CHAPTER – II

REVIEW OF THE
RELATED LITERATURE
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CHAPTER – II
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2.0. Introduction

Not many research projects are known to have been concluded on the impact of Attitude, Vocabulary and Concept in Geography on achievement in different school subjects. Hence, studies available on the impact of Attitude, Vocabulary and Concept in Geography collectively on the Achievement in Geography are practically few. The related literature available so far, the impact of Attitude, Vocabulary, and Concept in Geography on the achievement in school subjects independently are outlined below:

2.1. Related Studies:

The studies are mainly the short resume of different Ph.D. works both in India and abroad. Where a research has a long history, it has been divided into two parts: Trends of researches in the past and studies in the recent times. Thus pictorially:

Trend study → Studies in the recent Past

Studies Abroad

Studies in India

2.1.1 Attitude:

2.1.1.1. Trends of Researches on Attitude in the past:

A student’s attitude towards a school subject in most of the times an indicator of student’s effort, participation, learning outcome related to the subject (Standslause, 2013). It also indicates how the student will react to the subject in the combination of different school subjects. According to Inceoglu (2004)-Attitude is some body’s tendency to react to an event, object (or idea) in his or her environment. Attitude is spread over the domains of education i.e. Cognitive (intellectual activities related to the subject under consideration), affective (emotional attachment to the subject) and psychomotor (tendency to act for the subject). A positive attitude of a student towards a subject also shows the student’s liking for the subject during higher studies, his/her leadership in the subject in the school and college level. Hogg, & Vaughan (2005, p. 150) and (Eagly, & Chaiken, 1993, p. 1) defined Attitude in the similar tone (http://www.simplypsychology.org/attitudes.html: dl 06/11.14).
Attitude towards a subject is not always absolute. Neo Freudian Psychologist like Jung(1921) considers two sides of Attitude –the explicit (developed consciously in a man out of different exposures in life) and the implicit (developed unconsciously in a man remaining somewhat beyond the conscious control of a man). Attitude of a student towards a school subject, in all academic transactions, comes within the purview of explicit attitude (https://implicit.harvard.edu/implicit/faqs.html- dl06/11/2014).

It may vary from class to class [ Kbiatko, Janko et al.2012]. It may differ from school to school . Govt school students possess better attitude towards Geography (Sumesh & Gafoor, 2012). It may vary from gender to gender. However Kabiatko et al. (2012) & Ozdemir (2012) show that gender has no effect on the attitude of the students towards Geography. Grade does not always affect the students’ attitude towards Geography. Change of curriculum affects the students attitude towards Geography (Mularczyk: 2011). Students’ positive opinion about geography teachers (Tomal-2010) and blended learning model (Korkmaz: 2009) contribute more to the attitude of the students towards Geography.

Attitude of students towards a school subject is based on social status of the subject, its scope in higher education and profession, teacher’s quality & personality, and observation of different role models (Bandura,1971 in Mangal,2005).

2.1.1.2. Studies on Attitude Abroad:

Craker (2006) observed that nearly fifty percent of students may lose interest in science by the third grade, and the number of students preparing for a science-related career is declining. Several factors, including gender, expected achievement and previous science experiences could influence a student’s attitude toward science. This study analyzed the attitudes toward science of students enrolled in entry-level general education courses at the University of Wisconsin-La Crosse in the areas of personal confidence, usefulness of the subject, perception of the subject as a male domain, and perception of the teacher’s attitude. Males were found to have more confidence than females, and females perceive science as a male domain more than female. Expected achievement and attitude toward science were shown to be strongly related. The number of science and math courses taken in high school has a direct impact on a student’s attitude toward science.

To analyze the data, a Multivariate Analysis of Variance (MANOVA) was conducted for each independent variable (sex, course, class standing, expected grade, major, type of high school, number of science courses, and number of math courses), with the four
dependent variables of confidence, usefulness, male dominance, and perception of teacher attitudes. The results for each were then analyzed for significance using Wilks’ Lambda, with an alpha value of 0.05. For tests having significance, a One-Way Analysis of Variance (ANOVA) was then conducted, followed by pairwise or multiple comparisons to find the source of the differences and significance.

For the study, the sample size consisted of 397 students. Of these students, 115 were male (29%) and 282 were female (71%). It may be helpful to note the overall population of UW-La Crosse is roughly 40% male and 60% female. Further frequency statistics obtained through the use of SPSS (Statistical Software for the Social Sciences), found that 221 students were Freshman (55.7%), 80 were Sophomores (20.2%), 67 were Juniors (16.9%), 26 were Seniors (6.5%), and three were noted as Other (0.8%).

Some interesting results of additional data analysis found that 77.3% of students took more than three science courses in high school and 83.9% took more than three math courses in high school. Also, 23.5% of males expected to receive an A in the course, while only 16.5% of females expected an A; of those expecting a C, 77.8% of them were female, while 22.2% were male. It may also be interesting to note that of all the students enrolled in the College of Science and Allied Health, 75% were women.

Molly (2006) conducted using an approach (covering the literature between 1970 and 1991) similar to that suggested by Glass, McGaw, and Smith (1981) and Hedges, Shymansky, and Woodworth (1989). This analysis examined gender differences in student attitudes toward science, and correlations between attitudes toward science and achievement in science. Thirty-one effect sizes and seven correlations representing the testing of 6,753 subjects were found in 18 studies. Boys have more positive attitudes toward science than girls. Results of the analysis of gender differences in attitude as a function of science type indicate that boys show a more positive attitude toward science than girls in all types of science. The correlation between attitude and achievement as a function of selectivity indicates that in all cases a positive attitude results in higher achievement.

Adesoji (2008) designed to examine the claim by several methods of instruction could change students’ attitude positively towards science. It was the belief of the author that if students were allowed to develop higher cognitive processes through problem solving strategies, either as teacher directed or self-directed, their attitudes toward chemistry might change positively. Therefore, the effect of teacher-directed and self-directed problem-solving
strategies on students’ attitude toward chemistry was investigated. The four-stage (logical) model of solving Chemistry problems as suggested by Ashmore, Casey and Frazer (1979) was adopted for the study. The findings in this study showed that students in the experimental group developed more positive attitude towards Chemistry after the treatment. It was then recommended that teachers should adopt problem solving strategies in their teaching in order to win many more students to chemistry.

Farooq and Ullah Shah (2008) conduct an investigation to examine Students success in mathematics depends upon attitude towards mathematics. It also influences the participation rate of learners. The study was based on a survey of high school students about their attitudes towards mathematics. Students of both the gender constitute the population of this study. Sample of the study was 685 students (male=379 and female=306) of 10th grade selected conveniently from 10 private and public sector schools. The result of the study lead us to an important conclusion. The male and female students of 10th grade of the secondary schools of Lahore have same type of attitude towards mathematics. It means that gender differential has no impact on the attitude of students towards mathematics in Pakistan.

Korkmaz and Karakuş (2009) conduct an investigation to examine the impact of blended learning model on student attitudes towards Geography course and their critical thinking dispositions and skills. An experimental pattern with pretest-post test control group was used in the study. The study group consists of a total of 57 students – 28 in the experiment group and 29 in the control group – at Kırşehir High School. The experiment group was subject to hybrid learning through the Geography web page, while the traditional learning model was used for the control group. The Geography Attitude Scale and the California Critical Thinking Disposition Inventory were developed with Cronbach Alpha values of 0.92 and 0.88, respectively. A result Blended learning model contributed more to student attitudes toward geography course when compared to the traditional learning model; blended learning model contributed more to student critical dispositions and levels when compared to the traditional learning model; and there was a positive correlation between student attitudes toward geography course and their critical thinking dispositions and levels.

Zain et al. (2010) carried a study to improve students’ attitudes toward science using instructional congruence. The study was conducted in Malaysia, in three low-performing secondary schools in the state of Penang. Data collected with an Attitudes in Science instrument were analysed using Rasch modeling. Qualitative data based on the reflections of
teachers and students were also collected, since they provide valuable insight of the impact of instructional congruence on student learning. The results show that instructional congruence in science education promotes positive students’ attitudes toward science, especially in the constructs of the practical work of science, science outside of school, future participation in science, and a combined interest in science.

Stefan and Florentina (2010) conducts a study to compare the students’ interest and attitude towards Physics have been the object of international testing, the most recent of which is the PISA testing from 2006. The students’ attitude towards sciences is considered to be a significant predictor of their school results in science, respectively of pursuing a career in areas related to Science. The present paper had in view to discover the existence of convergences or divergences among the attitudes of the students in 8th and 9th grade towards the study of natural sciences and towards the teacher’s role in studying for the natural sciences.

Mularczyk (2011) conducted a three-stage survey in 1989, in 2002 and in 2010. He found that the role of Geography among other school subjects is changing during education system transformation in Poland.

The students’ attitudes towards Geography as a school subject were changing at that time. In order to meet the above objectives, Questionnaire containing 22 questions was a basic research tool. The questionnaire concerned students’ attitudes toward Geography as a school subject. It was observed that the students had been interested in Geography before the education system reform. It was perceived as a useful subject, both in further education and day to-day life. Unfortunately, in the following years of transformation, they do not think so.

Mohamed and Waheed (2011) conducts a study to compare the students’ attitude towards mathematics has been a factor that is known to influence students’ achievement in mathematics. The purpose of this study is to find out the students attitude towards mathematics and find out gender difference in attitude towards mathematics in a selected school of Maldives. A total of 200 secondary students were administered with a questionnaire to find out their attitudes towards mathematics. The students answered questions regarding their personal confidence to mathematics and perceived usefulness of mathematics. The results show that the students’ positive attitude towards mathematics is medium and there is no gender difference in their attitudes.
Kaya and Böyük (2011) conduct an investigation to examine the students’ development of researching, questioning, critical thinking, problem solving and decision making skills, so that they become lifelong learning individuals, they should be improved regarding their knowledge, understanding and attitude towards natural sciences. Attitudes towards physics lessons and physical experiments of high school students have been examined for this purpose. The research has been designed as a scanning study, population of which consists of high school students (9th, 10th and 11th grades) from the schools in the Kayseri province centre. Sample of the study is the 295 students selected among the population by random sampling. Furthermore, it was examined whether general attitude towards physics lessons and physical experiments of the students varied with respect to gender, grade and age variables, and no significant variation with respect to gender was found. It was determined that students’ grade and age differences effect on students' attitudes.

Ozdemir (2012) carried the study is to put forth high school students’ attitudes toward geography lessons. The research group of the study is compromised of 200 students’ attending to high school students in Karabuk in 2011-2012 educational years. As means of data collection “Geography Attitude Scale” developed by Aydin (2009) was used in this research in the frame of survey model. As the result of the study the gathered data were analysed by SPSS 15 statistical programme in terms of frequency, percentage, arithmetic mean, t-test and one way variance analysis (ANOVA). It was found that 83.5% of the students love geography. According to the results of the analysis, high school students’ attitudes towards geography courses having no meaningful correspondence with their “gender” and “class level” variants.

Smith & Walker (2012) conduct a study to compare students’ Attitudes toward Science (ATS) was examined from an attitude versus beliefs perspective using data obtained from the Science-in-the-Moment study (Schmidt & Smith, 2008), an investigation of high school students’ cognitive and affective experiences during science instruction. Although Francis and Greer (p. 220) found that the scale “operationalizes the affective attitudinal domain independently of the behavioral and cognitive dimensions,” the current paper argues that this instrument does not manifest itself as a uni-dimensional structure, but, instead, as a multi-dimensional composition. Results from a confirmatory factor analysis indicated that the scale consisted of two distinct clusters of items that measured two different factors: student attitudes toward science and their beliefs about science.
Anwer et al. (2012) conducted to examine students’ attitude towards science. The sample of the study consisted of 3526 students of 10th grade (Boys = 1914, Girls = 1612) and were from urban (n = 2304) and rural (n = 1222) localities of Pakistan. The instrument administered was ‘test of Science Related Attitudes’ (TOSRA) developed by Fraser (1981). Results of the study depicted a significant effect of gender and locale on students’ attitude towards science’. Girls had significantly higher attitude towards science than boys on total scale and on all sub-scales of TOSRA with only one exception of Career Interest in Science subscale on which boys were slightly high than girls but it was not significant. Locality wise results showed rural students to score significantly higher on the total scale and on the subscales of Social Implication and Career Interest in Science than the urban respondents, while the urban respondents scored significantly higher on the subscale of Adoption of Scientific Attitudes than the rural respondents. There was no significant variation between the rural and urban respondents in their Attitude towards Scientific Inquiry, Enjoyment of Science Lessons and Leisure Interest in Science. This study has wide implications for educationists.

Kubiatko et al. (2012) investigates 540 Czech lower secondary students’ attitudes towards geography. It examined the general influence of gender and grade level on attitudes towards geography with an emphasis on four specific areas in particular: geography as a school subject; geography and the environment; the importance of geography; and the relevance of geography lessons to pupils’ lives. The results suggest that grade level significantly influences attitudes towards geography, but gender does not. It also comments on drawbacks within the Czech curriculum that limit geography instruction.

Ephias et al. (2013) carried a study which sought to investigate the attitudes of Zimbabwean secondary school pupils towards the teaching and learning of science. A randomized sample of 243 participants from eight (8) selected schools completed a 5 point Likert type scale. Factorial Analysis using principal components with Varimax Rotation, Kaiser Normalisation and Scree testing were used to determine validity of the scale. Variables with factor loading of 0.3 and above and Eigen values of 1 and above were considered to form main Attitude towards Science (ATS) scale. Data were analyzed using ANOVA and One way ANOVA. It was found out that pupils in lower classes (Forms 1 and 2) recorded a positive attitude towards science than pupils in the upper classes (Forms 3 and 4). There may be a need to re-examine the reasons why attitude declines with form level.
Further studies may look at linkage between pupil’s attitude with their science performance in class, career aspirations and perceptions of the world of science at work.

Mubeen, Sarwat et al. (2013) conducts a study to compare the students’ attitudes towards mathematics are the important determinants of academic success and achievement. In order to succeed in a subject, positive attitude towards a subject is a necessary prerequisite. This also applies to mathematics, especially in case of girls as compared to boys.

The main purpose of the study was to measure the relationship of attitude towards mathematics with academic achievement in math among 9th and 10th class secondary level students. Sample of the study consisted of 500 students out of which 200 were boys and 300 were girls. This sample was chosen from two girls’ and two boys schools in Wah cantt (Pakistan). The sample consisted of 15 and 16 years age group. A 25-item questionnaire was self-developed in the light of available literature on the subject and adaptation of another instrument, developed by Steinback and Gwizdala. Academic achievement was measured by the marks obtained by the sample in their recently held examination in mathematics in their school. The obtained data were analyzed and interpreted using statistical tools of correlation coefficient. The result showed that boys differed in their mathematical achievement from girls. Girls achieved better results as compared to boys. Attitude towards mathematics and achievement in math did not go together.

2.1.1.3. Studies on Attitude in India:

Mahanta et al. (2012) carried a study of Mathematics at secondary level is the foundation stage of Higher Education. Every secondary school student should study mathematics as a compulsory subject so that he/she gains a basic quantum of Mathematical knowledge as a part of general education. In our society there exists a general belief that mathematics is a subject for boys. Even today a very few people encourage girl students to opt for this subject. In the present study data have been collected from secondary students through questionnaire and their attitudes have been compared. Also their attitudes and achievements have compared.

Analysis of data shows that (i) 37% boys considered mathematics to be a hard subject whereas 39.2% girls considered mathematics to be a hard subject. (ii) 60% boys considered mathematics to be helpful in the development of mind whereas 58% girls think so. Moreover, students of urban area show more positive attitude than rural area. Also the students (both
boys and girls) whose attitude scores are high they score good marks in mathematics examination, whereas students having low attitude score got less marks in examination.

Sudhakar et al. (2013) conduct a study to find out the difference between boys and girls of standard VIII students studying in English and Tamil medium in their Attitude Towards Learning Geography and study involvement. Data for the study were collected using Attitude Towards Learning Geography scale and Study Involvement Inventory. The investigator used random sampling technique for selecting the sample. The sample consists of 496 students. For analyzing data, ‘t’ test and Pearson’s product moment co-efficient correlation techniques were used. Findings show there was significant relationship between Attitude Towards Learning Geography and study involvement.

Sumesh et al. (2013) conduct a study to compare the attitude of Government and Private school students towards Geography Education in Calicut district of Kerala State. There are five objectives for the present study. 1-To compare the attitude of Government and Private school students towards Geography Education in Calicut district of Kerala State. 2-To compare the attitude of male and female students towards Geography Education at Government schools in Calicut district of Kerala State. 3-To compare the attitude of male and female students towards Geography Education at Private schools in Calicut district of Kerala State. 4-To compare the attitude of male students of Government and Private schools towards Geography Education in Calicut district of Kerala State. 5-To compare the attitude of female students of Government and Private schools towards Geography Education in Calicut district of Kerala State. The investigator followed Normative survey method for the present study. For the purpose of data collection, an attitude scale (Attitude towards geography education scale-ATGES) constructed and validated by Abdul Gafoor.K and Sumesh.PM (2012)). The Researcher collected data from five government and four private schools in Calicut district of Kerala state, India. Total 510 students (257 male and 253 female) were selected as the sample for the present study. For the analysis of the collected data, investigator used the mean, standard Deviation and ‘t’ test as statistical techniques. The study reveals that (i) the students of government and private schools significantly differ in respect of their attitude towards Geography Education. (ii) Government school students have better attitude towards Geography Education in Secondary schools of Calicut district when compared to private school students of same district.
Sarma (2013) conduct a study to investigates the attitude of secondary school students towards mathematics. For the study, the investigator has randomly selected 60 students of class X from 5 purposively chosen secondary schools under the SEBA course of greater Guwahati. From each school, 12 students were selected; out of which 6 were female and 6 were male so that the number of female students were 30 and the rest 30 were the male students. Gender wise comparison of attitude was done by using a scale developed by Aiken, named as “AIKEN REVISED MATHS ATTITUDE SCALE”. It has been found that the male students possess higher mean attitude score than their female counterparts. The significance of difference, the unpaired ‘t’–test has been applied and the calculated value was found to be much higher than the table value of ‘t’ at 0.01 level of significance with 58 df.

The average attitude score of the students samples towards mathematics is 67.20. Out of 60 students, 46.67% students have positive attitude; while 53.33% students have a negative attitude towards Mathematics. There exist a “highly significant difference” in attitude towards Mathematics between the male and female students.

Ramachandran et al. (2014) conduct a study to exploring the attitude of boys and girls student of different community towards Social Science.

The research design is an inevitable part of any research. It is a blue print. In the present study, the investigators followed Normative Survey Method. Simple random sampling technique has been utilized by the researcher in order to draw the sample from schools. The sample consisted of 1026 secondary school Standard X students in Pondicherry region. The researcher collected sample from 38 different type of schools (Govt./Self-finance/Govt. Aided) in Pondicherry region. It is found that there is significant difference between boys” and girls” attitude towards social science. Hence, the entire community has been divided into four groups and they are significantly differing in their attitude towards social science.

2.1.2 Vocabulary:

2.1.2.1. Trends of Researches on Vocabulary in the past:

Study on vocabulary dates back to the decade of 1950’s in India. Effect of Different factors on Vocabulary such as the effect of environment (Pasricha & Das, 1959), effect of strata and gender (Bhal, 1975; Shukla, 1976), Socio-economic status (Dasgupta, 1975), regional disparity (Sarasamma, 1984), grade levels (Edke, 1985), on Vocabulary were studied
extensively. Some studies on correlation and other factors were studied during the later part of last century e.g. vocabulary and grammar (Rajgopalan, 1981), vocabulary and text book language (Sharma, 1985).

In international scenario vocabulary study mainly emphasizes the process of development of vocabulary. The studies are all novel and diverse, structural similarity between vocabulary and concept studied by Carrol (1964), impact of alternative concepts leading to misconception and pronunciation studied by Milburn (1972). Strategy of teaching vocabulary should corroborate learning strategy. Van Dalen (1981), Brewer (1985), Thames (1986), studied the impact of vocabulary on achievement and comprehension. Russel (1987) found no significant effect of three dimensional static model on vocabulary learning but scriptural vocabulary is necessary for answering scriptural questions (Cockrum, 1987). Mealy (1989) emphasized the effect of preteaching vocabulary on the acquisition of more vocabulary and comprehension. Philips (1989) showed the importance of reading skill for development of vocabulary.

**Ku Yu-Mir** (2001) and **Alshamrani** (2003) studied the means of improvement of vocabulary. **Schuster** (2000) studied the development of vocabulary among the elementary students. **Rath and Nayak** (1998), Mukherjee, 1997 studied the achievement in Mathematics caste-wise and sex-wise respectively. **Vandalen and Mohr** (1981) examined the relation between vocabulary and achievement. **Jain** (1995) and **De** (1991) examined the relation between vocabulary and achievement in Sanskrit and Physical Science respectively at secondary level. According to Hoff, this finding points to the vital importance of vocabulary because, theoretically, if SES and other SES-related factors measured in those studies were somehow magically fixed, children with larger vocabulary would still perform better in school. A survey of the studies shows that very little work has been done on the vocabulary of Geography. Researches on relation between vocabulary and achievement have been done mostly in primary level. So it is necessary to know, how far the vocabulary helps the achievement in different school subjects particularly Geography, the subject whose Bengali medium vocabulary are of recent origin and are ambiguous in some cases. A study on the vocabulary and achievement seems to be necessary for the students who are pursuing Geography in Bengali medium. The topic for the problem for the study might emerge as “A study on the vocabulary of Geography in relation to Achievement in the Subject at Secondary Level in WB”.
2. 1.2.2. Studies on Vocabulary Abroad:

Zhang and Schumm (2000) compared the effects of keyword instruction and rehearsal instruction on the vocabulary recall and sentence completion of fifth grade English learners. They also compared keyword instruction in Spanish and English. Students were taught 15 words over the course of 1.5 hours of instruction (2 lessons of 45 min. each). Comparison of the keyword and rehearsal instruction conditions in English showed that effects on vocabulary recall and sentence completion were large in favor of the keyword condition (d=1.22 for vocabulary; d=1.68 for sentence completion). Comparison of the two conditions in Spanish showed that effects on vocabulary recall and sentence completion were also large in favor of the keyword instruction condition (d=1.46 for vocabulary; d=0.85 for sentence completion). The effects on vocabulary recall for keyword instruction were small in favor of Spanish instruction (d=0.39); however, the effects on sentence completion for keyword instruction were large in favor of English instruction (d=0.79).

Dobinson (2001) conduct a study which sought to investigate possible links between classroom interaction and the learning of new vocabulary. Twenty-four learners, all but one from Asian backgrounds, were asked to report the new words they could recall immediately after their lessons. They were then tested at two weekly and six weekly intervals for retention of the new vocabulary items. Following this, transcripts of the classroom interaction in each lesson were examined closely to see if connections could be established between teacher-student interaction, student-student interaction and the recall/retention of new vocabulary. The study found both positive and negative links between mentioning new words, repeating new words, focusing upon new words, turn-taking around new words and the recall and retention of new vocabulary. It was also found that learners recalled vocabulary items that the teacher intended to teach and which were made pivotal to the interaction of the lesson as well as items that arose spontaneously during the lesson.

Tschirner (2004) carried a study to investigate Worldwide, foreign language instruction – particularly EFL instruction – starts at increasingly earlier ages and takes up more space in the overall primary and secondary school curricula. As breadth of vocabulary has been identified as one of the most important indicators of reading proficiency and of academic language skills more generally, the present study focuses on vocabulary gain over eight years of English language instruction in secondary schools in Sachsen, a state in Eastern Germany. The study shows that even extended sequences of English instruction of eight years and more
do not necessarily enable students to meet vocabulary thresholds for academic purposes. In addition to describing the vocabulary levels attained by the participants, the paper discusses the relationship between test scores and background data such as length of time spent in English-speaking countries, number of English language books read per year, study strategies, etc.

**Hedrick et al. (2004)** conduct a study to focused on the vocabulary beliefs and instructional practices of social studies teachers in intermediate and middle school grades as well as their use of teachers’ manuals. Using a self-reporting survey to measure these beliefs and practices, we found some discrepancy between what teachers believe about vocabulary learning and their actual instructional practices for supporting vocabulary in teaching social studies. While their reported beliefs appear to mirror what is currently accepted as effective vocabulary instruction, their reported practices reflect more traditional notions like those found in many social studies textbook manuals. While all teachers surveyed held many beliefs and practices in common, three beliefs and three practices were differentially affected by grade level, economic status, or number of years of teacher experience.

**Carlo et al. (2004)** looked at the effects of a researcher-developed 15-week intervention on the word knowledge and reading comprehension skills of fifth grade students. The students’ schools mostly served Spanish-speaking working-class families. The intervention was centered on a variety of texts about immigration. Treatment students were taught 144 words over the course of about 45 hours (60 lessons of 30-45 min. each). Effects on word learning were very large and significant (d= 1.44); effects on depth of vocabulary knowledge and reading comprehension were moderate and significant (d= 0.46 & d= 0.59 respectively). There were no distal effects reported. There were also no significant differences in effects between English learners and English only students.

**Calderón et al. (2005)** studied the effects of an adapted Success for All reading program on the word learning and reading comprehension of Spanish-dominant third grade English learners who were transitioning from Spanish to mainstream English instruction. All participants were reading at a second grade level in Spanish. Treatment students received instruction for 22-25 weeks. Each lesson was about 90 minutes long. The number of words taught and the total number of lessons were not reported. Students were administered standardized tests in both English and Spanish. For the English tests, effects were significant for the passage comprehension and word attack subtests (d=0.16 and d=0.21 respectively),
but were insignificant for the picture vocabulary and letter-word identification subtests. For the Spanish tests, effects were significant for the letter-word identification subtest only (d=0.26).

**Ediger** (2008) studied the Student interest in science may be extended through a rich vocabulary environment. Students need to see words and experience them in an interesting way. A variety of approaches need to be emphasized for students to see words in print and relate them to the concrete (objects and items used in teaching science) as well as the semi-concrete (illustrations, pictures, and pictorial representations of reality). Words are abstractions which convey and communicate ideas. A rich speaking, reading, writing, and listening vocabulary should assist students to become increasingly science literate (See Zales and Unger, 2008).

**Vaughn** et al. (2009) investigated two experimental studies to improve vocabulary knowledge and comprehension were conducted in 7th-grade social studies classes with English language learners (ELLs). Two different non overlapping samples of classes of 7th-grade students (N=381 and N=507) were randomly assigned at the classroom (i.e., section) level to a social studies intervention or to business as usual comparison groups. The number of sections assigned to treatment was 7 and 9 in Experiments 1 and 2, respectively. Eight sections were assigned to comparison in each experiment. In addition, students were randomly assigned to sections prior to assignment of sections to treatment and control. Treatment students received a multi component social studies instruction including explicit vocabulary instruction, use of structured pairing, strategic use of video to build concepts and promote discussion, and use of graphic organizers for approximately 12 weeks daily during social studies class. Findings indicated significant differences in favor of the treatment students on curriculum-based vocabulary and comprehension measures for both experimental studies for all students including students who were ELLs.

**August** et al. (2009) examined the effects of the Quality Science and English Teaching (QuEST) intervention on the vocabulary and science content learning of sixth graders in a high-poverty school district. Treatment students were taught 135 words during 30 hours of instruction (45 lessons lasting 40 min. each). Effects on word learning were significant, but small (d= 0.28); effects on reading comprehension were insignificant and small (d= 0.15). Analyses were conducted at the section (classroom) level. Depth of vocabulary knowledge
was not measured. All measures were researcher-developed. There were no significant differences between English learners and English proficient students.

Proctor et al. (2009) studied the student-level effects of the ICON intervention on the vocabulary and reading comprehension skills of fifth grade students in high-poverty, urban schools with large Latino populations. Treatment students were taught 40 words during about 27 hours of instruction (32 lessons of 50 min. each). Effects on breadth of vocabulary knowledge were large and significant (d=0.84); effects on depth of vocabulary knowledge were even larger and were also significant (d=1.34). All students (treatment and control) experienced significant growth on the standardized measures of vocabulary and comprehension. There were also significant differences between treatment and control students in favor of the ICON students. Spanish-English bilingual students significantly outperformed their monolingual English peers on the vocabulary depth measures. Word Generation Among Fifth Grade Students.

Silverman and Hines (2009) examined the effects of a multimedia-enhanced read-aloud vocabulary intervention on the word and science content learning of Kindergarten through second grade students in a small, diverse, semi-urban school. Students in the intervention were taught 100 words over 27 hours of instruction (36 lessons of 45 min. each). Because there was no effect of condition for non-English learners, effects on word learning were reported only for English learner students. These effects were significant and large at the student level (d=0.97, researcher-developed test; d=0.99, standardized test). There were no significant effects for science content comprehension. Depth of vocabulary knowledge was not measured.

Vaughn et al. (2009) examined the effects of a social studies-based instructional intervention on the word learning and content comprehension of seventh grade English learners, or students who had been designated as limited English proficient within the last three years. There were two studies conducted. All intervention students received about 38 hours of instruction (45 lessons of approx. 50 min. each). The number of words taught was not reported. In both studies, effects on word learning were moderate (Study 1: g=0.53; Study 2: g=0.45), while effects on content comprehension were large (Study 1: g=1.12; Study 2: g=0.99). Effects were analyzed at the student level. All measures were researcher-developed (proximal). Depth of vocabulary was not measured. There were no significant differences between English learners and non-English learners.
Townsend and Collins (2009) studied the effects of the Language Workshop program on middle school English learners’ academic vocabulary knowledge. All students were enrolled in English language development classes in their Southern California school. Students in the program were taught 60 words over the course of about 24 hours of instruction (18-20 lessons of about 72 min. each). Effects on word learning as measured by the researcher-developed assessments were large and significant (d=0.83 average effect for treatment group A and group B); effects on standardized tests were significant, but very small (d=0.18). Analyses were conducted at the treatment group level. Depth of vocabulary knowledge and reading comprehension were not measured. There were no English only students in the study.

ÇELİK et al. (2010) examined vocabulary-learning strategies adopted by Turkish EFL students, specifically the frequencies and helpfulness ratings of strategy use, strategy patterns, as well as their change for students across different language levels. The study involved 95 tertiary level English as a foreign language learners. Data were analyzed statistically and the results indicated that the participants’ general use of vocabulary learning strategies was somewhat inadequate and there was a gap between their use of strategies and related perceptions of strategy usefulness.

Collins (2010) studied the effects of rich vocabulary explanations during read alouds on the word learning of pre-Kindergarten Portuguese-speaking English learners from urban districts serving middle-to-low income families. Treatment students were taught 56 words over the course of 12 weeks (12 sessions; instructional hours not reported) through read alouds with 8 different texts. Effects on target word learning were large and significant at the student level (d=1.39). Depth of vocabulary and reading comprehension were not measured. No standardized tests were used in the study. The study was conducted with English learners only, so there were no English only students.

Lugo-Neris et al. (2010) compared the effects of English-only vocabulary instruction and English-supplemented-with-Spanish vocabulary instruction during English shared book reading. Participants were 4-6 year-old English learners in a summer education program for migrant families. Students were taught 20 words over the course of about 4 hours of instruction (12 lessons of approx. 15-20 min. each). Children in both conditions made large gains in word naming (picture vocabulary in English), receptive vocabulary, and expressive vocabulary. Comparison between Spanish and English instruction showed significant effects
in favor of the Spanish condition only on expressive vocabulary (d=1.08). Depth of vocabulary and reading comprehension were not measured.

**Mancilla-Martinez** (2010) looked at the effects of the Word Generation (WG) intervention on fifth grade students’ word knowledge. Participants were from mainstream classrooms in a predominantly-Latino, low-income, urban school. Treatment students were taught 100 words over the course of 25 hours of instruction (100 lessons lasting 15 min. each). Effects on word learning were large and significant at the student level (d= 1.24; researcher-developed assessment). Depth of vocabulary knowledge and reading comprehension were not measured; all standardized assessments were used for pretests only. Results were not separated for English learners and English proficient students.

**Dalton** et al. (2011) studied the effects of the ICON intervention on the vocabulary learning and reading comprehension of fifth grade students from suburban middle-class districts. Intervention students were taught 40 words during 20 hours of instruction (24 sessions of 50 min. each) through the reading of interactive digital texts. Word learning effects were significant and large on the assessments built into the intervention (d= 1.2) and were significant and moderate on standardized measures (d=0.50); effects on reading comprehension were insignificant and small for both assessments built into the intervention and standardized measures (d=0.37 and d=0.28 respectively). Effects were analyzed at the student level. There were no significant differences between Spanish-English bilingual and monolingual English students.

**Lesaux** et al. (2011) looked at the effects of the ALIAS intervention on the word learning and reading comprehension of sixth grade language minority students from a large urban district in California. A majority of the students were Spanish-speaking. Treatment students were taught 72 words over the course of 54 hours of instruction (72 lessons of 45 min. each). Effects on word learning were small but significant (d=0.39); effects on depth of vocabulary knowledge were also small but insignificant (d=0.15); effects on reading comprehension were small and significant (d=0.20). Analyses were conducted at the student level. There were no effects on distal (standardized) measures of word learning or reading comprehension. The authors did not report any significant differences between language minority and English only students.
Alipour et al. (2012) attempted to investigate the effects of songs on vocabulary learning of upper-level language learners based on their gender. To achieve these purposes, a language proficiency test was administered to 105 male and female students attending English in Ahvaz, Iran in form of multiple-choice items on vocabulary and structure and ultimately 60 upper-level language learners were selected and randomly divided into two homogenous groups as musical and non-musical mode groups. The participants were examined based on a multiple-choice post test which probed into the learners’ vocabulary learning through songs of three different music genres, i.e. pop, country, and rap. The results of a series of t-tests showed that the musical- mode group performed better on both vocabulary recall and retention. The results also indicated better performance of the male learners than the females. The findings suggested that songs are not merely an entertaining tool and they can be utilized as a pedagogic material particularly when it comes to teaching vocabulary.

Sozler (2012) looked at the effects of strategy training on vocabulary development with 26 students studying in an Austrian Public Secondary School located in the Lower part of Austria. In order to be able to measure the effect of the memory strategy training on students’ vocabulary development an achievement test and a questionnaire were conducted as pre, post and long-term retention tests. Results indicated that using memory strategies as a vocabulary learning technique is more effective than using word lists to improve vocabulary level.

Cruz et al. (2012) conduct a study to Visualizing Social Studies Literacy, Teaching Content and Skills to English Language Learners Because of its conceptually dense character, social studies can be difficult to learn. Educators often struggle to find ways to teach higher-order thinking and make academic language and concepts comprehensible for English language learners (ELLs). Visuals may be the key to effective social studies instruction for this student population. Images can be located and obtained easily through the Internet, meshing well with the learning styles of today’s adolescents. This article presents some of the most promising approaches—including historical photographs, paintings and illustrations, maps, propaganda posters, and graphic organizers— that can be used with learners at all levels of language proficiency.

Fazio et al. (2013) carried a study of science vocabulary from a science curriculum standards document (Ministry of Education Ontario, 2007) was classified by morphological developmental level and compared to the grade level topics of the curriculum (grades 1 to 8). Descriptive statistical analyses highlight the complex nature of science vocabulary and the
incompatibilities between the conceptual nature of science vocabulary and the developmental reading levels of elementary students. These findings provide implications for teachers to encourage learning in science through scaffolded vocabulary instruction with multimodal, integrated resources. As learning through multi literacies evolves in the twenty-first century, science-specific vocabulary acquisition should garner renewed interest to ensure that discipline-based texts are reflective of content standards and are accessible to all readers.

Albakri (2013) investigates a method for teaching vocabulary of Biology using English to Arab learners who study English as a foreign language at a private school in Sharjah. The rationale for doing this study is that Arab students who learn all subjects in Arabic find difficulties when they learn the same subjects in English, consequently, a failure in understanding English scientific texts will happen to students. The methodology of teaching vocabulary of Biology in English is expected to enhance students' skills such as reading, writing and speaking to be able to understand scientific texts especially those related to Biology. Also, the study is adapted to suit the needs and motivations of the Arab learners whom I teach and may be suitable in schools that provide academic subjects in Arabic while English is studied as a foreign language. To achieve the purpose of the study a literature review of the main theories related to content and language integrated learning (CLIL) is conducted. Then, data samples are collected from 30 female students of grade 12 who are nearly advanced learners of English and have studied Biology for about three years but in Arabic. The qualitative instruments used to collect data include observations by school supervisors, students' works, and interviews with some of the students who are involved in the study. The results of data analysis prove the positive outcomes of the study which are represented by promoting students to understand English scientific texts, answering questions of comprehension, pronouncing words of the lesson correctly and reading aloud parts of the texts easily.

Goldenberg et al. (2013) looked at the RTI model is the necessity to identify students who are at-risk for reading difficulties. In this article, Jenkins, Hudson, and Johnson (2007) examine the universal screening aspect involved in the first step of the RTI process. Topics explored include whether a one-time screening or PM route is best for identifying students for additional support, attributes of ideal screening measures (criterion validity and classification accuracy), and suggested tools for screening students, based on the research. Three key factors are given for educators to consider when making a determination about a screening measure: 1) select a screening tool based on its intended use, 2) use cut-points that match
local criterion measures, and 3) consider the cost of each tool. To conclude the article, the authors summarize the findings from studies on various screening measures.

The American Biology Teachers’ Association (2013) conduct a study to improve literacy specific to science, vocabulary must be addressed. As Jitendra et al. (2004) pointed out, “because learning vocabulary during independent reading is very inefficient for students with reading difficulties, vocabulary and word learning skills must be taught.” We provide a summary of an investigation to improve the technology-based vocabulary of students with learning disabilities in a freshman high school biology class. The procedures for the project are provided, along with lessons learned about vocabulary instruction of students with disabilities.

Sepeng et al. (2014) investigated to explore Grade 11 learners’ perceptions of the sources of difficulty in comprehending mathematical word problem solving. Issues of using mathematical language, in particular the use of vocabulary knowledge in word problem solving were investigated in relation to learners’ academic performances. The study discussed in this article followed a mixed-methods design. Data collection strategies included a test and a questionnaire with structured and open-ended questions. Analysis of data revealed that learners struggled with defining algebraic terms used in the word problem statements as well as in instructional vocabulary. The learner’s perceptions of the sources of difficulty in comprehending and solving the mathematical word problems revealed that mathematical language impose difficult challenges to academic achievement. A correlation coefficient of $r = 0.53$ between vocabulary knowledge and performance in word problems suggested that knowledge of vocabulary influences success in word problem solving. In brief, the findings of the study reported here indicated that mathematical language appeared to influence learners’ comprehension when solving mathematical word problems.

Kenji (2014) conducted a study to finding the vocabulary predicts how well all children will do in school, regardless of SES: after controlling statistically for SES and SES-related factors (such as nutrition), vocabulary still matters for school achievement. According to Hoff, this finding points to the vital importance of vocabulary because, theoretically, if SES and those other SES-related factors measured in those studies were somehow magically fixed, children with larger vocabularies would still perform better in school.

Stahl et al. (2014) carried a meta-analysis of studies concerned with the effects of vocabulary instruction on the learning of word meanings and on comprehension. This analysis was used
to examine two questions: Does vocabulary instruction have a significant effect on children’s comprehension of text? What types of vocabulary instruction are most effective? In response to the first question, a mean effect size of .97 could be attributed to vocabulary instruction for comprehension of passages containing taught words and of .30 for global measures of comprehension, both of which are significantly different from zero. For the second question, it was suggested that the most effective vocabulary teaching methods included both definitional and contextual information in their programs, involved the students in deeper processing, and gave the students more than one or two exposures to the to-be-learned words. In addition, the mnemonic keyword method was found to have reliable effects on recall of definitions and sentence comprehension.

*Keshta* (2014) investigated the effectiveness of using puzzles in developing tenth graders vocabulary achievement. It also examined the long-term effect of the puzzles on the retention of the vocabulary. The researchers purposively chose 80 tenth graders from Abdul Kareem Al-Aklook secondary School for boys in Dair Al Balah for the experiment and randomly chose two classes from the tenth grade classes. The sample of the study was 80 students, (40) students in each one. Educational Puzzles were used in teaching the experimental group, while the traditional method was used with the control one in the second term of the school year (2012-2013). The experiment lasted for six weeks. After two weeks, a delayed test was administrated to the experimental group to measure retention. The results of the study revealed that there were significant differences in mean scores of vocabulary test in favor of the experimental group in the post application. It also showed that there were no significant differences in mean scores between the post-test and delayed test of the experimental group. And this was due to the method of using puzzles in teaching vocabulary.

2. 1.2.3. Studies on Vocabulary in India:

*Jitendra* et al. (2004) studied on vocabulary instruction involving students with learning disabilities. Nineteen vocabulary studies that comprised 27 investigations were located. Study interventions gleaned from the review included keyword or mnemonic approaches, cognitive strategy instruction (e.g., semantic features analysis), direct instruction (DI), constant time delay (CTD), activity-based methods, and computer-assisted instruction (CAI). While findings for the keyword, cognitive strategy, DI, CTD, and activity-based procedures were generally effective in enhancing vocabulary performance for students with learning disabilities, results for CAI were mixed. The studies are discussed with regard to study
characteristics (e.g., intervention intensity, instructional arrangement). Implications and recommendations for future research and classroom practice in teaching vocabulary to students with learning disabilities are discussed.

Bag (2004) attempts to find out the impact of vocabulary and concept in Life Science on each of the examination performance in Life Science and population awareness of the students in the backward areas like Sundarban of West Bengal, India. The study also attempts to find the closeness of Life Science and population education through the correlation of examination performance in Life Science and population awareness respectively.

The present researcher used a sample for try out of 200 students of class IX, almost at the end of the academic session, selecting them by cluster random sampling device from three schools of the Sundarban areas of West Bengal, India. For final administration of the tests a sample of 625 students of class IX, just promoted to class-X was collected by cluster random sampling technique from 15 high schools of Sundarban area comprising 374 boys, 251 girls, 273 general caste students and 352 scheduled caste students.

The content validity of the tests was assured by expert and checked with related literature. The test- retest reliability coefficients of vocabulary, concept and population awareness tests were 0.66, 0.59 and 0.68 respectively.

Descriptive statistics were calculated, and paired ogives were drawn for each test for the sample frame. The norm for each test was found by converting raw scores into T-scores. For drawing inference statistical technique like random sampling, 2x2 ANOVA designs, t-tests, bivariate correlations, multiple regression equation (after Atken’s method of pivotal condensation), multiple correlation coefficients etc. were considered.

Riccomini et al. (2015) conducted a study on Vocabulary understanding is a major contributor to overall comprehension in many content areas, including mathematics. Effective methods for teaching vocabulary in all content areas are diverse and long standing. Teaching and learning the language of mathematics is vital for the development of mathematical proficiency. Students’ mathematical vocabulary learning is a very important part of their language development and ultimately mathematical proficiency. This article draws on current research-based evidence to (a) provide a rationale for teaching vocabulary, (b) offer a review of research that supports the importance of teaching mathematics vocabulary, and (c) describe specific strategies for teaching mathematics vocabulary. It also addresses implications and the need for future research.
Sripada (2015) looked at the Vocabulary teaching is a neglected area even today in India in spite of researchers suggesting that ‘knowing more words in a new language is knowing the language better’. A quasi-experimental study was carried out in an Engineering college in India for a sample of sixty students and sixty six in two groups. Two strategies were tried out with one group of participants were exposed to incidental vocabulary learning strategy. The other group was exposed to explicit vocabulary learning strategy. Pretest and post test scores were compared for quantitative data analysis and questionnaire was used for qualitative analysis. Both groups showed improvement in their post-test, but explicit vocabulary learning group scored more in post-test than the incidental vocabulary learning group. The effectiveness of the strategy was tested through Z cal test. The findings show that both groups performed well in their post-test, but the explicit teaching group’s post test score was better and the learners also showed more enthusiasm than the incidental vocabulary learning group.

2.1.3 Concept:

2.1.3.1 Trends of Researches on Concept in the past:

Geography in its present form is mostly descriptive. Some people even think that it can be acquired by rote learning. To integrate the different ideas of geography we have to scrutinize whether the descriptive form of geography can be converted to conceptual geography. But such studies at school level are not available in India. Most of the works done are the contributions of the advanced countries of the west. Again these studies are confined to higher education. As reported by De (1991) studies on the concept have been conducted in different school subjects to see the relation between concept-instruction & achievement score (Cruz,1986; Singh,1965), relation between concept levels and grade levels(Sansanwala&Gholap,1986), teacher’s probing questions, formative evaluation and development of concept sex & caste-wise vis-a-vis concept development (Joshi,70; Basu,77,Bodulous,86). Bag(2004) quoted the following researches on concept: Interest and concept development ( Singh,94), inclusion of functional characteristics of a concept (Buchholz, 2000), the development of concepts through constructivist approach (Ibrahim,2001), teaching concepts through concept attainment model (Singh,1990; Bawa,1991; Manocha ,1991), development of concepts through concept mapping (Ledger, 2003).
De (1999) & De and Saha (2000) observed the relation between concept and achievement. The problem of learning conjunctive concepts from a series of positive and negative examples of the concept was considered by Sastry et al. 

[ http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=247899] It was also found that the application of problem-based active learning model affects students’ conceptual development positively and keeps their misconceptions at the lowest level (Akınoğlu and Tandoğan: 2006), interrelation among thought progress in geography, physical and concept development (Unlu, 2008).


2. 1.3.2. Studies on Concept Abroad:

Akınoğlu et al. (2007) looked at the effects of problem-based active learning in science education on students’ academic achievement and concept learning. In the study, both quantitative and qualitative research methods were utilized. Quantitative data were obtained via the pre/post-test, treatment-control groups test model. Qualitative data were obtained via document analysis. The research study was conducted on 50, 7th grade students in 2004-2005 school year, in a public school in Istanbul. The treatment process took 30 class hours in total. In the research, three measurement instruments were used: an achievement test, open-ended questions, and an attitude scale for science education. The reliability coefficient of the achievement test was calculated to be KR20=0.78. Cronbach a value of the attitude scale was 0.89. While the subject matters were taught on the basis of problem-based active learning in the treatment group, traditional teaching methods were employed in the control group. In the face of the data collected and the evaluations made in the research, it was determined that the implementation of problem-based active learning model had positively affected students’ academic achievement and their attitudes towards the science course. It was also found that
the application of problem-based active learning model affects students’ conceptual development positively and keeps their misconceptions at the lowest level.

**AYDIN** (2010) conducted a study to reveal the secondary school students’ perceptions in relation with metaphors about the “geography” concept. A total of 110 students attending to secondary schools in Karabük city center joined the research within the 2009-2010 academic year. Following questions were searched to answer: 1-Which metaphors do secondary school students use to explain the perceptions about the “geography” concept? 2-Under which categories do these metaphors conducted in terms of their common features? The research data were obtained by students’ completing the sentence “Geography is like .....because.........”. Phenomenology design was used in this research and the data were analyzed with the content analysis technique. According to the findings of the research, (a) secondary school students have created 44 different and acceptable metaphors related to the geography concept. (b)These metaphors were classified under 8 different conceptual categories after studied carefully with regard to common qualities. At the end of the research, it was understood that 34% of the secondary school students have a perception that geography is a way of expressing a place , 19% perceived that it is a way of expressing knowledge; 17% perceived geography as a way of expressing life, 9% perceived it as a way of expressing eternity, 8% had a perception that geography is a way of expressing value, 5% perceived it as a way of expressing change and development, 5% perceived it as a way of expressing guidance, and 3% perceived it as a way of expressing obligation. As a result, metaphors can be used as a strong research tool in understanding and explaining the perceptions of secondary school students towards geography.

**Alebiosu & Michael** (2011) investigated the effectiveness of using concept maps in improving the attitude of senior secondary students to Physics. The study, a pre-test, post-test, control group quasi-experimental design involving 2x2x3 factorial matrix also investigated the moderating effects of gender and quantitative ability. Ninety Senior Secondary 2 students of intact classes participated in the study that was carried out in Ibadan, Nigeria using three validated instruments; Teacher Instructional Guide, Quantitative Ability Test, and Physics Attitude Test for data collection. Findings showed that concept mapping method had significant main effect on students’ attitude implying that using concept maps was more effective in improving students’ attitude towards physics. There were no significant 2 way and 3 way interaction effects of variables on attitude. Physics teachers were implored
to adopt the use of concept mapping instructional strategy in physics classes and to disallow
discrimination among male and female low, moderate and high quantitative ability students.

Awofala (2011) investigated the effect of concept mapping strategy on achievement in
mathematics of 88 junior secondary year three Nigerian students. The study adopted a pre-
test, post-test nonequivalent control group quasi-experimental design and data collected for
the study were analysed using the t-test statistic. The experimental group, taught with concept
mapping strategy obtained mean post-test score which was significantly higher than the mean
post-test score of the control group. Results showed that concept mapping is an effective
strategy for teaching and learning mathematics. The strategy is also capable of improving
students’ mastery of content at the higher-order levels of cognition. Based on the findings, the
study recommended that concept mapping should be added to the teaching strategies of
mathematics teachers at the secondary school level.

Udeani and Okafor (2012) investigated the comparative effectiveness of the expository and
concept mapping instructional strategy of presenting secondary school biology concepts to
slow learners. One hundred and twenty four biology slow learners were identified and
randomly assigned to the expository group (n=62) and concept mapping group (n=62) and
respectively taught the concept of photosynthesis. The groups were post-tested after two
weeks of teaching for any significant differences in their biology achievement. Analysis of
post-test scores indicated that the group taught by the concept mapping instructional strategy
performed significantly (p<0.05) better than their expository group counterparts. Specifically,
female slow learners taught with the concept mapping instructional strategy performed
significantly (p<0.05) better than their male counterparts taught by the same method. These
results have implications for biology teacher preparation, especially in the areas of teaching
females and identifying slow learners and adopting effective methods of tackling their
problems.

Ahamed et al. (2012) carried a study in language teaching, method plays prime role. Well
adopted materials without effective method of teaching are practically useless. But with
proper tools and instructional materials, a good teacher encourages each member of the class
to participate directly in the learning experience. The main objectives of the study was to
define the concept attainment model and traditional method and to compare the effectiveness
of concept attainment model and traditional method. In order to achieve the objectives the
students studying the subject teaching of English constituted the population of the study and
the sample of the study consisted of 46 students teacher. On the basis of pre-test scores they were placed in three groups randomly. Each group comprised 23 students. Three hypotheses were framed and tested by applying independent sample t-test and dependent t-test, the results showed that all the students including low achievers and high achievers, who were taught through concept attainment model performed significantly better than their counterparts taught through traditional method.

Gürefe et al. (2014) carried a study to important meaningful and permanent learning in the Secondary School Mathematics Curriculum based constructivist approach. In order to achieve it, firstly, existing information of students about a subject should be determined and lastly, if they have misconceptions related this subject, these misconceptions are determined and removed. One of the effective methods using to determine is Conceptual Change Texts (CCT). The purpose of this study was to provide being learnt “Height” concept by the secondary school fifth class students and to remove misconceptions of these students with CCT. The study was made of the spring semester of the 2012-2013 academic years. Participants were 80 students from two different schools of Ankara. One of these schools was public schools and the other school was private school. A quasi-experimental design was used as the research method. There were two groups being experimental and control in each of schools. CCT was used in the experimental group and traditional instruction was used in the control group. “Height Achievement Test” developed by researchers was applied as pre-test and post-test for the experimental and control group. Difference between scores of experimental group and control groups was analyzed with independent samples t-test. The findings in this study indicated that there was a significant difference between the control and experimental groups in favour of experimental group (p<.05) for the both schools. Findings indicated that lessons being studied with conceptual change texts are more effective than traditional instruction.

Kilinc et al. (2015) conducted a study is to determine whether 8th, 10th, and 11th grade students perform better on social studies questions which include concept or concepts compared to questions which do not include at least one concept. The author used secondary data analysis. The population for this study consists of all 8th, 10th, and 11th grade students enrolled in Texas schools during 2005 - 2006 and 2008 - 2009 educational years. The findings showed that there were significant differences between concept questions and nonconcept questions correctness response percentages for each grade level. Students more often chose correct answer for nonconcept questions than concept questions. Also, the results
indicated that there were significant differences between male and female students on the percentage of correct concept questions for each grade level. The mean percentages of correct concept questions for males were significantly higher than females.

2. 1.3.3. Studies on Concept in India

De (1999) conducted a study on the impact of concept on the achievement of students in Physical Science. The Sample of the study consists of 850 students just promoted to class X in schools located in 24 Parganas Districts of West Bengal and Calcutta. However, complete data – sets of only 794 students are considered for analysis. A standardised concept test in Physical Science developed by De (1991) is used to collect the data. Examination scores are used for representing achievement. Major findings are: (i) In concept test boys are dominant over girls in general and urban boys are dominant over urban girls in particular. (ii) Urban students are superior to rural students of both the genders. (iii) Rural boys are not significantly superior to urban girls. (iv) Achievement in Physical Science is found highly correlated with concept in Physical Science. (v) High scores in concept are high achievers in Physical Science.

Kalani (2009) observed that the achievement of students who were taught by concept attainment model were found to be better than conventional method. Concept attainment model was more effective than conventional method with respect to the scores on attainment on the concept in science. Concept attainment model was more effective than conventional method in the retention of concept.

Rani et al. (2010) looked at the effectiveness of Concept Attainment Model in relation to Traditional Method of teaching. For this purpose sample of 87 students studying in the class VII was taken. Investigator developed Mathematics Concept Understanding Test to assess the Mathematics Concept Understanding of the students. Data was analyzed with the help of One Way Analysis of Covariance. It was found that CAM was effective in terms of Mathematics Concept Understanding of students. Also CAM was found to be more effective in terms of Mathematics Concept Understanding than Traditional Method of teaching mathematics when groups were matched with respect to Pre - Mathematics Concept Understanding.

Sharma et al. (2012) found that the importance of method of teaching cannot be neglected. Some students seek simple method other the complex some are interested in known others in unknown. In this study, researcher studies the effect of concept mapping strategy on the
learning outcome of students of 9th class in relation to intelligence and study habits. The sample for this study comprised 200 students of 9th class one group was randomly assigned to experimental group and other group constituted control group. The student from experimental group was taught through concept mapping strategy. The result of the study shows that concept mapping strategy were significantly superior to traditional method in teaching retention of social Studies.

Sarkar et al. (2013) comprises students (Boys: 15 & Girls:10) of class IX reading in Schools of Barrackpore of 24 Parganas(N), WB. A passage was prepared comprising the experience of a school girl regarding her tour in the hills and mountains of WB and the neighbouring states. The girl had some misconceptions about hills and mountains and so she asked for the clarification from her parents who could not satisfy her immediately. Then 10 items were prepared on the basis of observations and the experiences of the girl. These items were presented to the students. The items were Short Answer (SA) type each consisting of 2 marks. For objective scoring technique the marks were distributed over different value points. Total time for answering the questions was set as 30 minutes. Visual Angle, Stability, Altitude and temperature, Law of constancy, Principle of habitation Water table of hills, Characteristics of hilly river

The diagnostic test (now called as Pretest) was applied on the boys and girls on separate days. The items were scored and the mean and SD of the scores were determined.

The misconceptions were identified and the frequency of occurrence the misconceptions was tabulated in terms of % of the total students. On the basis of identified misconception/Vague conception a remedial lesson was planned for two periods. Necessary TLM was prepared. Methods of teaching included: Group discussion, Teacher pupil interaction, Classroom demonstration. The diagnostic test was re-administered and the Mean & SD of the scores of the final final test were determined.

Results of Analysis were expressed in terms of t (Significance of difference) Different misconceptions/vague conceptions possessed by the students regarding geographical characteristics may be significantly liminated/modified by remedial teaching based on the sharing of experiences and interaction among the students and teachers.
2.1.4 Achievement:

2.1.4.1. Trends of Researches on Achievement in the past:

Achievement refers to performance in school or college in a standardized series of educational tests, Taneja (1998). Achievement refers to what a person has acquired or achieved after the specific training or instruction has been imparted, Singh (1997). Achievement is the end product of all educational endeavors. The main concern of all educational efforts is to see that the learners achieve. Quality control, quality assurance, and of late, total quality management of achievement have increasingly gained the attention of researchers in education. The pioneering work to review the studies on achievement of students, especially the correlates of achievement, was done by Dave (1968). The review identified variates which were socio-economic status, intelligence, and gender. Anand and Dave (1979) found a new set of correlates relating to poor curricular organization. The study of Anand and Padma, (1987) highlighted among other sets of correlates some more categories relating to institution. More and more clusters of variates were identified to explain the variance in the achievement of students. Researchers also started using multivariate techniques for data analysis. As a result of higher level of statistical analysis interpretations of association between the variates and the criterion variable also showed further refinements. Achievement can not be explained by one single model that will be applicable to all, at all stages of education, in all places. The major goal of education is to develop in students a command of substantive knowledge. Achievement of this kind of cognitive mastery is certainly not the only concern of educators, parents, and students, but it the central concern. The study of Anand and Padma (1987) highlighted among other sets of correlates some more categories relating to institution and Scheduled Caste candidates. More and more clusters of variates were identified to explain the variance in the achievement of students. Researchers also started using multivariate techniques for data analysis. As a result of higher level of statistical analysis interpretations of association between the variates and the criterion variable also showed further refinements. Achievement can not be explained by one single model that will be applicable to all, at all stages of education, in all places.

Woolfolk (2007) provide theoretical and empirical insight into the determinants of academic achievement and its assessment. Spinath (2012) emphasizes the importance of academic achievement with regard to different perspectives (such as for individuals and societies, as well as psychological and educational). Hattie (2009), provides an overview of the empirical
findings on academic achievement by distinguishing between individual, home, and scholastic determinants of academic achievement according to theoretical assumptions. However, Spinath 2012 points out that it is more appropriate to speak of “predictors” instead of determinants of academic achievement because the study is mostly cross-sectional in nature. Large-scale scholastic achievement/ assessments such as PISA (ref. OECD 2010) provide an overview of the current state on academic achievement, as these studies have investigated established predictors of academic achievement on an international level. Moreover, the studies have increased the amount of attention paid to the role of family background and the educational system in the development of individual performance. The quality of teaching, in particular, has been emphasized as a predictor of student achievement. Altogether, there are valuable cross-sectional studies investigating many predictors of academic achievement.

2.1.4.2. Studies on Achievement abroad:

De Clerio (Seton Hall University, 2002) carried a study to examine the subject of gender difference in academic achievement in the subject areas of Mathematics, Science, and Language Arts measured on the New Jersey Elementary Schools Proficiency Assessment and the Grade Eight Proficiency Assessment in the Upper.

Male and female scores of the general education population were tested for significance on the assessment given in grade four, and in grade eight. Using a t-test for independent samples, the result indicated that statistically significant difference in socres was found in Language Arts at the fourth and eighth grade levels, with girls scoring significantly higher than boys. Significant difference was also found, favouring boys, at the fourth grade level in Science.

There were significant differences between the fourth and eighth grade test. Girls’ scores significantly increased in Mathematics from fourth to eighth grades and boys’ scores in Science significantly decreased from fourth and eighth grade. The difference in the mean scores of boys and girls decreased in Language Arts, Science and Mathematics from fourth and eighth grade.

Patton (University of Miami, 2003) studied a comparison of Mathematicc achievement by gender, socio – economic status, and ethnicity in departmentalized and self-contained elementary school organizational structures.
A sample of 21,425 fifth grade students from 202 elementary schools in a large, urban public school system participated in the study. The measure of Mathematic achievement was the Florida Comprehensive Assessment Test, Norm Referenced Test. A (2 x 2 x 3 x 2) factorial analysis of variance (ANOVA) design was used.

The four-way ANOVA showed statistically significant main effects for socio-economic status and ethnicity, but not for organizational structures and gender. However, there were significant interactions with organizational structures and ethnicity, organizational structures and gender, organizational structures and socio-economic status, and gender and ethnicity.

Sirin (2005) reviewed the literature on socioeconomic status (SES) and academic achievement. The sample included 101,157 students, 6,871 schools, and 128 school districts gathered from 74 independent samples. The results showed a medium to strong SES–achievement relation. This relation, however, is moderated by the unit, the source, the range of SES variable, and the type of SES–achievement measure. The relation is also contingent upon school level, minority status, and school location. The author conducted a replica of White’s (1982) meta-analysis to see whether the SES–achievement correlation had changed since White’s initial review was published. The results showed a slight decrease in the average correlation.

Lopata et al. (2005) conducted a study to compare the academic achievement of 543 urban 4th- (n=291) and 8th- (n=252) grade students who attended Montessori or traditional education programs. The majority of the sample consisted of minority students (approximately 53 percent), and was considered low income (approximately 67 percent). Students who attended a public Montessori school were compared with students who attended structured magnet, open magnet, and traditional non-magnet public schools on standardized measures of math and language arts. Results of the study failed to support the hypothesis that enrolment in a Montessori school was associated with higher academic achievement.

Lane (2008) conducted a study to describes the academic, social, and behavioral performance of elementary and secondary students with emotional and behavioral disorders (EBD) receiving services in a self-contained school for students with serious behavior problems, with an emphasis on how school adjustment and problem behavior patterns predict academic performance. Results revealed that elementary and secondary group scores were well below
the 25th percentile on reading, math, and written expression measures. Further, a seven variable model representing academic, social, and behavioral domains was able to differentiate between age groups explaining 54% of the variance and correctly classifying 78.26% (n=18) of the elementary students and 84.21% (n=16) of the secondary students. Findings also suggested that behavioral variables (e.g., school adjustment, externalizing, and internalizing) were predictive of broad reading and broad written expression scores, with school adjustment (a protective factor) accounting for the most variance in the three-variable model.

**Al-Ahdal** (2009) studied the development of fourth elementary female pupils thinking and there achievement in Geography, in Jeddah. For this purpose, the researcher prepared a teachers manual which enables the teacher to teach some thinking skills; namely communication, reasoning, relating, describing, comparing, categorizing, fluency and flexibility, within the unit of earth surface features in forth grade elementary stage. She used the Quasi-experimental design. The sample of the study consisting of 57 girl pupils was divided into two groups: The experimental group (31 pupils) and the control group (26 pupils). The Study instrument included the teacher manual, a questionnaire for Geography teachers to determine the thinking skills appropriate for fourth grade elementary school pupils, on achievement test in Geography thinking test. The obtained data was statistically analyses using (SPSS); namely T-test and Eta squared…etc. The study result showed statistically significant differences between the mean scores of the pupils in both groups, in favor of the experimental group. Results also showed that learning thinking across the curriculum (the independent variable) had a great effect on pupils thinking and achievement in Geography.

**Ebenezer et al.** (2009) studied adjustment and achievement in physics of XI standard students with the objective to find out the relationship between adjustment and achievement, and significant difference in the level of adjustment and physics achievement of class XI in terms of their gender and type of school by taking a sample of 331 students (207 males and 124 females) selected through stratified random sampling technique and found that there was no significant relationship between adjustment and achievement of class XI students. **Anderson et al.** (1963) found that emotionally better adjusted male and female students were good on academic achievement.
Sarwar et al. (2010) conducted a study to investigate the relationship between resilience and academic achievement of secondary level students of Gujranwala, Pakistan. A Resilience scale was used to collect data. The sample consisted of 127 secondary students including 52 boys and 75 girls. The data revealed that there was no association between resilience and achievement as measured through marks obtained in 10th grade.

Bashir et al. (2012) conducted a study to examine the effect of co-curricular activities on academic achievements of secondary school students in District Abbottabad. The research is experimental in nature, pre-test Post–test equivalent group design was selected for this purpose. In this study, an achievement test covering four chapters of mathematics and four lessons of English was used as measuring instrument. Depending upon pre-test scores, 200 students of 10th class were divided into two equal groups (n=100) named as experimental group and control group. The experimental group was involved in co-curricular activities and the control group did not participate in any activity beyond the classroom. There were two types of co-curricular activities. First physical i.e., games, athletics and P.T (physical training) etc and the other was debates, drama speeches etc. The experimental group carried out activities for forty minutes daily for twelve weeks. The post-test was administered after twelve weeks. The pre-test and post-test scores of the experimental and control groups served as data for this study. The analysis of data revealed that on the whole, experimental groups showed better performance than controlled group. Hence the ultimate results of the study indicated that co-curricular activities can contribute for enhancing academic achievements of the secondary school students.

Muhammad et al. (2013) conducted a study to explore the effect of parental involvement in the academic achievement of their children. The research was conducted in Allama Iqbal Town, Lahore city. A total of 150 students (boys and girls) of 9th class of secondary schools (public and private) were taken as respondents. Four schools were selected through simple random sampling which include one boy and one girl from each of the public and private schools categories for equal representation of both boy and girl students in the sample frame of present study. Survey questionnaire was used as a tool for data collection. After the analysis of data, it was found that parental involvement has significance effect in better academic performance of their children.
Ihendinihu (2013) carried a study which sought to examine the perennial problem of poor performance of students in Mathematics has remained a matter of great concern to all. Despite the introduction and implementation of different teaching methods/strategies suggested by researchers, the achievements of students in mathematics have persistently been poor, hence the need to explore different instructional approaches. The purpose of this study therefore is to investigate the effect of Mastery Learning Approach on Secondary School students’ achievement in mathematics. The design of the study is quasi-experimental, utilizing pre-test post-test non-equivalent group. A sample of 150 SS1 students was drawn from three (3) Secondary Schools in Umuahia Education Zone of Abia State. Two experimental groups namely Mastery Learning and Collaborative Mastery Learning and a Control Group were each constituted in the three Schools. Data were collected using Mathematics Achievement Test validated by experts and found to have a reliability index of 0.87. Results of data analyses done using mean, standard deviation and ANCOVA indicate that Mastery Learning Approach enhances students’ achievement in Mathematics.

Singh et al. (2013) carried a study which sought to examine a continuation of the curriculum changes introduced in the primary school. These changes have impacted geography subject in the secondary school. Geography becomes a compulsory subject for lower secondary and elective subject at the upper secondary school level. As a result, fewer schools in Malaysia offer geography at this level. Consequently, students in upper secondary school level are shying away from studying geography and the percentage of students who pass the exam is declining each year. Unlike Malaysia, geography is getting more attention in developed countries and has become a key subject at both the primary and secondary levels. As a result, GIS (geographic information system) was widely accepted and implemented in the secondary school geography curriculum. Numerous scholars have reported that the use of GIS as a teaching tool has had a positive impact on students’ engagement and motivation to learn geography. However, GIS has not yet been introduced to secondary school geography in Malaysia with reason of ability, lack of substantive research into the capacity of GIS to support and motivate students to learn geography. Therefore, the aim of this study is to determine the effectiveness of GIS promoting students’ motivation, engagement, and achievement in geography. This article presents a conceptual model based on an extensive review of literature in a related area for assessing the impact of GIS on the motivation and achievement.
Suleman et al. (2014) conducted a study to examine the effects of classroom physical environment on the academic achievement scores of secondary school students. All the students studying at secondary school level in Kohat Division, Pakistan constituted the population of the study. The study was delimited to the students of class 09 of Govt. High School Khurram (Karak). Forty students from class 09 of the same school were selected as sample through simple random sampling technique. The study was experimental in nature and therefore “Pre-test-Post-test Equivalent Groups Design” was used. Statistical data was collected through pre-test and post-test technique. Statistical tools i.e., mean, standard deviation and differences of means were calculated for each group. Significance of the difference between the mean scores of the experimental and control groups was tested at 0.05 level of confidence by applying t-test. After analysis, it was concluded that classroom favourable environment has a significant positive effect on the academic achievement scores of secondary school students. The students of experimental group showed better performance as compared to the students of control group.

Ezeudu et al. (2014) conducted a study to investigated the effects of reflective inquiry instructional technique, a learner-centered and activity-based method of teaching and learning, on achievement in Geography of Nigerian rural and urban secondary school students. The research design used was the pretest posttest quasi-experimental design. One hundred and sixty (160) SSS II students in Kolga Education Zone of Bayelsa State were drawn using stratified simple random sampling technique from four coeducational schools and were tested on the concepts of climate, effects of climatic elements and pressure using a developed 50-item Geography Achievement Test (GAT) whose reliability index was 0.66. One research question and three null hypotheses were formulated to guide the study. Mean and standard deviation were used in answering the research question. While the formulated null hypotheses were tested at 0.05 level of significance using analysis of covariance (ANCOVA). The analysis revealed that urban and rural students exposed to reflective inquiry instructional technique achieved higher in the post-GAT than those exposed to the conventional lecture method. Findings indicate that there was no significant difference in the mean Geography achievement scores between urban and rural students taught Geography with reflective inquiry instructional technique. Results showed that school location is not a significant factor in students’ achievement in GAT. It was therefore recommended that the secondary school Geography curriculum should be revisited and redesigned to incorporate and as well emphasize the use of reflective inquiry instructional
technique; workshops and seminars should also be organized periodically to train and retrain teachers in the use of reflective inquiry technique. Also, Ministry of Education should provide adequate and yet appropriate resource materials to the schools both in rural and urban areas evenly in order to enhance reflective teaching-learning practices to improve students’ academic achievement.

2.1.4.3. Studies in Achievement in India:

A series of studies have been conducted by the NCERT to support the preparation of district educational plans under the District Primary Education Programme (DPEP) (1995). All the studies have shown that the achievement and level of achievement of scheduled castes and scheduled tribes children have been much lower as compared to those of other children attending the same school.

Pal and Natarajan (1997) studied the gender differences on Mathematics achievement. The sample of the study comprised 210 boys and 116 girls of class IV, selected from 5 rural (tribal) schools in Maharashtra and one urban school in the city of Mumbai. Of these, 132 were from rural schools and 194 were from the urban schools. Tools used were Marathi Mathematics Achievement Test developed by NCERT and a questionnaire constructed by the researchers. Major findings are: a comparison across the content revealed that the boys and girls in the urban area had significantly better scores on Mathematics achievement than their counterparts in the rural area.

Mukherjee (1997) conducts a study to find out the gender bias in Mathematics among school students. 770 students covering 385 girls and 385 boys from 24 Parganas who have taken “achievement cum diagnostic test in Mathematics” administered by Centre for Pedagogical Studies in Mathematics were randomly selected from class VI, VIII and X. The scores of the above mentioned test were used as an indication of the students’ Mathematical achievement. It was found that boys appeared to be higher achievers than girls in all the aspects of Mathematics.

Surekha (2008) studied relationship between students’ adjustment and academic achievement and found that boys and girls from private schools were well adjusted and academically performed better than boys and girls from government schools; co-efficient of correlation between students’ adjustment and academic achievement was -0.29, which was significant at 0.01 level, which indicates that low scores in adjustment tend to accompany with high scores in academic achievement.
Mahmood et al. (2011) conducted a study to examined the effects of school type, gender and mathematics anxiety on mathematics achievement. The population consists of 863 males and 789 females from 15 secondary schools of Uttar Pradesh (India). The Mathematics Achievement Test and Mathematics Anxiety Scale were used for data collection, while stepwise multiple regression, ANOVA, t-test and correlation techniques were used for statistical analysis. The results of the analysis showed that among the three independent variables, school type had the greatest influence on mathematics achievement (46%), mathematics anxiety comes second in order while gender showed no significant influence. Moreover, the students of Missionary and A.M.U. schools had highest mathematics achievement, while students of Government and Government Aided schools had lowest achievement scores, moreover scores of students of Muslim and Hindu Managed schools slide in between the range of highest and lowest achievement. Further males reported more mathematics achievement than females and students with low mathematics anxiety had highest achievement scores. Findings also reveal a significant negative correlation (–0.48) between mathematics achievement and mathematics anxiety.

Nazimuddin (2015) conducted a study to examine the effect of Advance organizer Model on achievement of students in geography at school level. For this study 280 students Of IX th standard from Four West Bengal Govt. Aided Bengali medium Schools were selected by random method. For this purpose R.B. Cattle Culture Fair Intelligence Test ‘A’and achievement test in Geography was given to collect date. From this study it was found that Advance organizer Model (AOM) is more effective than traditional lecture method on pupils’ Academic achievement in geography at school level.

Razia (2015) conducted a study to explore the relationship of study habits with socioeconomic status and gender. The research was carried out on a sample of 224 students studying in class IX of Aligarh district. Standardized scales were used to collect the data which in turn was analyzed by applying Mean (M), Standard Deviation (SD), Product moment correlation (r), t-test and ANOVA. Findings revealed that significant difference exists in the study habits of students in relation to gender. Significant and positive relationship exists between study habits and Socioeconomic status but interaction effect of gender and SES was not found on study habits. Finally the study puts forth some suggestions to enhance the study habits of secondary school students.
2.2. Critical Appraisal of the Related Studies:

The present researcher reviewed the related literature, journals, books periodicals, the research reports and finally synthesized the studies in the following way.

2.2.1. Critical Appraisal of the Related Studies on Attitude:

Molly (2006) finds the gender difference in Attitude Towards Science Learning where as Farooq and Shah (2008) finds no such differences in Mathematics Learning. Korkmaz and Karakus (2009) shows efficiency of blended learning over traditional learning for developing students' Attitudes Towards Geography and this blending learning has higher positive correlation with critical thinking. Stefan and Florentina (2010) shows that the students Attitude Towards a subject partly depends on the role of teacher teaching the subject. Mularezyk (2011) shows that attitudes of the students towards Geography is not something perpetual, but it may die down with the curriculum transaction and transformation have a downward trend. Mohamed and Waheed (2011) confirms Farooq and Shah (2008) observation on Attitudes Towards Mathematics independent of sex. Kaya and Boyuk (2011) are also of the opinion that attitude towards subject is independent of sex but grade and age are highly related with attitude. But this is really contradicted by Ozdemir (2012) who opines that grade and class level have no meaningful correlation with gender and class level. Smith and Walker (2012) finds that students attitude towards a subject and their belief about their subjects are correlated. Anwer et al.(2012) find that no significant difference exist between rural and urban students regarding Attitude Towards Science subjects. Kubiatko et al. (2012) finds no importance of sex difference for developing Attitude Towards Geography, but grade has some influence. Ephias et al.(2013) find that sometimes attitude towards a subject declines with grade level career aspirations and knowledge about the arrives at a controversial conclusion that attitude and achievement do not go together. But Sabita Mahanta (2012) does not seen eye to eye with Mubeen(2013) in the relation between attitude and achievement. However Sudhakar et al.(2013) suggests Attitude Towards Geography is more linked with study involvement if not achieved. Sumesh (2013) shows Govt. school students display better attitude in comparison to other forms of schools. Bidula Sarma (2013) the only researcher to find gender difference in Attitude Towards Mathematics among the students. Ramachandran (2014) finds the influence of social stratification among the students on Attitude Towards Social Science which of course include Geography. Zain
(2010) emphasizes importance of practical work, cooperative work, work outside school have
tremendous impact on development of positive Attitude Towards a Subject.

There have been number of studies on attitude of the school students towards school subjects
including science and social science. The researchers are attached with different countries
from India to eastern Europe including Africa. They have analyzed attitude of the students
towards a curricular subject from the view point of sex, age, grade, social strata, habitat
achievement, teacher involvement, diversity in teaching and learning etc. They have worked
for different school subjects Science, Mathematics, Geography, and Social Science. Conflict
arises as to the importance of sex, age, critical thinking, teacher involvement, diversity in
teaching learning etc. So, there is a scope of inclusion of Geography which is a social science
as a school subject and attitude as a determiner of educational achievement.

2.2.2. Critical Appraisal of the Related Studies on Vocabulary:

These studies comprised sample throughout the world with more samples from the
Spanish speaking world. Vocabulary which is more emphasized in class room transaction are
well remembered by the children (Dobinson, 2001). Time of teaching not at all a guarantee
for retention of vocabulary(Tschirner,2004). Speaking, reading, writing and listening
vocabulary assist students to learn more vocabulary in a subject (Edigar, 2008). The intensity
of the use of vocabulary depends on the frequency of use of the vocabulary (Celik,2010).
Learning of vocabulary depends upon repeated practice but in depth knowledge of
vocabulary could not be ensured in this process (Collins,2010). Children’s picture
vocabulary, receptive vocabulary and expressive vocabulary may be developed in a relatively
shorter time (Lugo Neris, 2010). Vocabulary learning through songs has lasting effect
(Alipour,2012). Using memory strategies as a vocabulary learning technique is more
effective than using word lists to improve vocabulary level (Sozler, 2012). Teaching
cooperation in learning vocabulary by the students may accelerate vocabulary learning
(Fazio,2013). Vocabulary knowledge helps problem solving in science subjects
(Sepeng,2014). Socio Economic Status (SES) is also related to vocabulary development of the
children reported by Kenji,2014. Word meaning helps children to acquire vocabulary in an
effective way (Stahl,2014). The use of puzzles has a significant effect on the long term
retention of vocabulary (Keshta, 2014). Vocabulary development is an essential part of
comprehension of a subject of learning (Riccomini,2015). Planned vocabulary learning
yields better results in comparison to incidental vocabulary learning (Sripada, 2015).
The researchers studied different types of vocabulary learning such as picture vocabulary, receptive vocabulary, expressive vocabulary, explicit vocabulary, and incidental vocabulary. The effect of duration of teaching and learning, effect of short term and long term memory on vocabulary acquisition, effect of musical method etc. have been studied. More importance have been given on long term memorization of vocabulary than short term one.

In these studies of linguistic vocabulary more emphasis is given on vocabulary in language learning. Beyond that only mathematical vocabulary and its implication have been studied at a length.

These studies did not ever touch the fringe of social studies particularly Geography. Geography being interdisciplinary subject, its vocabulary are not always straight forward. These studies did not given much importance on the different prominent level of population of school children. For the development of vocabulary in Geography all out efforts should be taken to develop Geography vocabulary among the children of different grades.

So, a study on vocabulary in Geography is essential in the teaching learning system of 21\textsuperscript{st} century.

2.2.3. Critical Appraisal of the Related Studied on Concept :


Retention of concept is better when students learn through concept attainment than conventional method(Kalani, 2009). Retention of concepts of social study may be better when taught through concept mapping strategy than traditional method(Sharma et al., 2012). Concept Attainment model of teaching yields better results in comparison to traditional method (Rani, 2010; Ahamed, 2012).

Removal of misconception of the students can be done by interaction with teacher and group discussion – the so called constructivist approach (Sarkar et al., 2013). Lessons
being studied with “Conceptual Change Texts” are more effective than traditional instruction (Gurefe, 2014).

The students score better in non concept questions than on concept questions, girls have lower achievement in concept questions in comparison to boys (Kilinc, 2015).

These studies on concept were done India, West Asia and European countries. The studies included problem based activities, misconception, metaphor for Geographical concept, concept attainment model, concept mapping strategy, concept change texts, concept and non concept questions, removal of misconception etc. have been studied.

These studies did not focus the logical characteristics of concepts which Bruner (1956) mentioned as conjunctive, disjunctive and relational concept. These concepts have been widely used in Science subjects in last century but very small number of studies in the present century. More particularly Bruner type concepts have been rarely used in Geography. So, the study on Bruner’s concept in Geography is essential.

2.2.4. Critical Appraisal of the Related Studied on Achievement :

At present a number of researches have been attempted world wide to find the impact of gender differences, socio-economic status, ethnicity, anxiety, organizational structure, and strata on academic achievement.

Achievement depends upon sex, grade and the nature of the subjects (De Clerio, 2002). Socio economic status, ethnicity have remarkable effect on the achievement of the students. The type of management of the school also leaves effect on the achievement (Patton, 2003). Socio economic status and its different factors also have an impact on achievement. Ethnic groups, minority status and location of school have impact on school achievement (Sirin, 2005).

Management has significant effect on the elementary school achievement. Only the name of the school such as Montessori and Kindergarten can not fetch unless there is strong structured management (Lopata, 2005). Adjustment with school environment is an important factor for school achievement (Lane, 2008). Students of private schools are more adjusted with school environment and have better academic performance in comparison to other types of schools(Surekha, 2008). A learning by thinking and experimental groups in experimental research do better in achievement test(Al-Ahdel, 2009). In higher classes as in XI (eleven) adjustment with school environment do not have significant effect on achievement (Ebenezer,
Resilience has no definite connection with achievement (Sarwar, 2010). In Missionary schools achievement is better and boys’ achievement is better than that of girls. It was further seen that low anxiety yields more than highly anxious students (Mahood, 2011). Experimental groups has better performance in achievement (Bashir, 2012). Parental involvement has significant effect on better academic performance of the children (Muhammad, 2013). Masterly learning approach has positive significant effects on students achievement (Ihendinhu, 2013). Geography achievement of the students are increasing through out the world, except some backward countries where there is no scope of research in Geography Education (Singh, 2013). Favourable class room environment has a significant positive effect on the academic achievement on the students. Experimental group of students show better performance in achievement in comparison to the control group (Suleman, 2014). School location has no significant effect on academic achievement when method of teaching is superior (Ezeudu, 2014). Advance Organizer Model is suitable for better learning out come (Nazimuddin, 2015). Significant and positive relationship exists among study habits, socio economic status and academic achievement (Razia, 2015).

The researches reveal that the academic achievement of the students depends on following factors – i) Sex, grade level, socio economic status, ethnicity, adjustment and anxiety level.

ii) school location, management etc.

iii) method of teaching, participatory teaching, class room environment, parental involvement, mastery learning approach and experimental method.

iv) nature of subjects.

Effects on Attitude, Vocabulary and Concept on achievement of different subjects had not been widely studied. So a study on achievement in relation to Attitude, Vocabulary and Concept is most worthwhile in this connection.

2.3. The Present Problem against the backdrop of previous studies:

Three determinants of good teaching -learning as well as achievement in Geography came to the forefront as a result of reshuffle of Geography education at secondary level in West Bengal. These are: development of proper ‘Attitude of the students towards Geography, Geographical Vocabulary and Concept-based content”. It has, therefore, been incumbent upon the researchers on Geography education to study these variables for nurturing and
development of the education. This can be done in two ways: 1) to study the ability of the students in terms of these variables & 2) to study the relationship of these variables with the scholastic achievement of the students in Geography. Sustained and comprehensive researches are always necessary in this respect. But quality of researches on these aspects seems to be deficient in our state as well as in country. The researches so long done on Geography education are more concerned with teaching-learning, materials available in schools e.g. availability of geography museums, teaching aids, teachers’ orientation for teaching Geography etc. (Patil, 1985; Jain, 1987; Gupta, 1989). Patil and Gupta also found the futility of lecture method in teaching Geography in Indian context. No researches were found to have been carried in affective domain for learning Geography. The researches in ‘affective’ domain were inadequate and severely limited. Again the researches remained almost silent about the analysis and development of curriculum and also achievement of the students in Geography. No researches were attempted to see whether Geography alleged to be ‘descriptive’ has optimum logical basis for the intellectual development of the students.

For development of teaching-learning in Geography, the affective domains of both concerned teachers and the students were researched abroad. Tomal (2000), Norris-Holt (2002) & Walker (2006) worked on attitude of the students towards Geography through curricular and co curricular activities.


Aarti Kalani (2009) studied the effect of concept attainment model (CAM) on achievement of students. Rani & Kaur (2010) find that CAM is effective in terms of Conceptual Understanding of students.

In the light of above deliberations, the present study, therefore, involves three independent variables in Geography related to school education: Attitude towards Geography, Vocabulary in Geography & Concepts in Geography and the dependent variable: Achievement in Geography (the examination performance of the students in Geography). The inter correlations of these sets of scores will be found and their impact on an achievement in Geography will also be studied. Thus the problem of the study might emerges which we have stated as “ATTITUDE, VOCABULARY AND CONCEPTS IN RELATION TO ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN GEOGRAPHY”.

2.4 The Statement of the Assumptions:

(1) In the literature reviewed above, there is no conclusive evidence regarding superiority between boys and girls. In some of the studies, there are some controversies regarding the difference among the students in respect of their sex & habitat. So, it is better to assume, while writing the hypotheses for the study, the null hypotheses. Further the sample is drawn from the same population. So, there is no prima facie reason to impose any difference among the different groups involve in the study. So, null hypotheses might be used for all the hypotheses noted below regarding the independent variables.

(2) t-test used here is two-tailed.

(3) Homogeneity of variance

(4) Normal distribution of scores on all the test.

(5) Urban area is under municipality, notified area, corporation

(6) Rural area is under Gram Panchayats

(7) SPSS-17 computations are treated as reliable.

(8) Significance level \(p \leq 0.05\) has been considered for all the cases of decision taking.
2.5 Objectives of the Present study: In addition to the preparation & standardization of 4 (four) tools for the study, the present researcher intends to adopt following objectives for the study:

2.5.1 To find the significance of difference of mean scores on Attitude towards Geography Test gender-wise & strata-wise

2.5.2 To find the significance of difference of mean scores on Vocabulary Test in Geography gender-wise & strata-wise

2.5.3 To find the significance of difference of mean scores on Concept Test in Geography gender-wise & strata-wise

2.5.4 To identify the impact of Independent Variable

1. Attitude towards Geography on the Dependent Variable Achievement in Geography

2. Vocabulary in Geography on the Dependent Variable Achievement in Geography

3. Concept in Geography on the Dependent Variable Achievement in Geography

2.5.5 To find the inter correlation among the Independent Variables: Attitude towards Geography, Vocabulary in Geography and Concept in Geography & the Dependent variable(Achievement in Geography)

2.5.6 To predict the achievement scores in Geography by the scores on the Independent Variables: Attitude, Vocabulary and Concept.

2.6 Hypotheses (H_01 to H_03) of the Study:

(Null Hypotheses on Attitude towards Geography)

H_01: The boys and girls do not differ significantly in the mean scores in Attitude towards Geography

H_02: The urban and rural students do not differ significantly in the mean scores in Attitude towards Geography

H_03: The urban boys and urban girls do not differ significantly in the mean scores in Attitude towards Geography
**Null Hypotheses on Attitude in Geography**

**H₀₄**: The rural boys and rural girls do not differ significantly in the mean scores in Attitude towards Geography

**H₀₅**: The urban boys and rural boys do not differ significantly in the mean scores in Attitude towards Geography

**H₀₆**: The urban girls and rural girls do not differ significantly in the mean scores in Attitude towards Geography

**Null Hypotheses on Vocabulary in Geography**

**H₀₇**: The boys and girls do not differ significantly in the mean Vocabulary scores in Geography

**H₀₈**: The urban and rural students do not differ significantly in the mean Vocabulary scores in Geography

**H₀₉**: The urban boys and urban girls do not differ significantly in the mean Vocabulary scores in Geography

**H₀₁₀**: The rural boys and rural girls do not differ significantly in the mean Vocabulary scores in Geography

**H₀₁₁**: The urban boys and rural boys do not differ significantly in the mean Vocabulary scores in Geography

**H₀₁₂**: The urban girls and rural girls do not differ significantly in the mean Vocabulary scores in Geography

**Null Hypotheses on Concepts in Geography**

**H₀₁₃**: The boys and girls do not differ significantly in the mean concept scores in Geography

**H₀₁₄**: The urban and rural students do not differ significantly in the mean concept scores in Geography

**H₀₁₅**: The urban boys and urban girls do not differ significantly in the mean concept scores in Geography

**H₀₁₆**: The rural boys and rural girls do not differ significantly in the mean concept scores in Geography

**H₀₁₇**: The urban boys and rural boys do not differ significantly in the mean concept scores in Geography

**H₀₁₈**: The urban girls and rural girls do not differ significantly in the mean concept scores in Geography
(Null Hypotheses on the impact of Independent Variables on Dependent Variable)

H\textsubscript{019}: High and Low Scorer- Groups on Attitude towards Geography do not differ significantly in their mean Achievement scores in Geography.

H\textsubscript{020}: High and Low Scorer- Groups on Vocabulary do not differ significantly in their mean Achievement scores in Geography.

H\textsubscript{021}: High and Low Scorer- Groups on Concepts do not differ significantly in their mean Achievement scores in Geography.

(Null Hypotheses on Inter Correlations)

H\textsubscript{022}: There is no significant inter correlation among the dependent and independent variables.

(Null Hypotheses on Prediction of Scores of Dependent Variable by Independent ones)

H\textsubscript{023}: The scores of dependent variable in Geography (Achievement) cannot be predicted by the scores of independent variables (Attitude, Vocabulary & Concept).

2.7. The Terms Defined:


2.7.1.1 Attitude towards geography: It indicates liking of the students for a school subject in terms of some values: utilitarian, intellectual, vocational, recreational & moral.

For preparing the Geography Attitude Test (GAT), the investigator used the definition of Geography attitude as an opinion taken with respect to a psychological object in the field of Geography (Richard W. Moore,1970). So the Geography attitude has been defined as a common attitude towards the universe of Geography content and being assessed in terms of its favourableness or unfavourableness estimated from the scores obtained by the students on a test of attitude Test towards Geography.

A student, having attitude towards Geography:

(1) likes Geography teachers,

(2) affords more time in learning Geography,
(3) prefers geography among all the school subjects,
(4) likes to know the physical structure of the world outside the home and school,
(5) spare more time in recreation in Geography,
(6) intends to take higher studies in geography,
(7) intends to make career with Geography,
(8) appreciates contributions of geography in social life,
(9) intends to make association with geography lovers,
(10) upholds geography in writing articles.


2.7.1.2. Operational Definition of Vocabulary in Geography: Chambers 20th Century Dictionary (1989): Vocabulary refers to words used in a (particular) science or art: The signs or symbols used in any nonverbal type of communication, a collection of forms used in an art or by a particular practitioner of an art. Geography vocabulary comprises: some words, symbols, abbreviations, notations particularly used for description, explanation & communication.

A person having sound knowledge of vocabulary in Geography:

(1) can use suitable words to describe precisely a phenomenon or an object of geography,
(2) can substitute a group of words (phrase) by a single appropriate word,
(3) can use synonym, antonym,
(4) can modify a word for using in geography,
(5) can identify geography term out of so many distractors,
(6) can label a geographical figure with suitable word,
(7) Can use symbols, signs abbreviations to depict the different types of structure, composition, elevation or distance.
Definition of Vocabulary:

In verbal learning and communication vocabulary plays an important role. Though the definition of vocabulary is mainly lexical, its characteristics may be found in the work of different linguists psychologists and educationists.

According to the Advanced Learner’s Dictionary of Current English, English Language Book Society and Oxford University Press. Second Edition (1963), “book containing a list of words used in a book etc. usually with definitions or translations. (range of) words known to or used by a person in a trade, profession, etc.”

According to the Concise Oxford dictionary of Current English, Oxford University press, Fifth Edition (1964) “the word used in a language or usually in a particular book or branch of science etc. or by a particular author”.

Webster’s Third New International Dictionary of the English Language Unabridged (1966) observes vocabulary as –

(i) a list or collection of words and phrases usually alphabetically arranged, explained and defined; specific : a list in foreign language text book of words and phrases taught and used: Lexicon ;

(ii) a sum or stock of words employed by a language groups; individual or work, or in relation to a subject : scope of the language;

(iii) a set or list of nonverbal symbols;

(iv) a set of expressive forms used in an art : the range of elements composing a formal medium or artistic creation; and

(v) a range of means by which one can apprehend experiences or express ideas or feelings.

According to Shorter Oxford English Dictionary (1970), vocabulary is :

i) a collection or list of words with brief explanations of their meanings.

ii) the range of language of a particular person, class profession or the like.

iii) the sum of words or aggregate of words composing a language.

According to the Oxford Dictionary of current English (1987), vocabulary is : words used by a language or book of branch of science or author, list of these arranged
alphabetically with definitions or translations: range of words known to an individual (his vocabulary is limited), set of artistic or stylistic forms or techniques.

According to Chambers 20th Century Dictionary (1989), vocabulary is a list of words explained in alphabetical order: a dictionary: a list of words: the words of a language: the words known to use by a particular person: the words used in a (particular) science or art: the signs or symbols used in any noverbal type of communication, e.g. in computer technology: a collection of forms used in any art or by a particular practitioner of an art.

According to Oxford Advanced Learner’s Dictionary of Current English, Oxford University Press, Sixth Edition (2000), vocabulary means – all the words that a person knows or uses; all the words in a particular language; the words that people use when they are talking about a particular subject and a list of words with their meaning especially in a book for learning a foreign language.

The analyses of above definitions lead one to conclude that

i) Vocabulary of a subject or a branch of knowledge consists of words characteristics of that subject or the branch of knowledge. When a word is included in the vocabulary of a subject, it has some unique meaning or explanation. Sometimes a word may be common to the vocabulary or more than one subject, but its meaning does not necessarily remain same in those subjects.

ii) Vocabulary is a range of means by which one can apprehend experience or express ideas or feelings. In other words, vocabulary is helpful at the onset of a thinking process. In that sense vocabulary is intimately related to thoughts.

iii) Vocabulary may not always consist of verbal words. It may also sometimes, consist of some non-verbal symbols. No doubt these symbols are standardised in a particular subject.

iv) Vocabulary consists not only of words but also phrases. Sometimes compound words or group of words constitute a vocabulary. A group of word or a compound word is most often necessary to explain an idea on an event where a single word is found to be inadequate.

v) A person’s vocabulary is that which he is capable of using in different situations i.e. in acquiring knowledge, in social communication, expression of ideas, feelings etc.
Many vocabulary studies that are concerned with word meanings, especially in depth, are closely related to the knowledge of concepts (Russel 1960). Word (without meaning) in a vocabulary, therefore, is not the concept itself, but only a symbol Eyesenck and Meili (1972) or concept label (Jurd 1978).

Carrol (1964) considers vocabulary knowledge to be knowledge in the same structural form as concept. He relating concepts, words and word meaning to one another in the following way: words in a language can be thought of as a series of spoken or written entities. There are meanings for words that can be considered a standard of communicative behavior that is shared by those who speak a language.

Knowing a word in a Vocabulary:

Troike (1982) maintains that knowing a word fully means at least knowing (i) its pronunciation (ii) its primary referential meaning (its denotation), (iii) its range of application, (iv) its associational significance (its connotations), (v) its metaphoric uses, (vi) its categorical membership (feature its shares with other groups of words), (vii) its grammatical and semantic collocational or concurrent relationships with other words or word classes, (viii) its metalinguistic existence (e.g. how it is spelled, how to refer it, its paradigmatic membership), and (ix) its sociolinguistic or pragmatic properties (e.g. whether it is taboo word, whether it is a ‘hand word’ whether it is appropriate for intimate use).

However, the knowledge of a word can never be complete. In different encounters in his life situation a man constantly renews and revises his knowledge of words.

Scientific Vocabulary

The Scientific vocabulary has essentially the following characteristics:

(A) Insistence on definition, and

(B) Suppression of Peripheral meaning

They may be described as follows:

A) Insistence on definitions:

Each term used in science a definition. In natural science a term may be concrete or abstract, but the definition of the term requires a universal acceptance. The organs, processes
or events represented by the term should be demonstrable. In Geography different notations (symbol or abbreviations) are also used in lieu of words.

**B) Suppression of peripheral meaning:**

The scientific word usually have two types of meaning:

(i) Denotative meaning

(ii) Connotative meaning

Denotative or extensional or referent meaning (how it might be defined) is very clear cut, and indicates the essential meaning. Connotative or associational meaning indicates subsidiary meaning. Some of these connotations give it added reality. In science emotive connotation of word has no role to play.

There are some other characteristics of scientific vocabulary:

i) when a vocabulary contains more than one word to represent a concept, the one closest to the concept is generally preferred and mentioned. (ii) moreover, popularity of a word is taken into consideration irrespective of its linguistic derivation.

**Knowledge of Scientific Vocabulary**

In the lower classes a student learns Geography through observation and some activities. He learns about his environment only. At this stage he is required to be taught to verbalise such terms as atmosphere, lithosphere, hydrosphere, earthquake etc, even if he does not understand the concepts which these terms represent. At the later stage he most often acquires scientific knowledge through reading, listening, discussion, and he is required to communicate his knowledge through verbal and written symbols. At this stage he is required to develop a sound knowledge of vocabulary comprising both word knowledge and meaning of words in different context.

The student’s knowledge of a word becomes almost complete when he is able to master the meaning of the word and can interchangeably use words having same meaning. The students having mastery in vocabulary can use a single word substituting a phrase or a group of words and vice-versa. Such substitution is often necessary for the sake of clarity, contextual demand or brevity. Students with sound background of vocabulary in Geography are able to identify the word having a meaning opposite to that of a given one. The former world is the antonyms of the later and vice-versa. Antonimity is a regular and natural feature
of a semantic language, and can be defined fairly precisely. The antonyms are sometimes two words distinctly differing in structure and pronunciation. Some antonyms are formed by adding or eliminating or changing suffix or prefix. Antonyms are necessary to a student to express or depict a reverse process.

It is expected also that students in science develop capacity of distinguishing Geography related scientific words from purely literary words. They often prove their acquaintance with scientific words by playing word games, cross-word puzzles in science magazines, correcting words, collecting and choosing words. Thus Geography related word completion and word recognition (or identification) from an integral part of learning science. In Geography symbols and abbreviations are used which constitute a system of language quite expressive, exact and concise, and unique in character.

The students learning Geography have the scope to learn such language, and are able to interpreted different symbols and abbreviations through verbal language and vice versa.

In Geography students have to draw the diagram and the different parts of the diagram necessary to be pointing out or labeling by the definite scientific terms. Thus labeling the scientific diagram forms another significant part of Geography education.

The present investigator after considering all sides of vocabulary and vocabulary in Geography in particular, and carefully studying the literature, journals and periodicals, identified the following Dimensions of the Vocabulary Test which are as follows:

i) Substitution of a group of words by a Single Word.

ii) Antonyms

iii) Word Completion

iv) Word Identification

vi) Interpretation of Abbreviations as Symeblos.

vii) Labelling of Diagrams

The Vocabulary of Science in general and Geography in Particular are derived from classical language (e.g. Greek and Latin), modern language of each country. Though the vocabularies coined from the classical languages have an edge over others owing to its international acceptance, the vocabularies derived from the native languages or dialect give
an easy accessibility of the secondary students to the concept as well as the subject if they conform with the norms of vocabulary formation (such as condition of Transparency, Currency, Competence, Precision and condition of Conceptuality).

2.7.1.3 Operational Definition of Concepts in Geography: Concept indicates categories of objects or ideas having common characteristics and the concepts can be demonstrated. The characteristics vary in number and quality. Sood (1989), Bruner et al.(1956) furnished three types of concepts- Conjunctive, Disjunctive & Relational.

Conjunctive Concept Sood’s definition corresponds to the first type of definition of Bruner where the salient features/ characteristics are independent and jointly present in the concept. A Conjunctive Concept is an embodiment of salient but independent features. In Physical geography there are multitude of concepts like : day, night, desert, mountain, rock, glacier, river , ocean, sea and so on. There are different rivers but all rivers have some independent but common characteristics. When a student can mention the characteristics jointly , he understands the concept ‘river’.

Pictorially-

\[
\text{A conjunctive concept} = \text{feature}_1 + \text{feature}_2 + \text{feature}_3 + \text{feature}_4 + \ldots
\]

Disjunctive concepts- Disjunctive Concept have two or more salient but independent features. These features can individually or jointly indicate the Concept.

Pictorially-

\[
\text{A Disjunctive concept} = \text{feature}_1 \& \text{feature}_2 \& \text{feature}_3 \& \text{feature}_4 \& \ldots
\]
**Relational concept:** Relational Concept (RC) is a condition that connects or integrates two or more phenomena, process, ideas or objects which are apparently related or unrelated.

In the above diagram 1,2,3……are apparently related/unrelated objects. But a condition brings them under the same umbrella (RC).

**Definition of Concept:**

Any meaningful learning of Geography and other branches of knowledge mostly involves concept, concept formation and concept attainment. Human learning differs fundamentally from the learning of animals in its massive use of concepts. A few importance definitions are outlines below.

**The Pocket Oxford Dictionary (1961)** defines concept as ‘idea of attributes common to a class of things.

According to the **Webster’s New International Dictionary of the English Language unabridged (1966)**, concept is something conceived in mind: thought, ideas, notion as (a) philos, a general or abstract idea: a universal nation: (i) the resultant of a generalizing mental operation: a generic mental image abstracted from percepts, a directly intuited object of thought; (ii) a theoretical construct; (b) Logic: an idea comprehending the essential attributes of a class or logical species.

According to the **Encyclopedia of Psychology (1972)**, concept is the categorisation of objects and events on the basis of features and relationships which are either common to objects perceived or are judged to be so by the individual. Usually a concept is a symbol, a name. The word, therefore, is not concept itself but only a symbol.
According to Oxford Advanced Learner’s Dictionary of Current English, Oxford University Press, Sixth Edition (2000), concept means an idea or a principle that is connected with something ABSTRACT.

According to Piaget (1952), schemas refer to classes of total acts, which are distinct from one another, and yet share common features. Although the term schemas and concepts are not completely interchangeable, Piaget has recognised certain similarity between them:

The scheme as it appears, constitutes a sort of sensory motor concept or more broadly, the motor equivalent of a system of relations or class.

According to Osgood (1953): A concept is the acquisition of a mediating process that can be abstracted from the stimulus objects.

Bruner et al (1956) use the term conceptualising and categorising interchangeably. According to them, to categorise is to render discriminably different things equivalent, to group the objects and events and people around us into classes, and to respond to them in terms of their class membership rather than their uniqueness.

Dressel (1960) defines concept as abstraction which organizes the world objects and events into small number of categories.

Klausmeir (1960) states that a concept is the meaning or meanings that the individual associates with words, other signs, and direct sensory experiences, and meaning are based upon discriminations and associations.

In a later version Klausmeir (1985) describes concept as a mental tool with which one thinks. Concepts as a mental construct of an individual consists of his organized information about one or more entities – objects, events, ideas or processes – that enable the individual to other entities or class of entities. Concept as a public entity corresponds to the meaning of the word that names concept.

According to Hunt (1962), a concept is the label of a set of things that has something in common, a situation in which a subject learns to make an identifying response to members of a set of not completely identical stimuli.

Caorrol (1964) defined concept exists whenever two or more distinguishable objects or events have been grouped or classified together and set apart from other objects on the basis of common features or property characteristic of each. In a later version Bourne
(1974) extends his definition to include the relationship between critical features as integral to the concept. Thus, concept is viewed as relationship which governs the set of criteria features of properties.

According to Archer (1969), a concept is simply the label of a set of things that has some thing in common. A concept is different from a fact, a principle and a generalization.

According to Jurd (1978), extensively a concept involves enumeration of all those examples seen as belonging to specified group. Sometimes it may involve the matching of new objects with others in the group. Intensively a concept is defined by the statement of essential similarities between objects belonging to a group, such statement including both the relevant attributes and relationship between them.

According to Wickelegren (1979), a concept is a basic unit of information that represents a category. He goes further to state that a concept grows out of some other concepts, and as such, it is difficult to determine whether there exist some basic (i.e. primitives, unanalysable) concepts.

Drever in his Psychological Dictionary states that concept is:

that type or level of cognitive process which is characterised by the thinking of qualities, aspects and relations of objects at which therefore, comparison, generalization, distraction and responding become possible, of which language is the great instrument and the product of concept normally represented by a word.

Bourne Jr and Ekstrand (1985) observe: (1) a concept can best be thought of as basic unit of knowledge; (2) a concept is a mental quantum. In psychology a concept is a bundle or packet of knowledge (information). These packets of knowledge are highly structured both within themselves and among one another.

Selevens (1993) brings about the meaning of concept. A concept is a mental representation or a mental pictures of some object or some experience. A concept is a basic limit of information that represents a category. A concept consists of an individual’s organized information about one or more things, objects, events, ideas, process or relations that enable the individual to discriminate a particular thing or class of things and also relate it to other things or classes of things.
De Cecco (1988) maintains that a concept is a stimuli which have common characteristics. The stimuli are objects, events or persons.

According to Petrovsky and Yaroshevsky (1987), concept refers to a logical form of thinking; the highest level of generalization characteristic of verbal – logical thinking.

Aasubel in his Educational Psychology say – concept tend to group themselves into meaningful, interrelated patterns. Considered in isolation they lose some of their meanings. The extent to which the learner is able to visualise relationships between and among the subdivisions of large concept will determine the meaning the concepts convey to him when he is able to visualise the existing relationships, the learner is said to possess insight. It is not equally simple to acquire all different types of mental pictures, but all conceptual learning begins with concrete concepts. Furthermore, generalisations, abstractions, and the involved processes of analysis and synthesis on the concrete concept for their basic meanings.

**Concrete concepts:**

Concrete concepts are related to individual sensory impressions when these impressions are meaningfully interrelated, mental picture forms that gives direction to behaviour. Concrete concepts, those that result form direct sensory experience are the most vivid pictures the mind commands. Furthermore, they constitute the basic raw materials of which the more complicated concepts are comprised.

**Generalised Concept:**

Having at its disposal a large number of mental pictures that are particularly clear because of their closeness to the sensory process, the mind begins to classify. At all school levels, generalizations are formed. This is true in all fields, but it most apparent in the highly organized disciplines e.g. Social sciences.

**Abstract Concept:**

The formation of the concept, like that of the generalized concept, is dependent upon the learner’s mental pictures of concrete referents. After he has a range of experience with specific objects possessing a definite characteristics, he finds that he is able to think of the characteristics quite independently of the object. Thus the learning is able to think meaningfully of goodness in the abstract without the necessity for relating it to a good person.
He has now engaged abstraction or has abstracted (removed) a particular quality from its concrete setting.

**Concept in Science:**

According to the *Encyclopedia of Educational Research (1960)* science concepts often involve measurement, in addition, they go beyond specific measures to grasp of relation (cause and effect etc.) and to process, such as scientific method.

According to the *Encyclopedia of Education (1971)* the concepts in science can be broadly divided into four categories noted below:

1. Concepts in science are generalisation which attempt to make sense out of great variety of observable objects and phenomena in nature. They are man’s views of how and why nature behaves as it does.

2. Some concepts are categorization of objects or events designed to facilitate scientific study.

3. Some concepts, generally referred to as scientific principles, go beyond merely classifying objects and events, and deal with observed relationships between other concepts. A scientific principle is a statement of an inferred general relationship between scientific concepts.

4. The explanation of why a relationship (generally cause and effect) exists is another type of concept, which is called a scientific theory and is not based on observation.

**Concept in Geography:**

Though the concept or categories used by Bruner and his associates (1956) are artificial, they can be used profitably in learning Geography. Bruner classifies the concept into three types:

(i) **Conjunctive Concept** – It refers to the joint presence of appropriate value of several independent attributes or characteristics.

(ii) **Disjunctive Concept** – It refers to attributes which individually or jointly represent to concept.

(iii) **Relational Concept** – It is one defined by a specifiable relationship among the defining attributes.
In geography the students come across different facts, processes, terms which are apparently diverse. Efforts may be made by the teacher to find consequence in those facts, processes etc. and group them under a common class or concept. Students find some definitions or statements in the form of concepts, but many more may be formed by the teacher as well as by students through their own experience and considerations. However, the grouping may take place in different ways, and accordingly, there may be different types of concepts.

Different unrelated characteristics of attributes may be grouped together to give a resultant impression of a scientific concept. Such concept is termed as conjunctive concept. In a given conjunctive concept the students are to identified the characteristics or attributes which jointly define the concept. Geography has more scope for conjunctive concept.

In Geography some concepts are available or may be formed which may be designated as disjunctive concepts. A disjunctive concept can be represented as a bunch of characteristics or conditions such that any of them can refer to the concept independently. If two or more characteristics or conditions are taken together, even then, they refer to the same concept.

There are some concepts, both qualitative and quantitative, such that each of them can be defined by specifiable relationship between the defining attributes. Here, it is not the presence of attributes, but the relation between them, that defines the concept. So, the students learning Geography should carefully study the relationship among the attributes belonging to any relational concept. In school Social Science (Geography) relational concepts are not so common.

After carefully considering the content and teaching-learning practices in Geography in Class – IX level in the secondary schools of West Bengal and studying the literature, journals and periodicals, the present researcher identified the following dimensions of the concept test in Geography:

(i) - Conjunctive Concept

(ii) - Disjunctive Concept

(iii)- Relational Concept
2.7.1.4 Operational Definition of Achievement in Geography: Outcome/performance of the school students in Geography test planned and constructed as per prescribed curriculum, instructional objectives and style of instruction is called Achievement in Geography. Generally it includes all types of performance a student does in Geography. In the present research the achievement has been considered as the performance of the students in sample questions of class IX curriculum (old) used in the secondary final examinations between 2009 to 2012.

Definition of Achievement in Geography:

A few definitions of examination and achievement from authentic sources are summed up below:

According to Srivastava and Qamaruddin (1992), examination refers to a process of determining the level of achievement of an individual. According to Taneja (1998), examination is a technique for assessment of ability, achievement, or present performance in a subject. According to Chambers 20th Century Dictionary, 1983, examination is a careful search or inquiry: close inspection: trial: a test of capacity and knowledge. According to Oxford Advanced Learner’s Dictionary of Current English, 2000, examination is for know about a subject or what you can do.

Achievement refers to performance in school or college in a standardized series of educational tests, Taneja (1998). Achievement refers to what a person has acquired or achieved after the specific training or instruction has been imparted, Sing (1997).

An achievement test is a test of developed skill or knowledge. The most common type of achievement test is a standardized test developed to measure skills and knowledge learned in a given grade level, usually through planned instruction, such as training or classroom instruction. Achievement tests are often contrasted with tests that measure aptitude, a more general and stable cognitive trait.

Achievement test scores are often used in an educational system to determine what level of instruction for which a student is prepared. High achievement scores usually indicate a mastery of grade-level material, and the readiness for advanced instruction. Low achievement scores can indicate the need for remediation or repeating a course grade.