examination and Habits and attitudes were found to be non significant at both the levels ($t = 1.14, 0.04$ and 0.71 respectively) .It can be inferred from the findings that on the onset of 21st century all the stake holders in the field of education are aware of their duty of promotion of effective study habits among secondary school students as emphasized by Anameze (2001).

From the mean value it is clear that the students of private school (Mean:164.64) are higher than their counterparts (Mean: 157.80) in study habits inventory.

HYPOTHESIS 8

In the present study eighth hypothesis is: **There is no significant difference in study habits among secondary school students with regard to medium of instruction.**

Table- 4.4.8 showing mean, SD, t- values of dimensions of study habits with regard to medium of instruction.

Factors	Medium of instruction				df	't'
	English (n=48)		Hindi (n=57)			
	Mean	S.D	Mean	S.D		
Home environment and planning	25.31	04.07	23.66	03.81	103	2.13*
Reading and note taking	31.21	05.70	35.07	05.13	103	1.14@
Planning of subjects	19.06	03.31	17.28	03.79	103	2.56*
Concentration	14.73	02.54	22.00	03.23	103	12.90**
Preparation of examination	18.35	03.95	18.38	03.01	103	0.04@
Habits and attitudes	28.92	05.48	29.64	04.79	103	0.71@
School environment	21.87	04.87	26.45	02.57	103	5.86**
over all study habits	164.64	22.29	157.80	17.27	103	1.73@

**significant at 0.01 level

*significant at 0.05 level

@not significant

RESULTS AND INTERPRETATION-

Table 4.4.8 shows that, 't' value of 1.73 is not significant at both the levels of significance (0.05 and 0.01 level). It leads to the inference that secondary level English medium and Hindi medium school students do not differ significantly on their overall study habits. The 't' scores on dimensions of study habits showed that both groups differed significantly on Home environment and planning, planning of subjects ($t = 2.13$ and 2.56 at 0.05 level of significance respectively). From the mean value it is evident that English medium students performed better than Hindi medium students with mean scores (25.31 and 23.66, 19.06 and 17.28 respectively) while factors like concentration and School environment is significant at 0.01 level of significance ($t = 12.90$ and 5.86 respectively) where Hindi medium students performed better than English medium students with mean scores (22.00 and 14.73, 26.45 and 21.87 respectively). While other dimensions like Reading and note taking, Preparation of examination and Habits and attitudes were found to be non significant at both the levels ($t = 1.14, 0.04$ and 0.71 respectively). It can be inferred from the findings that study habits is independent of language barriers or medium of instruction .

From the mean value it is clear that the students of English background (Mean: 164.64) are higher than their counterparts (Mean: 157.80) in study habits inventory.

HYPOTHESIS 9

In the present study the ninth hypothesis is: **There is no significant difference in study habits among secondary school students with regard to parental education.**

Table- 4.4.9 showing mean, SD, t- values of dimensions of study habits with regard to parental education.

Factors	Parental Education				't'
	graduates(n=54)		Undergraduates(n=51)		
	Mean	S.D	Mean	S.D	
Home environment and planning	25.09	03.92	23.72	04.00	1.77@
Reading and note taking	36.22	05.57	34.92	05.18	1.23@
Planning of subjects	18.61	04.18	17.35	03.61	1.65@
Concentration	14.50	02.83	11.82	03.27	4.48**
Preparation of examination	18.43	04.28	18.33	03.10	0.14@
Habits and attitudes	28.46	06.39	29.78	04.74	1.20@
School environment	21.72	05.33	20.94	02.50	0.96@
over all study habits	164.20	21.64	156.88	17.47	1.91@

**significant at 0.01 level

*significant at 0.05 level

@not significant

RESULTS AND INTERPRETATION-

Table 4.4.9 shows that, 't' value of 1.91 is not significant at both the levels of significance (0.05 and 0.01 level). It leads to the inference that secondary level undergraduate parents' children and graduate parents' children do not differ significantly on their overall study habits. The 't' scores on dimensions of study habits showed that both groups do not differ significantly on Home environment and planning, planning of subjects, Reading and note taking, Habits and attitudes, Preparation of examination and School environment at both the levels of significance except on concentration ($t = 4.48^{**}$) where students' whose parents are graduate are better than their counterparts (Mean: 14.50 and 11.82 respectively). From the previous researches it can be inferred that it is parental involvement rather than education which counts for students study habits and academic achievement. Good parental models, early and consistent parental supervision, and learning-conducive home culture and Environment is constituents of good study habits (Covey, 2007; Landsberger, 2007; Charnley, 2006; Zolten & Long, 1997).

From the overall mean value it is evident that students whose parents are graduate (Mean: 164) are higher in their study habits than students whose parents are under graduate (Mean: 156.88).

CHAPTER - V

SUMMARY, FINDINGS

AND

RECOMMENDATIONS

CHAPTER – V

SUMMARY, FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter includes a brief summary of the study; findings and the conclusions drawn from various analyses along with the recommendations for further research on related area have also been outlined.

The present study tried to investigate the relationship between concept mapping ability and study habits among IX standard students.

5.2 STATEMENT OF THE PROBLEM –

Relationship between concept mapping and study habits among secondary school students.

5.3 RESEARCH QUESTIONS –

- What relationship exists between concept mapping and study habits?
- Do study habits have any influence on student's concept mapping ability?
- Is concept mapping dependent /independent of study habits?

5.4 OBJECTIVES OF THE STUDY –

- To study the relationship between concept mapping and study habits of secondary school students.
- To study the level of concept mapping ability among secondary school students.

- To study the level of study habits among secondary school students.
- To study the significant difference if any, in concept mapping ability among secondary school students with regard to gender, school management medium of Instruction and parental education.
- To study the significant difference if any, in study habits among secondary school students with regard to gender, school management, medium of instruction and parental education

5.5 HYPOTHESES

- There is no significant relationship between concept mapping and study habits of secondary school students.
- There is no significant difference in concept mapping ability among secondary school students with regard to gender, school management, medium of instruction and parental education.
- There is no significant difference in study habits among secondary school students with regard to gender, school management, medium of instruction and parental education.

5.6 VARIABLES

In the present study the investigator has selected two dependent and four independent variables, depending upon the suitability of the study. The independent variables are gender, school management, medium of instruction and parental education .The dependent variables are concept mapping and study habits.

5.7 METHOD

To accomplish the objectives of the present study Descriptive survey method was used.

5.8 SAMPLE

A sample of 105 students of 2 CBSE Coeducation schools in Bhopal city was selected using random sampling technique.

5.9 RESEARCH TOOLS

In this study two types of research instruments were used for the collection of data.

- Study Habits Inventory: (constructed and standardized by Dr. B V Patel)
- Concept Mapping Ability Test [CMAT]: (developed by the researcher in English as well as Hindi language).

5.10 DATA ANALYSIS

In this study percentage, t-test and correlation are used to analyze the data.

5.11 FINDINGS

The major findings of the study are as follows:

- There are 12 boys (17.91%) and 3 girls (7.89%) under the category of good. The category of above average consists of 21 boys (31.34%) and 16 girls (42.11%). There are 32.84% of boys and 2.63% of girls under average category. 14.93% boys and 2.63% of girls fall under below average category. 2 boys (2.99%) and 1 girl (2.68%) are poor in concept map building ability.
- There are 11 government school students (19.30%) and 4 private school students (8.33%) under the category of good. The category of above average consists of 22 government school students (38.60%) and 15 private school students (31.25%).

31.58% of government school students and 43.75% of private school students fall under average category. There are 5 government school students and 6 private school students in below average category. 1.75% of government school students 4.17% of private school students are poor in concept mapping.

- There are 11 Hindi medium students (19.30%) and 4 English medium students (8.33%) under the category of good. The category of above average consists of 22 Hindi medium students (38.60%) and 15 students English medium (31.25%). 31.58% of Hindi medium students and 43.75% of English medium students fall under average category. There are 5 Hindi medium students and 6 English medium students in below average category. 1.75% of Hindi medium students 4.17% of English medium students are poor in concept mapping.
- There are 11 students whose parents are undergraduate (21.57%) and 4 students whose parents are graduate (7.41%) under good category. 18 children of graduate parents and 19 children of undergraduate parents fall under the category of above average. Under, average category 23 graduate parents' children (42.60%) and 16 undergraduate parents' children (31.37%) are present. 3.24% of graduate parents children and 9.80% of undergraduate parents children fall under below average category. Only 3 graduate parents' children are poor at concept mapping.
- There are 3 boys (4.47%) and 2 girls (5.26%) under the category of good. The category of above average consists of 7 boys (10.45%) and 6 girls (15.79%). There are 22.39% of boys and 47.37% of girls under average category. 44.78% boys and

28.95% of girls fall under below average category. 12 boys (17.91%) and 1 girl (01.49%) are poor in their study habits.

- There is 1 government school student (1.75%) and 4 private school students (8.33%) under the category of good. The category of above average consists of 5 government school students (8.77%) and 8 private school students (16.66%). 24.56% of government school students and 39.58% of private school students fall under average category. There are 29 government school students and 12 private school students in below average category. 14.03% of government school students 10.42% of private school students are poor in their study habits.
- There is 1 Hindi medium student (1.75%) and 4 English medium students (8.33%) under the category of good. The category of above average consists of 5 Hindi medium students (8.77%) and 8 students English medium (16.66%). 24.56% of Hindi medium students and 39.58% of English medium students fall under average category. There are 29 Hindi medium students and 12 English medium students in below average category. 14.03 of Hindi medium students 10.42% of English medium students are poor in their study habits.
- There is 1 student whose parents' are undergraduate (1.96%) and 4 students whose parents are graduate (7.41%) under good category. 8 children of graduate parents and 5 children of undergraduate parents fall under the category of above average. Under, average category 23 graduate parents' children (40.74%) and 11 undergraduate parents' children (2.57%) are present. 25.93% of graduate parents children and 52.94% of undergraduate parents children fall under below average

category. 6 graduate parents children and 7 undergraduate parents children are poor in study habits.

- There is no significant correlation between concept mapping ability and study habits of IX grade students.
- There is no significant difference between concept mapping ability of IX grade boys and girls.
- There is significant difference between concept mapping ability of IX grade English and Hindi medium students. Hindi medium students have better concept mapping ability than English medium students.
- There is significant difference between concept mapping ability of IX grade Private and Govt. school students. Govt. school students have better concept mapping ability than Private school students.
- There is significant difference between concept mapping ability of IX grade students with regard to their parental education. Students whose parents are undergraduate have better concept mapping ability than those whose parents are graduate.
- There is no significant difference in study habits among IX grade students with regard to gender, school management, medium of instruction and parental education.

5.12 EDUCATIONAL IMPLICATIONS

Results of this study have a very important implication to the education system.

- There is no relationship between concept mapping and study habits of secondary school students. Students of science background are needed to follow the concept mapping strategy so that they can

easily understand the holistic structure of any scientific related concept. Students of economics, statistics, mathematics, commerce are needed to follow study habits with meaningful planning to work, habits of concentration and systematic preparation for examination. Even though students of above said discipline are not influenced by concept mapping they are considered to follow concept mapping for developing good study habits.

- There is no significant difference in concept mapping ability among secondary school students with regard to gender. Aluja, Colon, Abad and Espinosa (2000) also stated that there is no global difference in scholastic aptitude favoring any gender. Teacher has to teach the disciplinary concepts through concept mapping for clear understanding and has to help to improve desirable study habits among boys and girls without gender bias.
- There is significant difference in concept mapping ability among secondary school students with regard to school management. Teachers who are working at private sector are being imposed stress among the students, without giving any opportunity for reflective and independent thinking. Teacher are following only program of the student in connection with attainment of marks, this is not applicable at this present scenario, so teachers of private sector have to modify their mind set up and have to implement the strategy of concept mapping for improving the good study habits among students so that students of private sector can exhibit their inner abilities and choose their careers in radiant outlook.
- There is significant difference concept mapping ability among secondary school students with regard to medium of instruction it reflects that three language formula stressed by Kothari

Commission 1964 and NPE 1986 is to be practiced effectively in teaching learning practice.

- There is significant difference in concept mapping ability among IX graders due to variation in parental education. The students whose parents are undergraduates performed better than their counterparts. Teacher have to encourage students for developing their concept mapping ability and study habits irrespective of their parental educational background because every disciple has innate ability in constructing ideas with independence. It is teacher's responsibility to enhance that innate ability.
- The present study in the light of past researches has shown that concept mapping is rarely used spontaneously by students because it is difficult and that the process of map modification may be messy and cumbersome .The kind of task , map characteristics ,the amount of subject matter knowledge, the tendency for rote or meaningful learning are the variables that may affect the effective use of concept maps in learning scenarios hence for concept mapping to provide maximum benefits to the learner , it would seem sensible that the mapping activities should be integrated with a variety of the classroom activities .This provide both concrete experiences and cognitive structure that are required for meaningful learning to occur and thus makes learner more metacognitively aware.
- Study habits have to be well informed with present trends, approaches, strategies, tendencies and technologies in connection with psychological, social and philosophical aspects .Its importance and necessity as per the social demands have to be oriented by teachers to flourish students ability in various fields.

5.13 RECOMMENDATIONS FOR FURTHER RESEARCHES

- The present study can be further extended by taking a larger sample to obtain reliable results.
- A wider study may be made involving all schools at Bhopal.
- The study can also be elaborated to national level.
- The same can be conducted at rural level only.
- The study can be taken for PhD. level research.
- The study can be done including the samples of different castes.
- The same study can be done concerning socioeconomic status of the children.
- For causal inferences on the relationship of the studied variable, a longitudinal study can be conducted.

5.14 CONCLUSION

Concept mapping is very essential for students at primary, secondary and higher level; it improves reflectiveness, critical awareness, metacognition, active learning, creativity, thinking ability, reasoning and problem solving. Study habits influences students in connection with their attitudes, believes, values, achievement correlates, cognitive processes, motivational factors, perceptual abilities, personality characteristics etc .If the relation between concept mapping and study habits is positive than there will be desirable progress in achievement and attainment of goals, not only in teaching learning process but also in radiant life careers.

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APPENDIX

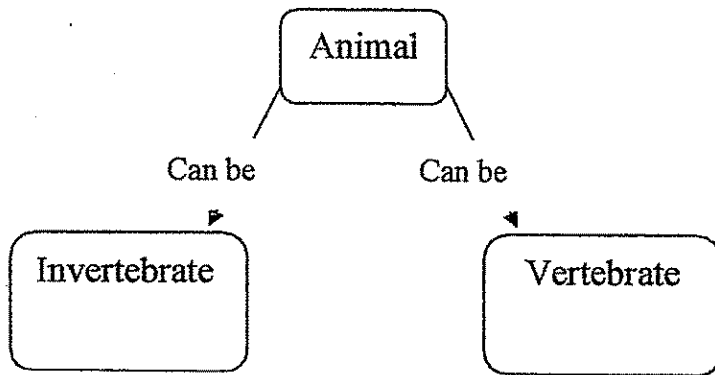
Concept Mapping Ability Test (CMAT)

Name of the Students : -----
 Name of the School : -----
 Class/Standard : -----
 Gender of the Student : -----
 Mother's educational Qualification : -----
 Father's educational qualification : -----

Instructions:-

1. As soon as you get this booklet, fill in your name, standard etc.
2. This booklet consists of 9 Items, to measure the concept mapping ability among 9th standard students.
3. Each item consists of a diagrammatic representation of concept being linked with one another.

Illustration:-



Here Animal, vertebrate and Invertebrate are concepts.

'Can be' is a linking word.

Arrow (\longrightarrow) indicates the direction of the relationship.

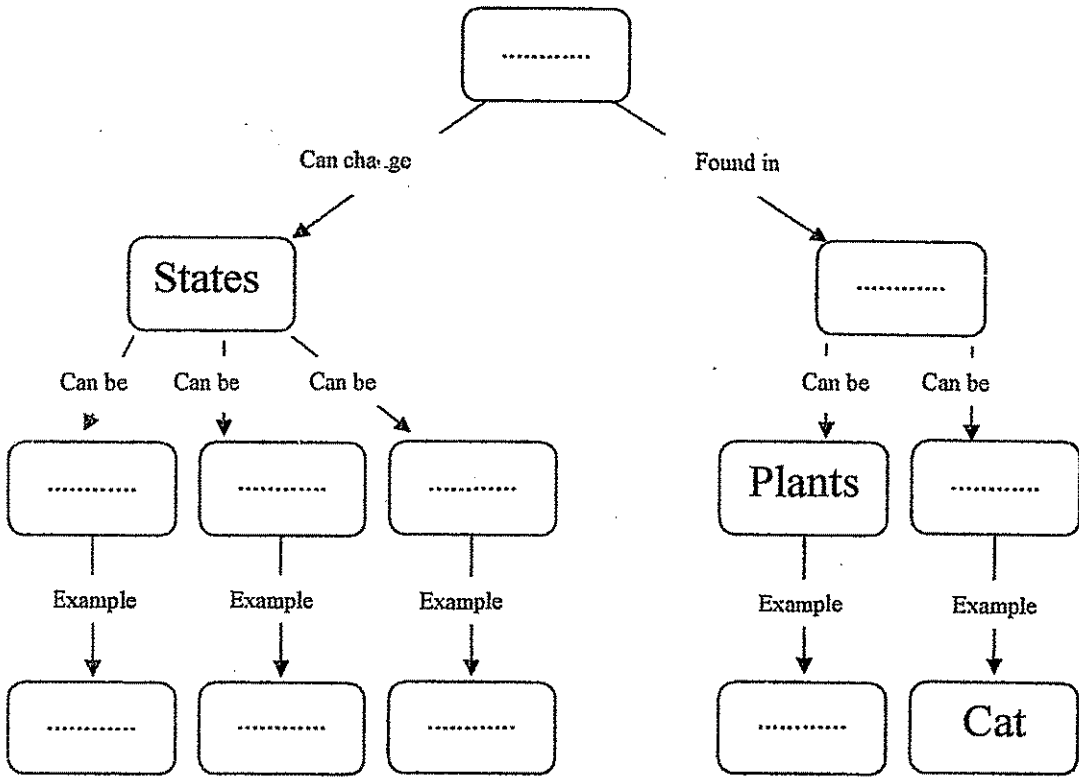
4. Complete/Draw concepts maps in the following items according to the instruction provided.

Level-1

Fill in the concepts

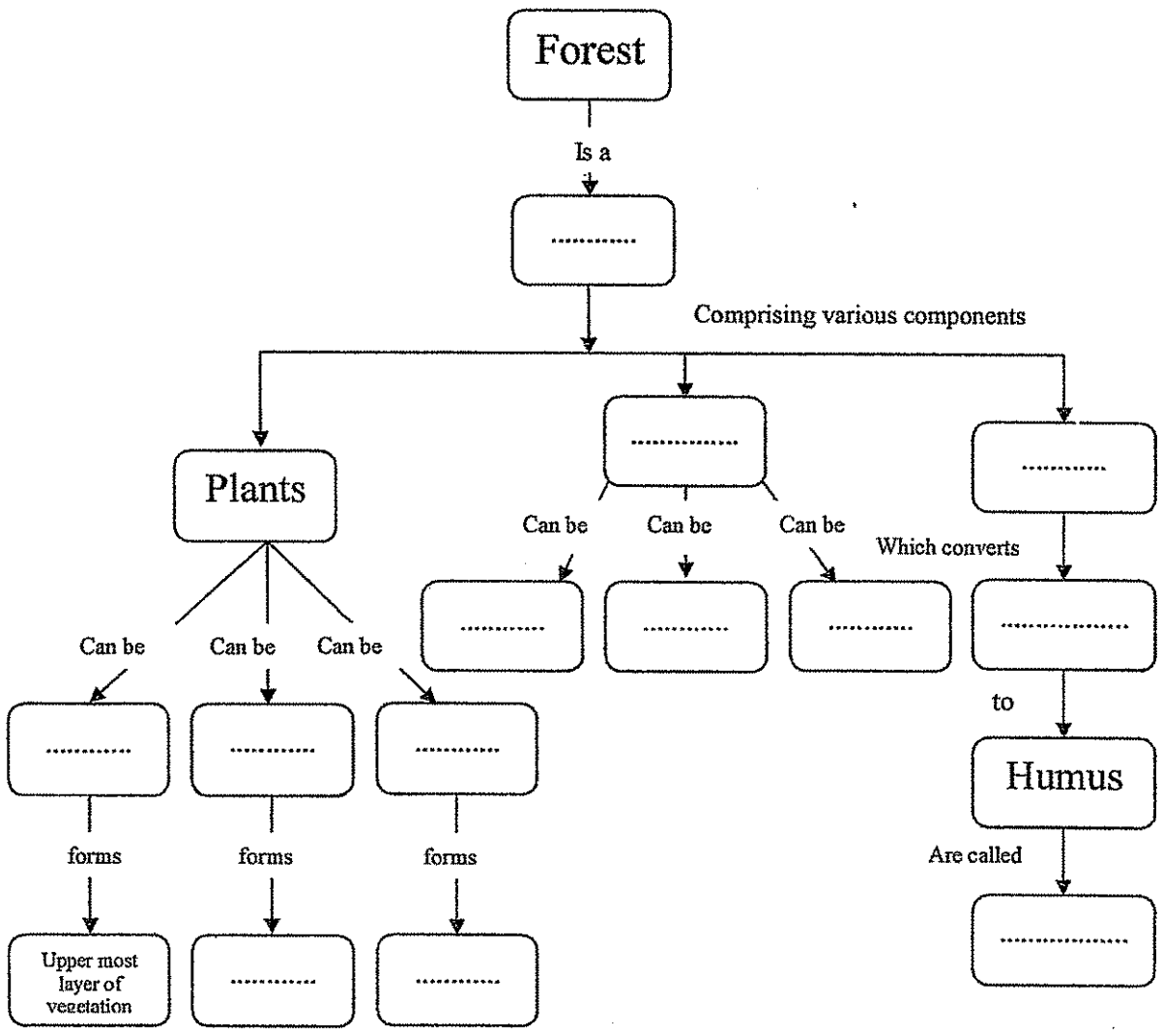
Question-1

Concepts: - Water, solid, animals, liquid, living things, gas, ice, water, steam, Banyan tree.



Question-2

Concepts:- System, decomposers, microorganisms, trees, middle layer of vegetation, lowest layer of vegetation, animals, shrubs, herbivores, herbs, carnivorous, dead plant and animal tissues, omnivorous.

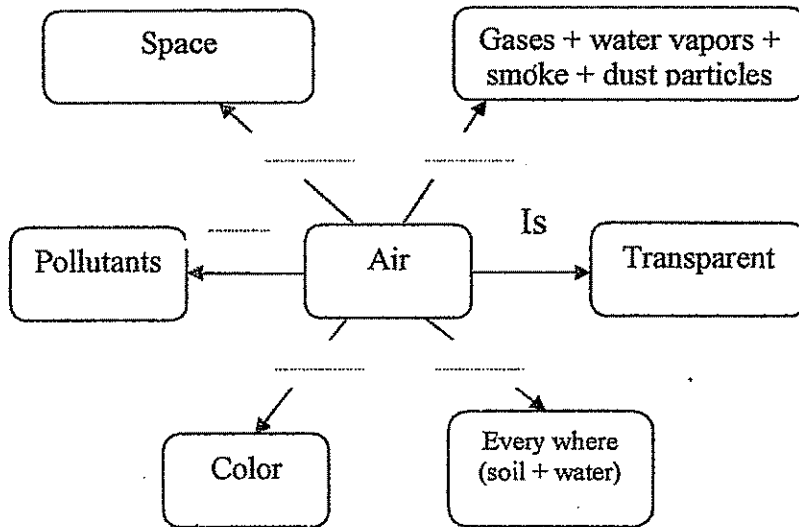


Level-2

Fill in the linking words.

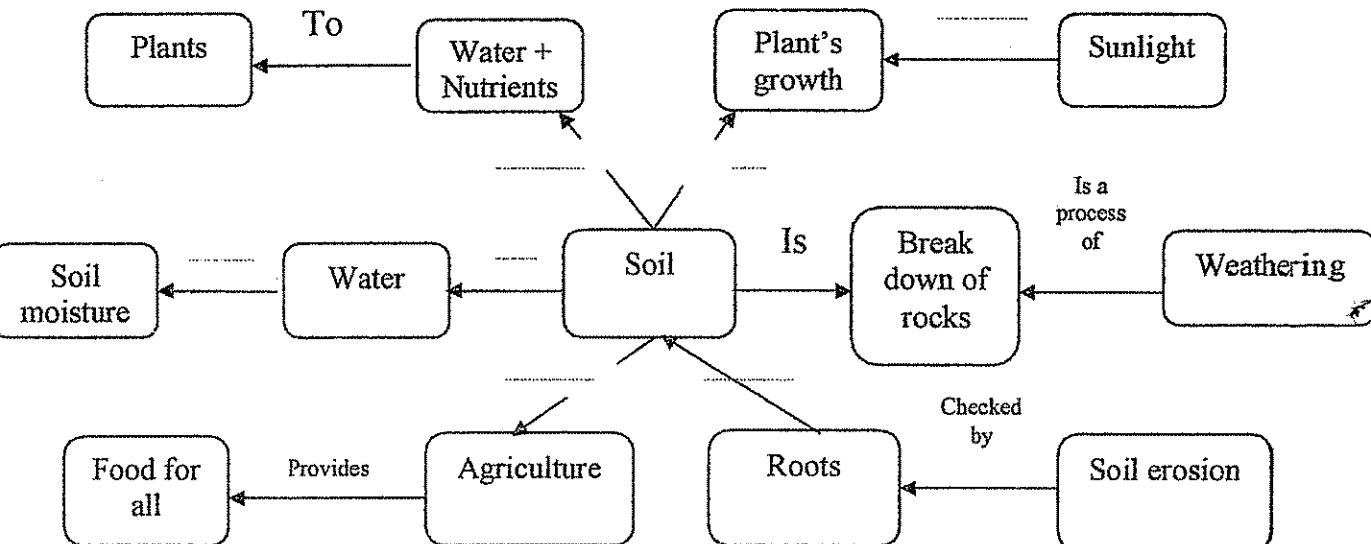
Question-3

Linking words – occupies, mixture of, is present, may contain, has no.



Question-4

Linking words – which is called, supply, supports, needed for, holds, essential for, holds firmly.



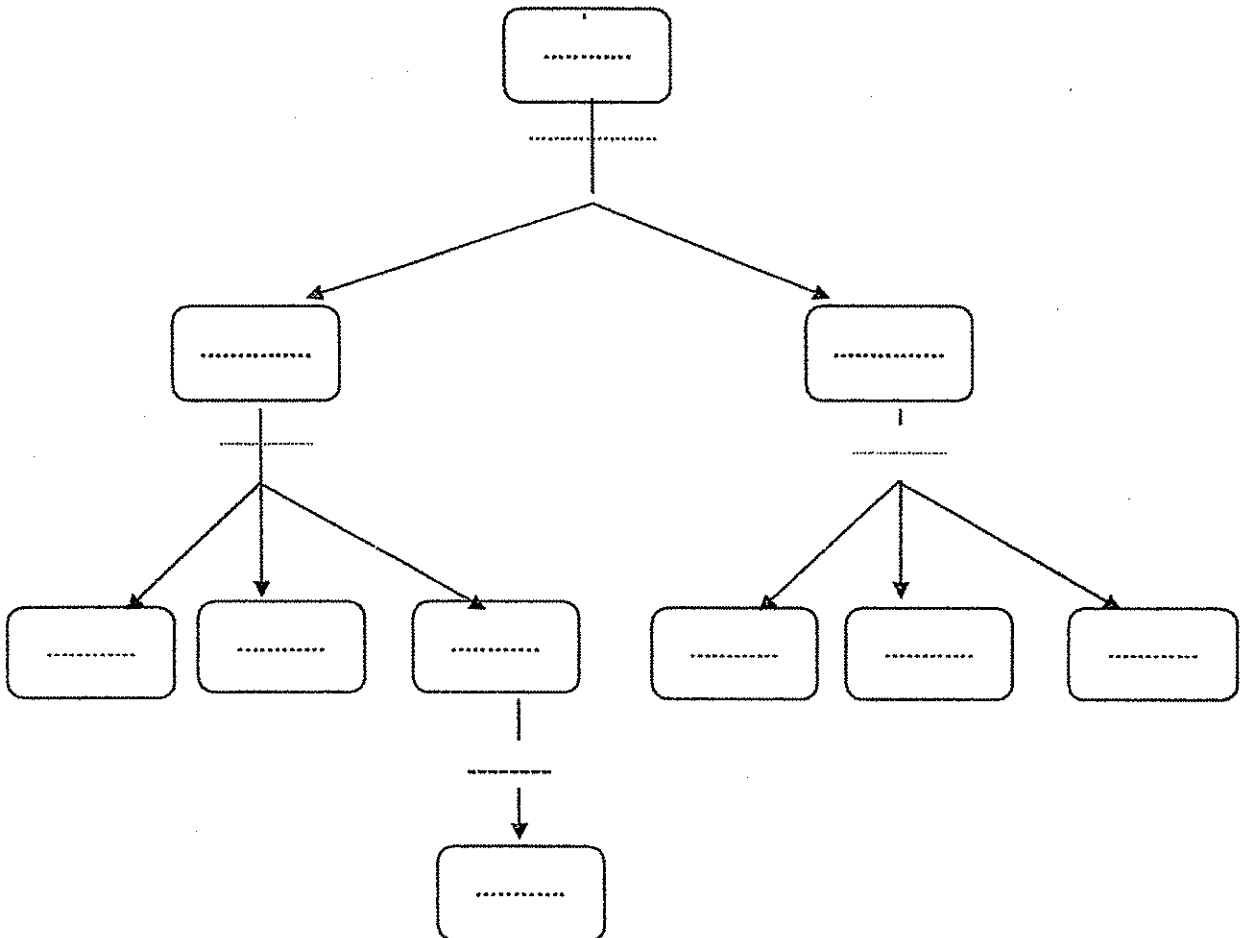
Level-3

Make a concept map with given concepts and linking words.

Question-5

Concepts :- water, chemical properties, physical properties, universal solvent, neutral in nature, reacts with metal, evaporation, freezing point 0°C , abnormal expansion, oxides and hydroxides.

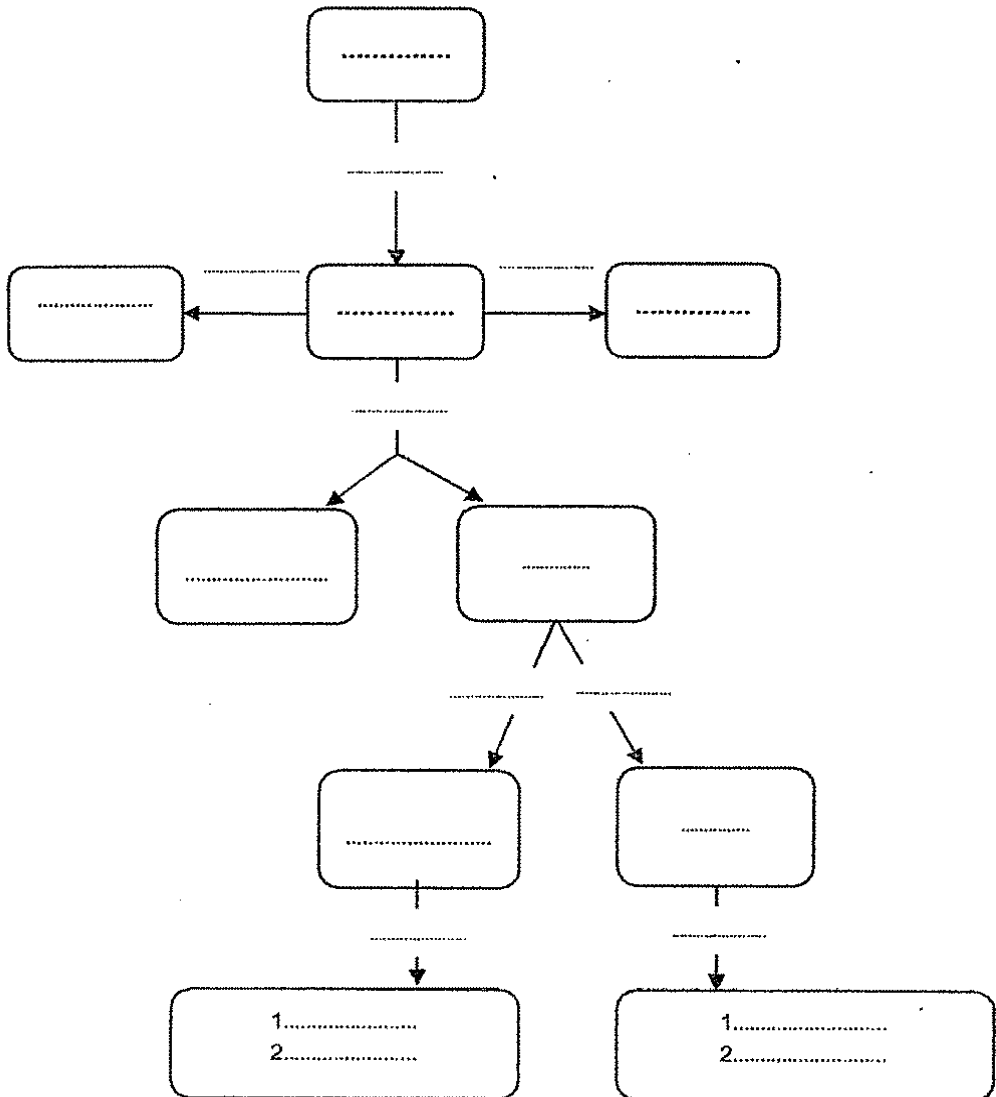
Linking words – has, to form, are, are.



Question - 6

Concepts: - sewage, liquid waste, soil pollution, water pollution, water, contaminates (dissolved and suspended impurities), organic, inorganic, human faeces, pesticides, nitrates, phosphates.

Linking words – is a, causes, causes, has, can be, can be, example, example.



Level-4

Find out the concepts and link from the given paragraph and form a concept map.

Question - 7

Water in the form of vapours goes into air by evaporation (takes place from all open surfaces of water i.e, rivers, sea etc.) and transpiration (occurs in plants), water vapours condenses to form clouds, which precipitates down to the ground as rain, hail or snow.

Question - 8

Environment consists of 2 main components: - living components and non living components. The non living component comprises the atmosphere (envelope of air that surrounds the earth), the lithosphere (rock material present on earth's surface) and the hydrosphere (all the water found on earth). The living component includes plants and animals. Atmosphere consists of 4 layers (Troposphere, Stratosphere, Mesosphere and Thermosphere) which differ in temperature, density and composition. Stratosphere contains ozone layer which protects earth from harmful UV radiation. Biosphere is that layer of the atmosphere in which living organisms are present along with their non living components. Biosphere is divisible into 3 components -

1. Hydrosphere
2. Lithosphere
3. Atmosphere

Level-5**Question - 9**

Choose any one topic and make a concept map

1. Forest
2. Pollution
3. Waste Water
4. Natural Resources

प्रत्यय मानचित्र योग्यता परीक्षण (Concept Mapping Ability Test)

(CMAT)

विद्यार्थी का नाम :

पाठशाला का नाम :

कक्षा :

छात्र/छात्रा :

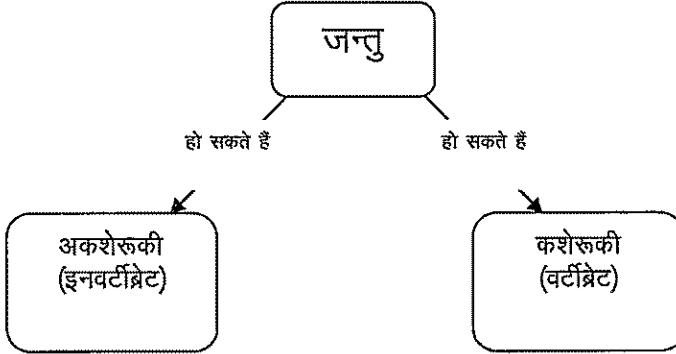
माता की शैक्षणिक अर्हता :

पिता की शैक्षणिक अर्हता :

सूचना:-

1. पत्रिका मिलते ही उपर्युक्त खानापूर्ति कर लें।
2. पत्रिका में 9 प्रश्न हैं जो कक्षा 9वीं के विद्यार्थियों की प्रत्यय मानचित्र योग्यता (कोन्सेप्ट मैपिंग एबिलिटी) को मापेंगे।
3. प्रत्येक प्रश्न में चित्र प्रदर्शन द्वारा एक प्रत्यय (कोन्सेप्ट) का अन्य प्रत्यय से सम्बन्ध (लिंक) स्थापित किया गया है।

उदाहरण:-



यहाँ पर जन्तु, अकशेरुकी, केशरुकी, प्रत्यय हैं।

‘हो सकते हैं’ (लिंगिंग वर्ड) प्रत्ययों के मध्य सम्बंध स्थापित करने वाला शब्द है।

(एरो) (—————>) बताते हैं सम्बन्ध की दिशा

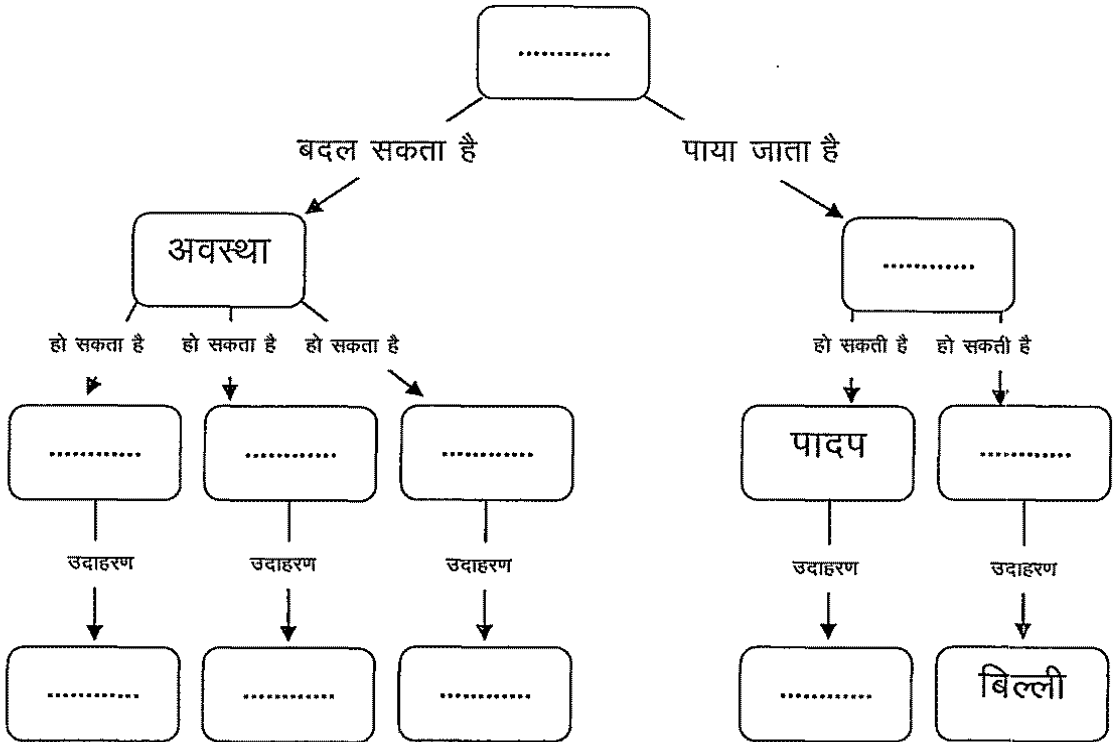
4. प्रत्येक प्रश्न के निर्देशानुसार प्रत्यय मानचित्र (कन्सेप्ट मैप) को पूर्ण कीजिए/निर्माण कीजिए।

स्तर-1

रिक्त स्थानों की पूर्ति कीजिए।

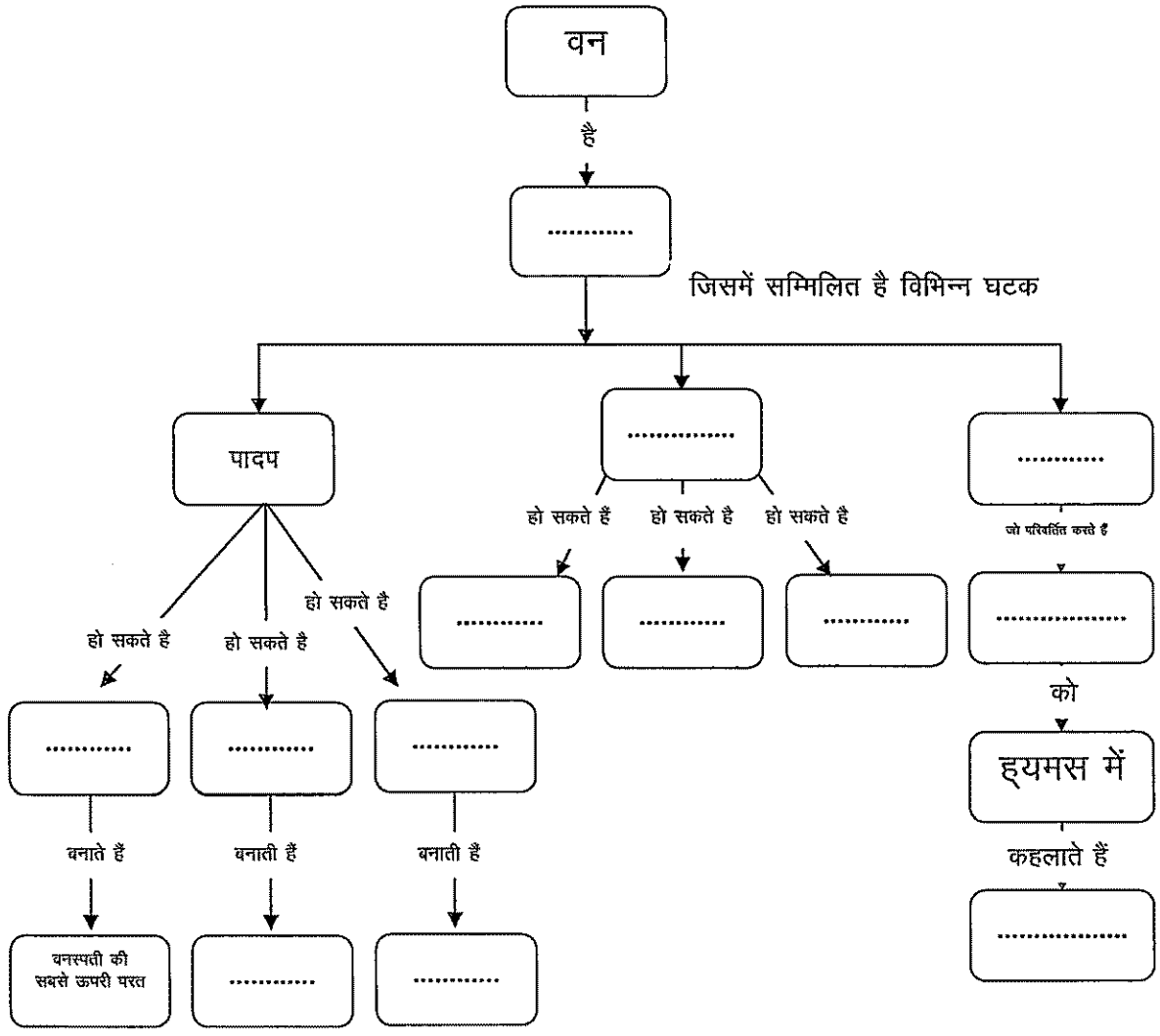
प्रश्न-1

प्रत्यय:- जल, ठोस, जंतु, द्रव, जीवित वस्तुएँ, गैस, बर्फ, भाप, जल, बरगद का पेड़।



प्रश्न-2

प्रत्यय:- एक तंत्र, अपघटक, सूक्ष्मजीव, वृक्ष, वनस्पति की मध्य परत, वनस्पति की नीचली परत, जन्तु, झाड़ियाँ, शाकाहारी, शाक, माँसाहारी, मृत पादपों और जन्तु ऊतकों, अभयहारी।

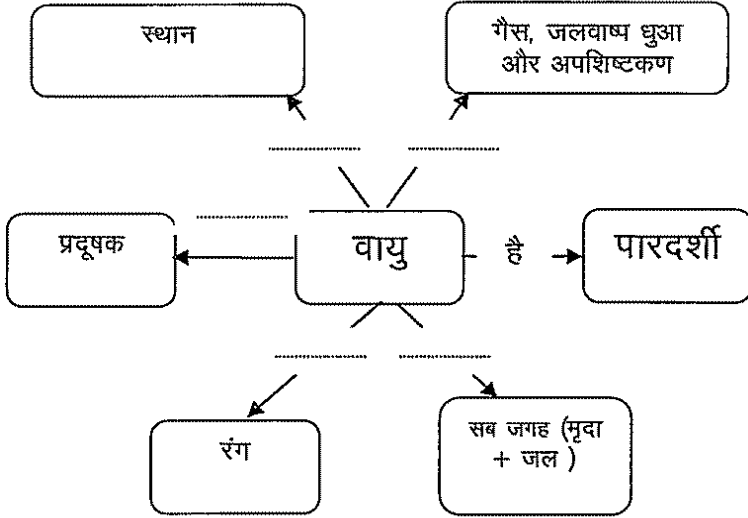


स्तर-2

रिक्त स्थानों में सम्बन्ध स्थापित करने वाले शब्द (लिंकिंग वर्ड) भरें।

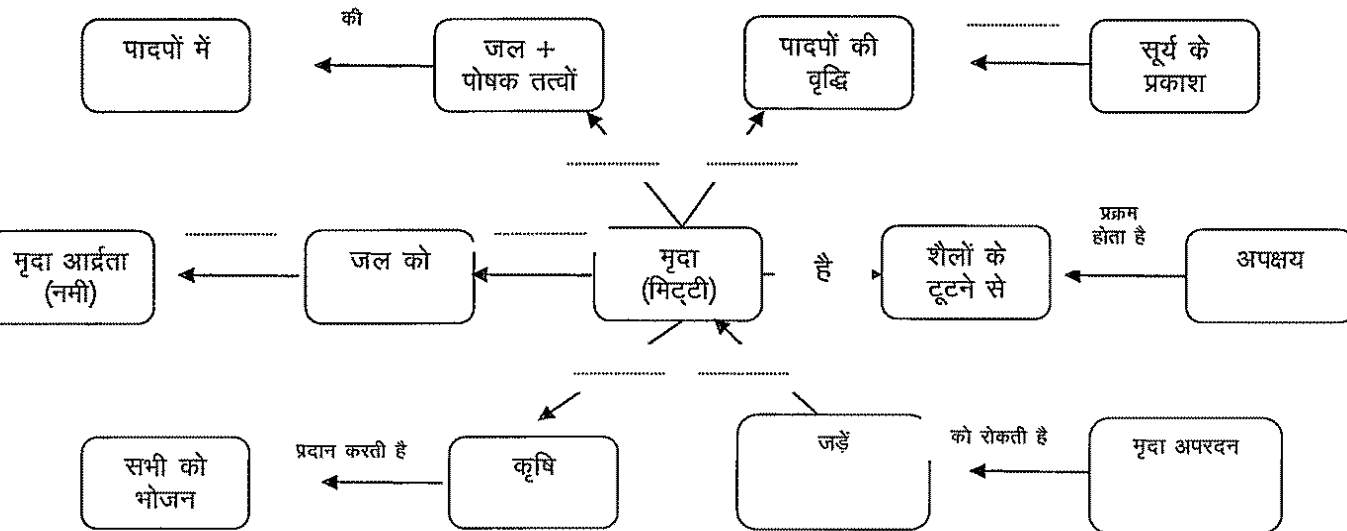
प्रश्न-3

लिंकिंग वर्ड (प्रत्ययों के मध्य सम्बन्ध स्थापित करने वाले शब्द):- में हो सकते हैं, उपस्थित है, घेरती है, का नहीं है, मिश्रण है,



प्रश्न-4

लिंकिंग वर्ड (प्रत्ययों के मध्य सम्बन्ध स्थापित करने वाले शब्द):- सहायता करती है, की जरूरत है, अनिवार्य है, आपूर्ति करती है, को दृढ़ता से रोकती है, जिसे कहते हैं, थामे रखती है।



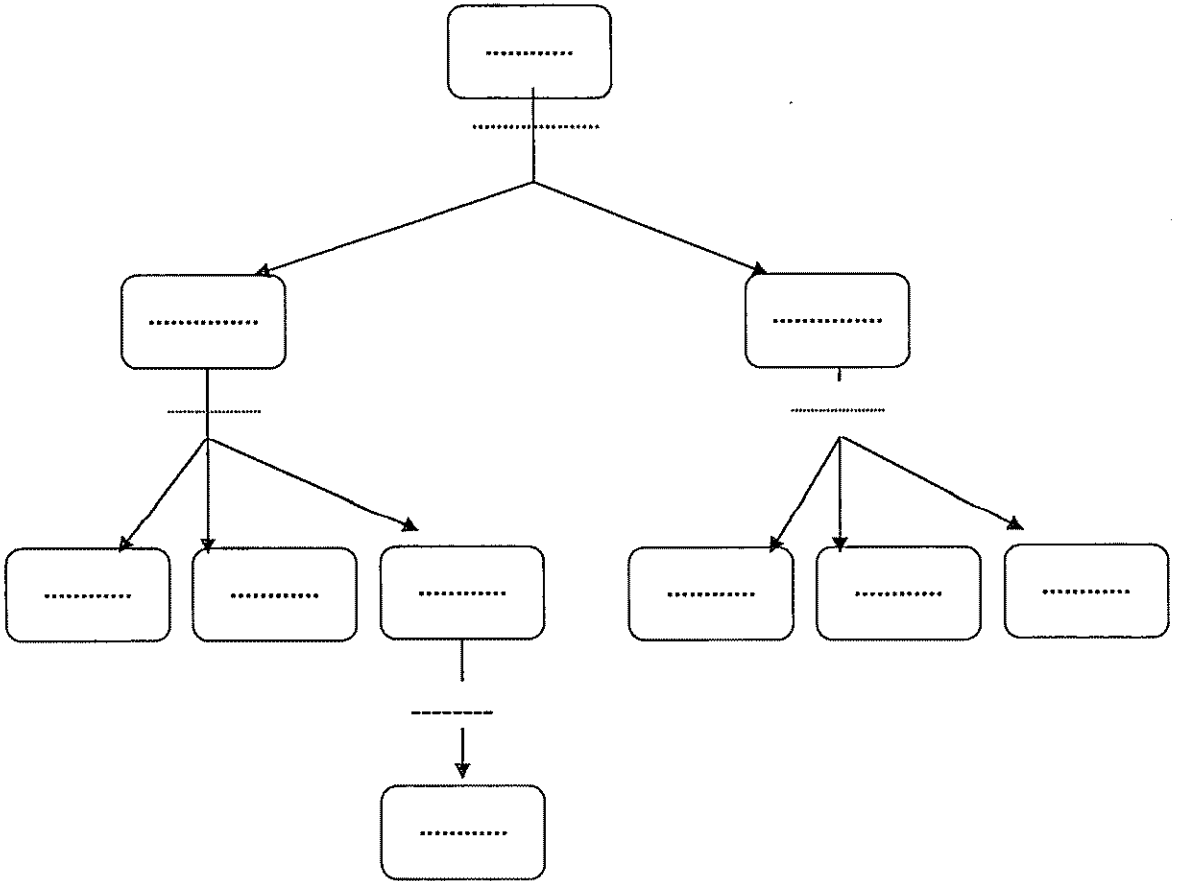
स्तर-3

दिये गये प्रत्ययों और लिंकिंग वर्ड की सहायता से प्रत्यय मानचित्र (कोन्सेप्ट मेप) बनाइये।

प्रश्न-5

प्रत्यय (कोन्सेप्ट):- जल, रसायनिक गुण, भौतिक गुण, सार्वभौमिक विलायक, असामान्य विस्तृतीकरण, वाष्पन, हिमांक बिन्दु 0° , धातु जल से अभिक्रिया करते हैं, ऑक्साइड और हाइड्रॉक्साइड, उदासीन।

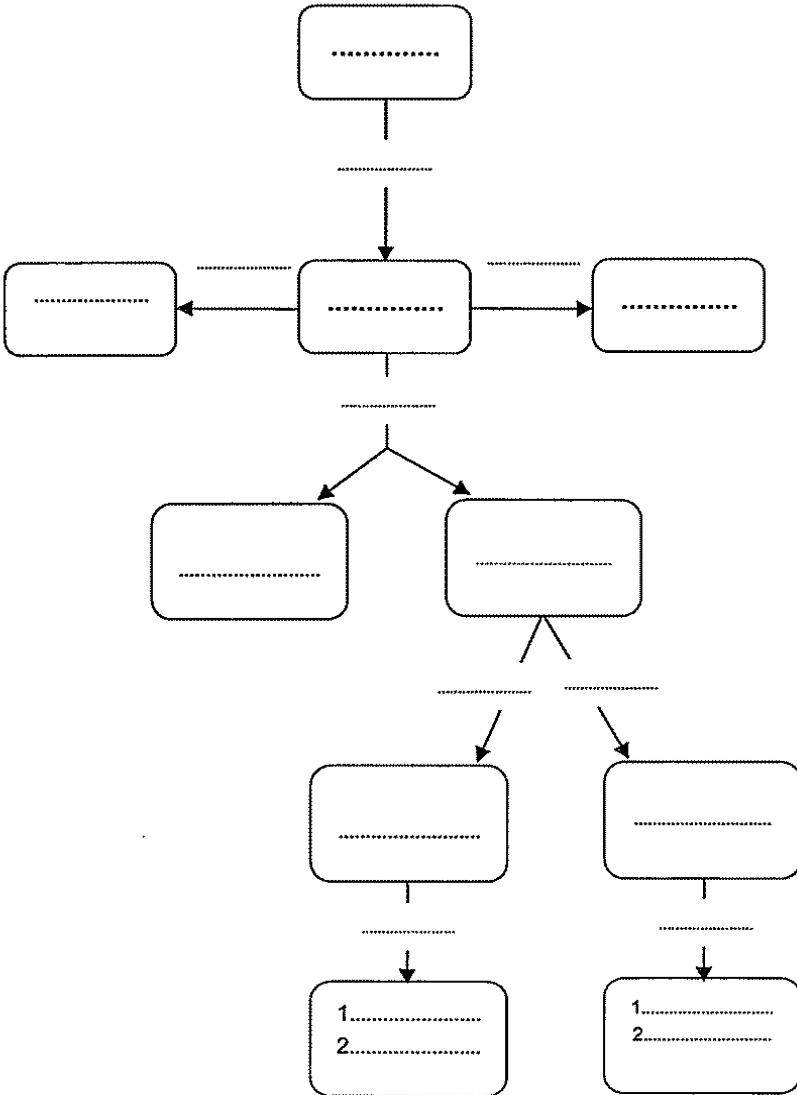
लिंकिंग वर्ड (प्रत्ययों के मध्य संबंध स्थापित करने वाले शब्द):- में होते है, बनाते हैं, हैं, ।



प्रश्न-6

प्रत्यय (कोन्सेप्ट):- वाहित मल, द्रवरूपी अपशिष्ट पदार्थ, मृदा प्रदूषण, जल प्रदूषण, जल, संदूषक (घुले हुए निलंबित अपद्रव), कार्बनिक अशुद्धियाँ, अकार्बनिक अशुद्धियाँ, मानव मल, पीड़कनाशी, नाइट्रेट, फॉस्फेट।

लिंकिंग वर्ड (प्रत्ययों के मध्य संबंध स्थापित करने वाले शब्द):- है, कारण है, कारण है, में होता है, हो सकते हैं, हो सकते है, उदाहरण है, उदाहरण है।



स्तर-4

निम्नलिखित वाक्य-खण्ड में दिये गये प्रत्ययों (कोन्सेप्ट) और लिंकिंग वर्ड (प्रत्ययों के मध्य संबंध स्थापित करने वाले शब्द) को पहचाने और प्रत्यय मानचित्र (कोन्सेप्ट मेप) बनाये।

प्रश्न-7

जल, वाष्पन (जल की खुली सतह से होता है जैसे नदी समुद्र आदि) और वाष्पोत्सर्जन (पादपों में होता है) के द्वारा जलवाष्प के रूप में वायु में चला जाता है। जलवाष्प संघनित होकर बादल बनाते हैं और वर्षा, ओले तथा हिम के रूप में जल पुनः धरती पर वापस आता है।

प्रश्न-8

पर्यावरण के दो मुख्य घटक, जीवित घटक और अजीवित घटक हैं। वायुमण्डल (पृथ्वी के चारों ओर का आवरण), स्थल मण्डल (पृथ्वी सतह पर पथरीली सामग्री) और जलमण्डल (पृथ्वी का पूर्ण जल) अजीवित घटक के उपघटक हैं। जीवित घटक के उपघटक पादप और जन्तु हैं। वायुमण्डल की 4 परतें (क्षोभमण्डल, समतापमण्डल, मध्यमण्डल और तापमण्डल) हैं, जिनमें से समताप मण्डल में ओजोन परत होती है। ओजोन परत धरती को सूर्य की पराबैंगनी किरणों से बचाती है। वायुमण्डल की सभी परतों का घनत्व, ताप और संयोजन अलग है। पर्यावरण की परत, जिसमें सभी जीव अपने अजीवित घटकों के साथ रहते हैं, जीवमण्डल कहलाती है। जीव मण्डल के उपघटक

1. जलमण्डल
2. स्थलमण्डल
3. वायुमण्डल हैं।

प्रश्न-9

निम्नलिखित विषयों में से एक पर प्रत्यय मानचित्र (कान्सेप मेप) बनाईये।

1. प्रदूषण
2. अपशिष्ट जल
3. वन
4. प्रकृतिक सम्पदा

Study-Habits Inventory

By

Dr. B. V. Patel

Name.....Age.....Std.....
 School/College.....Boy/Girl.....
 Village/City.....District.....Date.....

Home Environment & Planning	Reading and Note-taking	Planning of subjects	Habit of concentration	Preparation for Examination	Habits and Attitudes	School or College environment	Total

Remarks.....

Instructions :

1. As soon as you get this booklet, fill in your name, age, school/college name etc.
2. The statements that are given in this booklet depict your study-habits or method of study. Therefore there is no right or wrong answer.
3. Against each statement five columns are given namely 1, 2, 3, 4 and 5.
4. After reading each statement you have to tick mark (✓) in a proper column by deciding critically to what extent it resembles to your study habit or method of study that you have at present.

Illustration :

No. Statement	Always	Often	Sometime	Seldom	Never
1. I read regularly	...	✓

I read regularly. After reading this statement, I compare it with my present habit. After comparing it I feel, that often I read regularly. Therefore a tick mark (✓) against that statement in the column of 'often' has been put above the three small dots. In this way you have to answer all the statements.

5. There is no time limit.
6. Be as honest as possible in answering. Your answers will be kept secret.

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Tiwari Kothi, Belanganj, Agra-282004

(Phone : 362964)

Nò.	Statement	Always 1	Often 2	Some- times 3	Seldom 4	Never 5
1.	I frame my own time-table to study at home.	...	...	...	...	...
2.	I work according to my time-table.	...	...	...	...	...
3.	I study regularly in study-room.	...	...	...	...	...
4.	I prepare almost all my subject before going to school and read them again at home, whatever is done in this class.	...	...	...	...	...
5.	I join tuition-classes.	...	...	...	...	...
6.	I read at place where I get disturbed by radio, people's talk, children's play, relatives, guests etc.	...	...	...	...	...
7.	I cannot study well as I keep myself engaged in the domestic work.	...	...	...	...	...
	* * *	*	*	*	*	*
8.	I make note of important points during reading.	...	...	...	...	...
9.	I use dictionary to look up meaning of new words.	...	...	...	...	...
10.	I pay more attention to new words while studying.	...	...	...	...	...
11.	I take down detailed notes of what is being taught in the class-room.	...	...	...	...	...
12.	The doubtful points which arise during reading are referred to the subject teacher of clarity.	...	...	...	...	...
13.	I try to solve at once, the difficulties met with while reading.	...	...	...	...	...
14.	I miss important points while taking notes in the class-room.	...	...	...	...	...
15.	I read annotations (guides) rather than text-books.	...	...	...	...	...

No.	Statement	Always	Often	Some- times	Seldom	Never
		1	2	3	4	5
16.	I underline the important points in my text-books while reading.	...	...	...	...	...
	* * *	*	*	*	*	*
17.	I pay more attention to the subjects I find difficult.	...	...	...	...	...
18.	I devote more time to study subject in which I am weak.	...	...	...	...	...
19.	I give priority to studying the difficult subjects.	...	...	...	...	...
20.	I read the same subject for a long time.	...	...	...	...	...
21.	I study only that subject I am interested in and leave out the subject-which I find uninteresting.	...	...	...	...	...
	* * *	*	*	*	*	*
22.	I study with concentration.	...	...	...	...	...
23.	I feel I don't study at all.	...	...	...	...	...
24.	My mind goes astray when I read.	...	...	...	...	...
25.	I understand that I read, but I don't remember it.	...	...	...	...	...
	* * *	*	*	*	*	*
26.	In examination I think of the answers of the questions before I start writing them.	...	...	...	...	...
27.	I get nervous at the time of examination.	...	...	...	...	...
28.	I read till late at night at the time of examination.	...	...	...	...	...
29.	I read class-notes at the time of examination.	...	...	...	...	...
30.	I do not study regularly, for I get important questions and suggestions at the time of examination.	...	...	...	...	...

No.	Statement	Always	Often	Some- times	Seldom	Never
		1	2	3	4	5
31.	I do not prepare questions occurred (asked) at previous examination thinking that they would not be set again.	...	...	...	...	...
	* * *	*	*	*	*	*
32.	I memorize definitions, maxims, formulas etc. after understanding them.	...	...	...	...	...
33.	I discuss the subjects read, with my friends.	...	...	...	...	...
34.	I read while reclining on a bed.	...	...	...	...	...
35.	I read along (loudly).	...	...	...	...	...
36.	I try to compare things learnt in one subject with those in another.	...	...	...	...	...
37.	I ruminate over all things I read.	...	...	...	...	...
38.	Before I start reading new lessons I briefly revise the lesson read.	...	...	...	...	...
39.	After reading one paragraph, I atonce review it mentally.	...	...	...	...	...
	* * *	*	*	*	*	*
40.	I spend my leisure time at school in reading.	...	...	...	...	...
41.	I use books from the library.	...	...	...	...	...
42.	I read news-papers and other books too.	...	...	...	...	...
43.	I participate in the class-room discussion.	...	...	...	...	...
44.	I answer the questions asked by the teacher while teaching.	...	...	...	...	...
45.	I can not progress in my study due to my dislike for certain teachers and subjects.	...	...	...	...	...

स्वाध्याय-आदतें सूची

(STUDY HABITS INVENTORY)

(संशोधन-पत्रिका)

Constructed and Standardised by

Dr. B. V. Patel

Principal and Professor, M. B. Patel College of Education

Sardar Patel University, Anand (Kaira)



नाम	आयु	कक्षा
पाठशाला/कॉलेज का नाम	छात्र/छात्रा	
ग्राम्य क्षेत्र/शहरी क्षेत्र	पाठशाला/कॉलेज	क्रमांक
गाँव/शहर का नाम	जिला	दिनांक
अथम पदवी	पदवी में प्राप्त हुई कक्षा	

धर का वातावरण और आयोजन	वाचन और टिप्पणी	विषयों का आयोजन	एकाग्रता	परीक्षा की तैयारी	आदत और रुचि	पाठशाला का वातावरण	कुल प्राप्तांक

सूचना— टिप्पणी

- पत्रिका मिलते ही उपर्युक्त खानापूर्ति कर लें।
- पत्रिका में दिए हुए विधान तुम्हारी स्वाध्याय करने की आदत या पद्धति का बयान करते हैं, अतएव उसमें कोई भी सही या गलत उत्तर नहीं है।
- प्रत्येक विधान के सामने 1, 2, 3, 4 और 5 खाने रखे गये हैं।
- प्रत्येक विधान को पढ़कर वर्तमान में तुम्हारा अभ्यास करने की जो आदत व पद्धति हो वह उस विधान के साथ कहाँ तक सम्बन्धित हो सकती है, उसके बारे में सोच-विचार कर निर्धारित किए हुए योग्य खाने में (✓) का निशान करें।

उदाहरण—

विधान	हमेशा	बहुधा	कभी-कभी	शायद ही	कभी भी नहीं कदापि नहीं
मैं नियमित पढ़ता हूँ	✓

मैं नियमित पढ़ता हूँ। इस विधान को पढ़ने के बाद मैं अपनी वर्तमान आदत के साथ उसकी तुलना करता हूँ। मुझे लगता है कि मैं अक्सर नियमित पढ़ता हूँ। इसीलिए अक्सर के खाने में उस विधान के ठीक सामने, जहाँ तीन बिन्दु हैं, उसके ऊपरी भाग में (✓) निशान किया है। तुम्हें भी इसी प्रकार उत्तर देने हैं।

- समय की कोई पाबन्दी नहीं रखी गई है। नीतिमत्ता के साथ उत्तर दें। आपके उत्तर गोपनीय रखे जायेंगे।

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क्रम	कथन विधान	हमेशा (1)	अक्सर (2)	कभी-कभी (3)	शायद ही (4)	कदापि नहीं (5)
1.	घर पर अध्ययन करने के लिए मैं अपना समय पत्रक तैयार करता हूँ।
2.	मैं तैयार किये हुए समय-पत्रक के अनुसार काम करता हूँ।	....	....	....	....	....
3.	मैं अध्ययन-कक्ष में (कमरे में) नियमित पढ़ता रहता हूँ।	....	....	....	....	....
4.	पाठशाला जाने से पहले मैं करीबन सभी विषयों को तैयार करता हूँ और कक्षा में जो हुआ उसे पुनः घर पर एक दफा पढ़ लेता हूँ।	....	....	....	....	....
5.	मैं 'ट्यूशन क्लास' में जाता हूँ।	....	....	....	....	....
6.	लोगों की बातचीत, रेडियो, बच्चों के खेलकूद, रिश्तेदार, मेहमान आदि से बाधा व रुकावट पैदा होती हो, ऐसी जगह मैं पढ़ता हूँ।	....	....	....	....	....
7.	घर के कार्यों में व्यस्त रहने के कारण मैं अपना अध्ययन ठीक से नहीं कर पाता हूँ।	....	....	....	....	....
	o o o	....	....	....	....	....
8.	पढ़ते समय मैं महत्वपूर्ण मुद्दों की टिप्पणी करता हूँ।	....	....	....	....	....
9.	नये शब्दों के अर्थ समझने के लिए मैं शब्दकोष का उपयोग करता हूँ।	....	....	....	....	....
10.	अध्ययन करते समय मैं नये शब्दों के प्रति विशेष ध्यान देता हूँ।	....	....	....	....	....
11.	वर्ग या कक्षा में जो कुछ सिखाया जाता है, उनकी सविस्तार या टिप्पणी कर लेता हूँ।	....	....	....	....	....
12.	पढ़ते समय पैदा होने वाली समस्याओं का समाधान विषय-शिक्षक से प्राप्त कर लेता हूँ।	....	....	....	....	....
13.	पढ़ते समय पैदा होने वाली कठिनाइयों का समाधान तुरन्त ही करने का प्रयत्न करता हूँ।	....	....	....	....	....
14.	कक्षा में टिप्पणी उतारते समय मुझसे आवश्यक विषय-सामग्री छूट जाती है।	....	....	....	....	....
15.	पाठ्य-पुस्तकें पढ़ने के बजाय मैं कुंजी (गाइड) पढ़ता रहता हूँ।	....	....	....	....	....

क्रम	कथन विधान	हमेशा (1)	अक्सर (2)	कभी-कभी (3)	शायद ही (4)	कदापि नहीं (5)
16.	पढ़ते समय मैं अपनी किताब में महत्वपूर्ण मुद्दों या विषयों के नीचे लकीर खींचता हूँ।	....	....	....	....	....
17.	जो विषय मुझे कठिन लगते हैं, उसके प्रति मैं विशेष ध्यान देता हूँ।	....	....	....	....	....
18.	जिन विषयों के बारे में, मैं सर्वथा अनभिज्ञ हूँ, उनके लिए मैं ज्यादा समय देता हूँ।	....	....	....	....	....
19.	अध्ययन करने में, मैं कठिन विषयों को पहले पसन्द करता हूँ।	....	....	....	....	....
20.	मैं एक ही विषय को ज्यादा देर तक पढ़ता हूँ।	....	....	....	....	....
21.	मुझे जिन विषयों में रुचि होती है, उनको ही पढ़ता हूँ और जिन विषयों में रुचि नहीं है, उनका पठन नहीं करता हूँ।	....	....	....	....	....
22.	मैं ध्यान देकर अध्ययन करता हूँ।	....	....	....	....	....
23.	मुझे लगता है (मैं महसूस करता हूँ) कि मैं कुछ भी पढ़ता नहीं हूँ।	....	....	....	....	....
24.	जब मैं पढ़ने बैठता हूँ तब मेरा मन दूसरे विचारों में उलझ जाता है।	....	....	....	....	....
25.	मैं जो कुछ पढ़ता हूँ, उसको समझ तो सकता हूँ, लेकिन याद नहीं रहता है।	....	....	....	....	....
26.	परीक्षा में प्रश्नों के उत्तर लिखने से पहले, मैं उनके उत्तर के बारे में मन में सोच लेता हूँ।	....	....	....	....	....
27.	परीक्षा के समय मैं घबड़ा जाता हूँ।	....	....	....	....	....
28.	परीक्षा के दिनों में, मैं रात को बड़ी देर तक पढ़ता ही रहता हूँ।	....	....	....	....	....
29.	परीक्षा के समय मैं सिर्फ 'क्लास-नोट्स' ही पढ़ता हूँ।	....	....	....	....	....
30.	परीक्षा के दिन में महत्वपूर्ण प्रश्न और रचनाएँ मिलते रहते हैं, अतएव मैं नियमित नहीं पढ़ता हूँ।	....	....	....	....	....
31.	गंत परीक्षा में पूछे गए प्रश्न इस परीक्षा में पुनः नहीं पूछे जायेंगे, ऐसा सोचकर मैं उन प्रश्नों को तैयार नहीं करता हूँ।	....	....	....	....	....

क्रम	कथन विधान	हमेशा (1)	अक्सर (2)	कभी-कभी (3)	शायद ही (4)	कदापि नहीं (5)
32.	सम्पूर्णतया समझने के बाद ही मैं व्याख्या, सूत्रादि मुँह जबानी याद करता हूँ।	....	....	....	....	....
33.	मैं पढ़े हुए विषयों की चर्चा अपने मित्रों के साथ करता हूँ।	....	....	..	....	....
34.	मैं लेटे-लेटे (सोते-सोते) पढ़ता हूँ।	..	....	....	....	....
35.	मैं ऊँची आवाज में पढ़ता हूँ।	....	..	....	....	....
36.	एक विषय में सीखी हुई बातों को दूसरे विषय ही सीखी हुई बातों से मिलाने का प्रयास करता हूँ।	....	....	....	....	....
37.	पढ़ने के बाद पढ़ी हुई, सभी बातों को मैं मन में सोच लेता हूँ।	....	....	....	....	....
38.	नया पाठ शुरू करने से पहले, मैं पढ़े हुए पाठों का संक्षेप में पुनरावलोकन कर लेता हूँ।	....	....	....	..	....
39.	एक परिच्छेद पढ़ने के बाद तुरन्त ही, मैं उसे अपने मन में सोच लेता हूँ।	....	....	....	....	....
40.	पाठशाला में जो अवकाश-समय मिलता है, उस समय मैं पढ़ता हूँ।	....	....	....	..	....
41.	मैं पुस्तकालय की पुस्तकों का उपयोग करता हूँ।	....	....	....	....	....
42.	मैं वर्तमान-पत्र (समाचार-पत्र) का अन्य किताबें भी पढ़ता रहता हूँ।	....	....	..	....	....
43.	वर्ग (कक्षा) में होती हुई चर्चा (बहस) में भी मैं सम्मिलित होता हूँ।	....	....	....	....	....
44.	शिक्षक सिखाते समय जो प्रश्न पूछते हैं, उन प्रश्नों के मैं उत्तर देता हूँ।	....	....	....	....	....
45.	कतिपय शिक्षक और विषयों के प्रति अरुचि के कारण मेरी पढ़ाई की प्रगति नहीं हो सकती है।	....	....	....	....	....

CONCEPT MAPPING STRATEGIES

- Introduce a concept that is familiar to all students, such as “car”, “chair” or “food.”
- Have students write down 10 other concepts that they associate with this main concept (i.e., for food, “vegetables”, “meat”, “cereal”, “milk”, “steak”, “carrots”...).
- Ask them to rank the 10 concepts from “most general and inclusive” to “least general and inclusive” or from “most important” to “least important”; this step will require several minutes.
- Tell students to write the “most general” or “most important” concept near the top of a large piece of paper (e.g., poster board or butcher paper is excellent, but regular notebook paper will suffice). Have them enclose this “super ordinate concept” in a box or oval. Use pencils instead of pens
- Explain that you want them to connect concepts from their list, one pair at a time, with directional links; and most importantly, to label the linking lines (e.g., Carrots → vitamin A (linking word is, “contain”) OR meat → iron (linking words are, “is a good source of”). Continue this process until all concepts appear on the map.
- Give students plenty of time (20-30 minutes). Encourage them to include a lot of branching and many levels of hierarchy. Put special emphasis on cross-linking concepts in one area of the map with those in other areas. Suggest that they may add as many additional concepts as they wish to make their maps unique and personally meaningful. Remind them that the boxes or ovals should contain only one or two words. Emphasize that “neatness doesn't count” and that they may re-draw their maps as often as they wish.

- Circulate around the room as students construct their maps. Be supportive but not directive. Remind students that a concept map is a distinctive representation of their understanding, and that individual components on their maps may or may not be scientifically accurate, but there is a large set of ways to organize and represent what they know. Encourage creativity and stress that there are no one “correct” answer.
- Select several students to share their maps with the class. You may need to make a transparency to display the maps in large classes. Focus attention on appropriate connections between concepts. Remind students that concept maps may be a very helpful way to study; they can be used to condense many pages of textbook verbiage into a succinct summary of what the author presents.
- In the next class, introduce a central concept from your course (e.g., “star”, “cell”, “energy”, “matter”) and ask your students to construct a concept map on this topic. Collect the maps and review them, but don't grade them. You may want to suggest ways the maps could be improved.
- Return the maps to the students and suggest that they rethink some of their ideas. We have used different colored pencils for each iteration so students may depict and emphasize how their ideas change over time. The same map may be used for several class periods, and students may be encouraged to add to, delete, reorganize or even begin anew whenever they need to do so.