Review of Literature
CHAPTER – II
REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

According to Webster dictionary a literature review is a written form of text which considers the important points of that very area including its substantial findings related to the area. The main purpose of related literature is to situate the current research within the body of available literature. It provides a direction to the research in hand. It is an account of what has been already done in a particular research area and what are the gaps that remained unfilled. The review updates a researcher with all the required knowledge regarding the research work. It is therefore a critical and an evaluative summary of themes, issues and findings related to the problem. In the present study review was done for three variables mainly. It included the

2.1 Studies related to brain based instructional strategies and achievement in science.
2.2 Studies related to learning styles and achievement.
2.3 Studies related to self esteem and achievement.

The studies on the variables of brain based instructional strategies, achievement in science, learning styles and self-esteem are given below:

2.2 STUDIES RELATED TO BRAIN-BASED LEARNING

Mustafa. M. H. (1999) conducted a study on effect of mental stimulation and brain based learning paradigms. More specifically the research adopted conceptual approach for application of artificial neural networks (ANN). The study revealed that in practical educational environment, brain is intimately involved in and is connected with, everything instructors and learners do in classroom session. The results supported improvement of learning and an increase of synaptic connectivity of the students.

Kathlene(2000) conducted a research to implement the brain-based activities on distance learning environment. The present study used two instructional design theories i.e. Gardner’s multiple intelligence and Kovalik’s integrated thematic instruction, which became the basis of brain-based activities. Study involved specific activities such as crossed-lateral movement
patterns and detailed online activities that were incorporated into an online learning environment or a distance learning class with face to face interaction for adults. The results revealed that the brain-based activities can be successfully implemented in distance learning course and these activities are helpful to the adult learners.

Kim (2003-04) investigated the effects of the Superbrain Yoga with fifty-six (56) middle school students in Norristown, Pennsylvania, who were experiencing academic and behavioral problems. Thirty-seven (37) children served as a study group, while nineteen (19) children served as the control group. The study group performed the Superbrain Yoga twice a week, under conditions when the students were found to be tired and still needed to assimilate academic information. The Gates MacGinitie Tests was used to evaluate the effectiveness of the study. The Gates MacGinitie reading inventory was used to regulate the effectiveness of this program to monitor different aspects such as progress in grade level, diagnosing students with learning problems etc. The results of the study showed a significant increase in the performance scores on the Gates MacGinitie Test in the study group. The sum total of change in the test scores was found to be 21.487% in the study group, versus 2.7125% in the control group. There was a dramatic increase in student participation in and out of the classroom in the study group and seventeen (17) students were moved to a higher academic section. Six out of ten participants of the Superbrain Yoga study students were inducted into the National Junior Honor Society. One student from the study group after the study qualified as gifted.

Arnold and Fonseca (2004) conducted a study on multiple intelligence theory and foreign language learning: a brain based perspective. The study was conducted using frames of teaching based on different learners requirement using multiple intelligence theory and brain based learning. The research resulted in a significant enhancement of learning foreign language by the students taught by specified frames.

Clemons (2005) investigated a research entitled Brain-Based Learning: Possible Implications for Online Instruction. The research described about the brain based learning theory and its implications in higher education. The research also revealed the major suggestions to improve and facilitate the online classes in higher education.
Murphree (2005) conducted a study to see the effects of a brain-based instructional approach on third grade student achievement in Floyd county schools. Three classrooms were selected from Floyd County Schools in Rome, Georgia to study the effects of teaching methodologies. The participating schools were selected out of convenience since a researcher was based at each site. The participating teachers completed a questionnaire in order to determine if the classroom instruction provided was brain-based in nature or traditional. Data gathered from the ITBS test year indicated that brain-based instruction has a positive impact on academic achievement. Academic gains were noted for all three schools. Substantial gains were evident at Garden Lakes Elementary which has a large minority population.

Duman (2006) conducted a study on the effect of brain-based instruction to improve on students’ academic achievement in social studies instruction. The study was designed as an experimental research; traditional teaching and brain-based teaching have been selected as independent variables and academic achievement as dependent variable. Sample of the study consisted 6th grade students which were selected randomly from two separate classes of Turdu primary school in mugla. One of the classes has been randomly assigned as experimental group and other as control group. In experimental group Brain-based learning strategies were used. Data from dependent variable was collected by academic achievement test of social studies and interview method of qualitative research. To analyze the data, ANOVA and t-test were used. The findings of the study suggests that brain-based learning approach appears to be more effective than traditional teaching procedures in terms of enhancing the retention of gained knowledge.

Herson (2006) did an investigation on brain-compatible research: using brain-based techniques to positively impact student learning. The research was conducted on sixth grade students. Experimental group was given brain based instructions whereas control group was provided conventional strategies. The study revealed that the students who got brain based instructions achieved significantly higher grades as that of the control group students.

Jeri. (2007) conducted a study on increasing student achievement through brain-based strategies. The study was pre-test post-test experimental research. The sample of study was third and fourth grade students with learning disabilities and seventh grade science students who exhibited poor
scores in tests, motivation and behavior that negatively impacted their learning. Different were used to assess the effectiveness of the teaching methodology. The methods adopted were Parental survey, Observation, checklist, learning style inventory and multiple intelligence survey. The results reported that students gained strength on their level of intelligence and hence increased achievement.

Tompkins (2007) Brain-Based Learning Theory: An Online Course Design Model. The development of a theoretical brain-based online course design model with potential transferability across course management systems in higher education. The method of Qualitative inquiry was used for present study. This research revealed that this brain based learning theory model may be just as effective in the traditional seat environment as in the online environment. In addition, not only may this model hold potential for optimizing student learning in higher education, but may also hold positive potential for optimizing student learning at any other level of education.

Wilson (2007) conducted a study on Music and arts education: it’s effect on brain development and academic achievement. The study revealed that using music and arts education the students were able to gain more on different subjects whereas the students who did not use music and creative art classes obtained lesser grades on all subjects.

Amanda Pociask, B.S. Jeri Settles, B.S.(2007) Increasing student achievement through brain-based strategies. The students targeted were third and fourth grade students with learning-disabilities and seventh-eighth grade science students who were poor test scorers with lesser motivation that negatively impacted their learning. Data was collected through observation checklists, parental survey, and Multiple Intelligence (MI) test as both pre- and post-intervention measurement tools. Students’ learning experiences would be greatly enhanced if teachers taught to multiple student intelligences and incorporated alternative assessments.

Erduran Avei and Yağbasan(2007) a study on Impact of brain-based learning approach on students’ achievement and retention of knowledge about “work-energy” topic. This study was applied to 7th grade students in science lessons to 91 students consisting of 30 students in
experimental group, 30 in control group I and 31 pupils in control group II. The sample had 49 female students and 42 male students. The scores which were taken from science tests were examined by ANOVA. The results of this research have shown that brain based learning have pretty important positive effect on achievement of students and permanence of knowledge.

Tuba (2007) studied the effect of brain- based learning to success and retention in social studies. The study focused on investigating whether Brain-Based Learning has an effect on academic success and retention. The sample was confined to students of Ali Gaffar Okkan Elementary School, Eskisehir in fall term in 2004-2005 academic years. Experimental design with pre-post test control group model and both qualitative and quantitative data collection methods were used in the study. Findings of study indicate that there was a significant difference between the success and retention of control group and experimental group, experimental group being more successful than the control group. The learners seemed to have positive perspectives on Brain- Based Learning. They seemed to think that Brain- Based Learning provides memorable and enjoyable learning experiences without a need for memorizing content.

Bellah (2008) investigated upon Brain based learning: A synthesis of research. The purpose of this study was to synthesize research as it relates to brain-based learning and its relevance to the agricultural education profession. An extensive review of literature revealed that brain based studies were useful to create self discipline, development of teaching principles, and identify the future suggestions as well as implications for agricultural education.

Inci and Erten (2008) conducted a study on the effect of brain based learning on academic success, attitude and retention of information in science and technology classes. The pre test posttest control group research design was used for the present study. There was one experimental and one control group with 30 students each. In the experimental group, students were taught according to the brain-based learning approach, while in control group students were taught according to the traditional methods. The data obtained were analyzed using the SPSS program for Mann Whitney U Test, Friedman Test and Wilcoxon Sign Rank Test. The means and standard deviations were calculated for both the groups. The results demonstrated that there
were a statistically significant difference on achievement, attitude and retention between the experimental group and the control group. The results were in favor of the experimental group.

Ozden and Gultekin (2008) examined the effects of brain-based learning on academic achievement and retention of knowledge in science course. Pre test post test control group design was used for present study. Sections A and B of class V were randomly assigned as experimental and control group respectively. The sample of the study was 22 fifth grade students from each group of A and B. duration of study was 11 days which had 18 working hours. The experimental group was given brain-based learning approach of teaching, while the control group was administered a traditional teaching method. The analysis of the research revealed that there exists significant difference between the groups and results were favoring brain-based learning approach.

Hinton, Miyamoto and Chiesa (2008) conducted a study on effect of brain research on learning, emotions and the possible implications for educational research, policy and practice. These results have important implications for student assessment. Since the process by which knowledge is encoded influences its underlying neural circuitry, dichotomous correct/incorrect measures of assessment. Formative assessment is a powerful tool for guiding the development of abilities and teachers must be trained to teach children emotional regulation skills.

Serna (2008) examined the role of brain-based gender differences on the vocabulary learning and consolidation strategies. This study aimed to investigate the possible relationship between the differences of the male and female brain and vocabulary learning strategies of male and female students. It was carried out with a group of 200 students attending the Preparatory Program at TOBB University of Economics and Technology. As the result of this study, it has been found out that females use more variety of strategies than male counterpart. It has been found that females employ social and cognitive strategies whereas males employ memory strategies more as compared to that of females.

Ajda, Kahveci and Selahatdin(2008) investigated upon different approaches – common implications: brain-based and constructivist learning from an integral model perspective. The
study resulted in the fact that an integral approach to education would be more promising instead of only brain-based or constructivist approach for the anticipated outcomes. Also, the Integral Model may serve as a powerful and holistic theoretical perspective to educational research.

Espinosa (2008) investigated the scientifically substantiated art of teaching: the study implemented neuroeducational model. The design of the new model was followed by a Delphi survey of 20 international experts from six different countries that further refined the model contents over several months of Tracey Noel reflection. Finally, the revised model was compared to existing information sources, and created a new model of teaching that resulted in an effective outcome.

Shelly (2009) conducted a survey study on Knowledge, beliefs, and practices of education faculty in the Pennsylvania State System of Higher education. The sample of the study included faculty of education who were serving to students in university. Participants were selected from university in Pennsylvania, Bloomsburg, California, Clarion, Indiana etc. Alert scale of cognitive styles was used as tool to collect data regarding beliefs and knowledge regarding brain-based learning. Findings of the study concluded that PASSHE used brain-based learning technique as an effective teaching instructional procedure.

Melek and Serap (2009) investigated upon the effect of brain-based learning on achievement, attitude, retention and learning outcome. Control group pre-test post-test experimental design has been applied in research and qualitative data related to the learning process has been analyzed with an interview technique. The research revealed that Brain-based learning environment has a positive effect on higher level learning, retention of learning and the attitude towards course of the university students of Turkey.

Jones, Franey, Mashmoushi and Liao (2009) examined the neuroscience literacy of trainee teachers. The study was conducted on 158 graduate teacher trainees using preliminary and structured interviews. The study revealed that the teacher trainees had had many misconceptions regarding mental activities and brain functioning. Trainee teachers place equal importance on home environment and education as determinants of educational outcome, with genetics a significant but smaller influence than either.
Klinek (2009) investigated upon brain-based learning and teacher’s knowledge, beliefs and practices by faculty in the Pennsylvania state system of higher education. The study was conducted on a sample of 190 teachers of Pennsylvania State. Method used was a survey, designed by the researcher and distributed to teacher education faculty in the Pennsylvania State System of Higher Education by email. 73% of population agreed that they were aware of the brain based strategies. However 39.5% of population agreed that they need to need to be more adequately trained in relaxation, movement and other strategies to teach special children.

Newton (2010) did an investigation on closing the gap brain based teaching and learning techniques. Two African American special education students attending school at an urban school within the Rochester City School District participated in using brain based learning approach. It was found that the strategies such as movement while class session and group discussions have a positive impact on the students learning and achievement. An environment with Change in the seating arrangement also had a positive impact on students’ learning. Therefore the research has suggested that activities involving movement of pupils and group discussions should be frequently implemented in the classrooms.

Jack (2010) conducted a study on Exploring brain-based instructional practices in secondary education classes. Experimental group was taught keeping in mind brain based principles. The brain/mind principles advocate an environment that allows time for students to have many opportunities to practice, and correct mistakes to gain expertise and in depth understandings. This finding suggests that students have several minutes to reflect on new learning, such as, writing in journals or discussion in small groups.

Hutchins (2009) conducted a qualitative multi-site case study on three elementary schools in the State of Georgia that utilize brain based instructional strategies in the educational process. The study was conducted to increase the understanding of the philosophical foundations of brain based learning and how it is being used in conjunction with or opposed to other instructional strategies. Perceptual data were gathered by observation, interview, video recordings and questionnaires and analyzed through identification of themes and patterns. The results indicated that some teachers and administrators believed brain based learning is not an effective strategic
technique. The data indicated that brain based learning is still a questionable practice and further empirical research is warranted.

Magon (2009) investigated upon gender, the brain and education: Do boys and girls learn differently? Study was conducted at girls’ high school of British Columbia. Two Science classes of IXth standard received lessons that were designed to target either boys or girls. Sample included 17 boys and 17 girls. Several methodologies were employed to teach boys and girls. Results indicate that engagement and enjoyment of lessons do not always correlate to successful learning.

Bas, Khan. G. (2010) Examined the effects of brain-based learning on students’ achievement levels and attitudes towards English lesson on VIth grade students. The research was carried out in karatlı sehit sahin yilmaz elementary school. The sample consisted of 60 students from two different classes of 6th grade. The design of the study was pre-post test control group design. The analysis of the obtained data revealed that there exists a significant difference between the attitude scores of the experiment group and that of control group. The results also concluded that the Brain-Based Learning activities were more effective in the positive development of the students’ achievement levels.

Morris (2010) conducted a study entitled Brain-based learning and classroom practice: A study investigating instructional methodologies of urban school teachers. Data for this study was collected using a Teacher Survey that was sent to 460 teachers. This data was analyzed by Quantitative research methods. The study revealed that elementary teachers applied more of the surveyed brain-based practices than middle or high school teachers. Apart from this study showed that the teachers with 0-10 years of experience were not frequent users of brain based approach of teaching.

Pennington (2010) investigated the use of kinesthetic movement in the Brain-based Learning Theory. The incorporation of movement to increase the learning of grammar by high school students. Movements were used as a vehicle to teach grammar to high school students. The study involved 277 secondary school students currently enrolled in prep English courses grades 9-11.
and were assigned to classes by simple random sampling technique. The control group was provided with traditional grammar practice and experimental group was exposed to kinesthetic exercises. The t-test results were not significant; however the student affect was meaningful as determined by positive results of three out of four emergent categories from teacher logs.

Riasat (2010) studies the impact of brain based learning on students’ academic achievement. The major purpose of the study was to see the impact and effectiveness of brain based learning environment in secondary schools. Samples were divided in two groups viz. experimental and control group each group having 25 students. The experimental group students were taught by brain based learning while control group students were taught by traditional method. It was revealed from the study that brain based learning environment has positive impact on students’ academic achievement. Therefore the study showed that brain based learning environment was found to be conducive and effective in improving learning. The students of brain based learning method showed better results than traditional method of teaching. So brain based learning method and its environments are fruitful in the academic achievement of students.

Awolola (2011) conducted a study on effect of brain-based learning strategy on students’ achievement in senior secondary school mathematics in Oyo state, Nigeria. The sample consisted of 522 Senior Secondary School Students in Oyo State, Nigeria. The design of the study was pretest-posttest (non-equivalent) control group design with quasi-experimental settings. This design was preferred because the experimental and control groups were naturally assembled groups as intact classes with similar characteristics. The moderator effect of cognitive style was also examined on independent variable (instructional strategy) and dependent variable. The ANCOVA statistic was used to analyze the data collected from the study. The results showed that brain-based instructional strategy enhanced students’ achievement in mathematics more than the conventional lecture method. Therefore the research recommended that mathematics teachers should adopt this strategy in teaching senior secondary students.

Kiedinger (2011) investigated on brain-based learning and its effects on reading outcome in elementary aged students. Study was implemented to examine the effects of brain-based learning within the framework of two elementary schools that administer the Wisconsin Knowledge
Concepts Exam. Teachers of these students were previously in-serviced on the implementation of brain-based learning strategies. The method used was a survey designed by the researcher and distributed to the faculty of the students into different grades i.e. III, IV and V. The study found an increase in Reading scores as measured by the WKCE.

McNamee (2011) studied the impact of brain based instruction on reading achievement in a second grade classroom. An experimental group of 25 second grade students participated in the brain based literature unit, where as the control group of 19 second grade students participated in traditional teaching practices. After the SSSRDA was administered as the pre test, the experimental group participated in the 12 week intervention while the control group received traditional reading instruction. The SSSRDA) State Standards Reading Diagnostic Assessment was again administered as post test.

Ghraibeh (2011) examined brain based learning and its relation with multiple intelligences. The sample consisted of 300 students who study the psychology as a course of subject. The sampling technique employed in the present research was simple random sampling. The results indicated that more repeated method of learning and thinking is based on the left hemisphere of the brain; as it comes out with the highest total of 136 and within a percentage of (45.3%). Whereas, intrapersonal intelligence comes third with a mean value of (48, 40%). Finally, musical intelligence scores the lowest mean value.

Salmija, S.(2011) Conducted a research to measure the effectiveness of brain based teaching approach on learning and motivation towards physics subject among secondary school students of Malaysia. The sample constituted 100 students of two science secondary schools of Northern Peninsular, Malaysia. Pre test post test control group design was adopted to see the effectiveness of the approach. Tools used in the study were questionnaire of physics learning, motivation scale, student learning style inventory, and structured interviews. The data analysis was done quantitatively as well as qualitatively with the help of progressive focus technique and triangulation method. The results obtained showed that the BBTA module was an effective teaching approach for enhancing the motivation for learning physics.
Haslija and Emilin (2012) conducted a study on transforming a brain-based library via active learning instructions as a new way of learn. The survey was conducted to compare the awareness about active learning and brain based learning among Malaysian academic librarians. The results revealed that librarians have been implementing active learning concept in their library instruction classes, 53% of them agreed. However, only 27% of the respondents agreed that they have been implementing brain-based learning concepts in their library instruction classes. It is imperative to assert that despite the low perception by librarians about the usage of brain-based learning concepts in their classes.

Rehman, Malik, Hussain, Iqbal and Rauf (2012) investigated upon Effectiveness of Brain-Based Learning Theory on Secondary Level Students of Urban Areas. The study was conducted to investigate effectiveness of human brain in the subject of mathematics. The Brain-based Learning theory consists of 12 principles related to I.F of brain. A pre-test, post-test control group design was followed. Three chapters from 9th grade textbook of mathematics were selected for teaching. The research tool of the study comprised 16 items. The selected 60 Ninth graders were randomly divided into experimental and control groups. The performance of students enhanced significantly by activation of the I.F. It was concluded that academic achievement enhances with sharpening of innate faculties of brain.

Seyihoglu and Kepitan (2012) examined the effect of brain-based learning approach to elementary teacher candidates’ attitude and achievement in geography lesson. The study was conducted with the participation of 131 freshmen studying at the Department of Primary School Teaching of Education Faculty at Rize University in 2008-2009 spring terms. An attitude scale and self-evaluation were used as a means of data collection. The data was analyzed using t test and content analysis. Significant difference between the post test and pre test scores was reported. The brain based learning approach had a positive effect on the students’ attitudes toward the course in geography teaching subject.

Varghese (2012) conducted a study of the effectiveness of Brain-based Learning on the comprehension of certain concepts attainment in educational psychology subject, their hemispheric dominance and learning style preference among the teacher educators. The study was carried out on a sample of 200 B.Ed students. The design of the study was the pre-test post
test quasi-experimental design design. The experimental group was taught through the Brain-based learning strategy which were developed by researcher whereas the control group taught through the expository method. Mc Carthy’s Hemispheric Mode Indicator and Kolb’s learning style inventory was used to measure hemisphericity and learning styles. The strategy is found to be highly effective in understanding the psychological concepts.

Rangrej.V (2012) conducted a study on evaluating teaching methods and brain based learning. Article suggested Designers of educational tools must be artistic in their creation of brain-friendly classroom context. The teachers need to realize that to make learning enjoyable and best methods other than lecture method should be adopted. Apart from this pupil participation with safety and fearlessness is of prime importance in these strategies.

Pandya.R.S and Varghese (2012) The present research focuses on the effect of Brain-based learning on academic achievement in biology, stress and study habits of VII standard students. The study was carried out on a sample of 240 students from 4 schools in which two were private-aided 120 students and two were private-unaided 120 students. A three-stage stratified random sampling technique was used to select the sample. The following tools were used in the study: Achievement Test in Biology (Researcher-made), Stress Scale, and Study Habits Inventory. The researcher has developed lesson plans based on brain-based learning and the study reveals that brain-based learning is a constructive, domain specific strategy to holistic education. It has the potential to stimulate the optimal learning among students in very relaxed and enriched learning environment.

Rujira, Pannee, Niramon, Theppamon and Krittiya (2012) conducted a study to see the effectiveness of brain-based learning and animated cartoons for enhancing healthy habits among school children in khon kaen, Thailand. The objective of this study was to investigate the effectiveness of brain-based learning (BBL) and animated cartoons on video compact discs (VCDs) in enhancing the healthy habits amongst school children. A sample of 1085 students children of third grade was selected out of 16 schools by using multi-stage sampling technique. Questionnaire as a tool was used to assess the healthy habits. Both the VCD and brain based learning were used either in combined form or individually, which resulted into improvement in knowledge as well as practice of skills related to healthy behavior. BBI was found to be more
effective strategy when used without VCD and had led to great improvement in healthy practices. We may conclude that both BBL and VCD interventions are effective however VCD requires additional strategies to get good outcome.

Srinthorn and Lilibeth (2012) conducted a study on brain compatible activities for EFL vocabulary learning and retention. The purpose of the study was to investigate the effects of brain compatible activities on vocabulary learning and retention of 31 third year undergraduate students taking English for tourism after taking the course using BCA. Data gathered from pre test post test and structured interview were analyzed both quantitatively and qualitatively too. The study resulted to the conclusions that students significantly learned the target words while taking the course. The vocabulary learned was retained at least 6 weeks after the instruction.

Erkan and Ozlen (2013) studied the effects of brain-based learning approach on students’ motivation and attitudes levels in science class. The purpose of the study was to examine the effect of brain-based learning approach on attitudes and motivation levels in 8th grade science students. The pre test post test control group research design was implemented for the present study. There was one experimental and two control groups. The sample was divided into three groups with 19 students in every group. The topics taught were division and heredity of the science notebook. In the experimental group, students were taught using brain based intervention. The attitude and motivation of experimental group was found to be significantly higher than the pre test. Therefore the brain based learning approach impacted positively upon the motivation as well as attitude.

Kaur (2013) conducted a study on effectiveness of brain based learning strategies on enhancement of life skills among primary school students with internal and external locus of control. Study was conducted on 116 male and female students. Pre test post test control group design was employed for the study. 2X2X2 factorial design was used in the present study. The experimental group taught by Brain based learning strategies performed significantly better in Life-skills in comparison to control group taught by traditional learning strategies. The male and female with internal LOC performed significantly better than male and female with external LOC.
Moghaddam, Alireza Navid; Araghi, Seyed Mahd (2013) studied upon Brain-Based Aspects of Cognitive Learning Approaches in Second Language Learning. Although it was great development on the way of understanding the basic concept and nature of learning process, criticism was still faced by the cognitive psychologists. The study resulted to be in favor of application of those approaches to language classrooms utilizing as guarantee some of the main perception from brain-based learning theories.

Vankuren, Dave, Thompson and Greasly (2012) examined that how can we use brain-based research teaching methods and strategies to enhance student learning in math? The efforts of 4 teachers working with students of various ages and abilities. The focus is on the utilization of brain-based teaching to assist with the acquisition of skills in the subject of math. The goal was to test the effectiveness and universality of implementing brain-based instructional techniques across all divisions, including special education, which would provide the opportunity to compare results with different student populations.

The review mentioned above provides a positive direction in a manner that almost every study using brain based instructional strategies has revealed that there was a significant gain in the achievement, learning as well as acquisition of skill related to particular subject. Though only single study has been conducted to see the effect of brain based teaching strategies on achievement of science subject still the results revealed the similar trend i.e. brain based instructional strategies have been effective teaching strategies in improving the students achievement level in science subject. Apart from science, the brain based instructional strategies have been proved to be significantly effective teaching strategies in enhancing the level of achievement.

2.3 STUDIES RELATED TO LEARNING STYLES:

Joy (1991) in his study and investigation of the impact of learning style factors on college students’ retention and achievements. The purpose of study was to determine the effect of the exposure to different levels of learning styles information on academic achievement and retention rate of full time college (400) students. The results of the study established that there is
no significant impact of learning styles factor on college students’ achievement. The similar results were reported by Burkey (1993).

Setia (1991) conducted a study on sample of 510 students and explored the effect of some socio-psychological and educational factors of differential learning rates in modern mathematics. She revealed that male rapid learners perform better on achievement tests in mathematics as compares to female rapid learners. However, male-female average and slow learners do not differ significantly with each other on achievement in mathematics.

Susabda (1992) reported that learning style of the average and below average students tended to be more concretely dimensional while superior students tended to be more abstract in their thinking.

Van Vuren (1992) did an experimental investigation to determine the effect of matching learning styles and instruction upon academic achievement of students receiving an interactive learning experience. The experiment included 197 chemistry students enrolled in Inorganic Chemistry 103. Students were divided into one of four learning styles: Abstract random, Concrete sequential, Concrete random and Abstract sequential, which were specified by the Gregory Style Delineator. Students received style specific instruction in an interactive learning environment. They were compared to a randomly selected control group. The results obtained from analysis of variance revealed that significant difference in academic achievement test scores was found between the treatment groups and the control groups. It was found that students’ academic achievement can be greater when information is presented to them in their preferred learning style.

Lyon (1991) conducted a study at Washington state university to determine if a relationship existed between teaching styles and learning styles in a real-life adult learning situation. Kolb’s Learning Style Inventory was used to determine learning style preferences of sample under study. A pretest was administered to determine the participants’ present level of knowledge about the computers. A posttest was administered after the MS word intervention program at the completion of the course to check students gain in knowledge. The sample of the study was 35 individuals for computer program. No significant difference was found between knowledge gain and a matching between teaching styles of the instructor and the learning styles of the learner. In addition to this there was no significant correlation between knowledge gain and teaching style.
Joseph.H (1993) conducted a study on relationships between learning styles and academic achievement and brain hemispheric dominance and academic performance in business and accounting courses. The study determined if relationships exist between learning styles and academic achievement and brain hemispheric dominance and academic courses. All second-year accounting students (64 students) at Northeast Iowa Community College took the Kolb Learning Style Inventory and the McCarthy Hemispheric Mode Indicator. Academic achievement was measured by the students' final grade point averages earned in the courses. Findings suggest that post-secondary business and accounting instructors should consider testing their students to determine students' learning styles and brain hemispheric dominance so that the instructors may suggest study approaches and methods that may increase the academic achievement.

Susabda (1992) reported that learning style of the average and below average students tended to be more concretely dimensional while superior students tended to be more abstract in their thinking.

Key (1993) in his study gender differences in attitude special visualization ability and learning styles of remedial mathematics students studied gender difference in learning style of remedial mathematics students. The findings revealed that males scored significantly higher on reflective observation type of learning preference.

Marrison and Frick (1994) investigated the effect of agricultural students’ learning styles on academic achievement and their perceptions of two methods of instruction. The major purpose of this research study was to compare the extent to which academic achievement and students’ perceptions of traditional lecture and computer multimedia instruction are influenced by learning style. The researchers utilized a pretest posttest control group experimental design. The population in the study was 75 undergraduate students from Agriculture department of major land-grant university. The data obtained was analyzed and the results showed that learning style (field dependent/independent) when coupled with treatment variable had no significant effect with respect to achievement on the agricultural economics demand knowledge test.

Matthews (1995) using the Canfield Learning Styles Inventory, investigated the learning styles characteristics as related to conditions of learning area and mode of learning among students. The sample consisted of 971 students (475 males and 496 females) of South Carolina first year students. The study found that there was also a relationship between stream chosen and
the learning style. Combination applied styles were favorable among pupils with disciplines of mathematics, science and education. However students of humanities, business, and social science showed conceptual or combination conceptual styles as their favorable style.

Goodwin(1998) in his study effects of matching students and instructor learning style preferences on academic achievement in English indicated that the students taught by instructions that matched their preferred learning style has significant gain in academic achievement. Significant high achievement resulted among previously failing students when they were taught with strategies that complemented their learning style preferences.

Jones(1999) in his study are learning styles subjects area

Verma and Sharma (2000) in his study academic achievement in relation to learning styles of adolescents. They compared the academic achievement of independent and dependent learning styles in hindi, English, mathematics, general science and social studies. It was found that the group of dependent learning style students was significantly better than group of independent learning style students so far as achievement in social science was concerned. Ther was no significant difference in mean gaim scores of achievement in hindi, English, mathematics in respect of competitive and collaborative learning style groups.

Letty and Willey (2003) investigated Gifted achievers and gifted underachievers: the impact of learning style preferences in the classroom. This study focuses on the learning style preferences of achieving and underachieving gifted middle school students. Learning style was determined through administration of the Learning Style Inventory (LSI). Both groups of participants revealed several learning style preferences that were quite similar. Many low achievers showed a strong need for tactile and kinesthetic modalities. The low achievers did not perceive themselves to be persistent, and scores revealed that they needed structure in assignments. Persistence seemed to be a key to success for the achieving learners in this study since they were able to maintain high academic performance in all content areas. Over half of the low achievers, on the other hand, did not judge themselves to be successful at task completion. The results revealed that learning styles affect the achievement of underachievers.
Joan (2003) studied Effects of learning-style teaching on elementary students’ behaviors, achievement, and attitudes. An investigation of underachieving, chronically misbehaving, fourth-, fifth-, and sixth-grade students in a suburban elementary school measured the impact of learning-style instructional strategies on classroom behaviors, attitudes toward learning, and achievement-test scores. Two mathematics instructional treatments were provided: traditional and learning-style congruent. Analyses of the data indicated that, despite the fact that these students consistently had been identified on the basis of their poor in-school behaviors during traditional lessons, their decorum was significantly better when they were involved in learning-style responsive lessons. In addition, the attitudes and long-term retention of mathematics information of these underachieving students, improved significantly when the instruction was congruent with their learning-style preferences.

Montemayor, Aplaten, Mendoza, Perey (1997) held a study on Learning styles of high and low academic achieving freshman teacher education students: An application of Dunn and Dunn’s learning style model. The research dealt on the learning styles of high and low academic achieving students of Cordilerras University. As per the pre decided parameters set in the research, there were 19 students were found to be low achievers and 29 students were high achievers. The study revealed that there were no significant difference in the learning styles between the low achieving and high achieving students of two groups. When compared according to level of academic performance students does not vary in terms of their learning style, therefore it is recommended that teachers should incorporate specific methods that are representative of learning preference of students and match with their teaching strategies.

Renou (2004) examined A Study of Perceptual Learning Styles and Achievement in a University-level Foreign Language Course data obtained from Eighty-two English-speaking students, with Spanish as their maternal language. Self-assessment tool, the Barsh Learning-Style Inventory Questionnaire were used. An analysis of variance or ANOVA was used to examine whether having a particular learning style could attribute for differences in course grade. The results showed that close to half of all the subjects were visual learners, twenty-three percent were auditory learners and almost twenty-one percent scored the same on both visual and auditory perceptual learning styles. The remaining seven percent of the subjects were tactile learners. In the present study, results do not show any statistically significant advantage to
preferring one learning style over another (i.e. visual, auditory, tactile or a combination) with respect to success (course grade) in a French language course.

Yeung, Read and Schmid (2004) conducted a study on Students’ learning styles and academic performance in first year course in chemistry. Sample was selected from University of Sydney and was divided to three different groups. The learning style inventory was distributed to sample of 1143 students. The finding of the research revealed that considerations need to be given to learning styles while considering the instructional practice. The study suggested that it will not only improve teaching and learning but might also increase retention rates for chemistry students in the future.

Gallagher (2005) investigated on Causes and Consequences of Underachievement and Non Achievement junior high school time is the critical time at the secondary level for patterns of underachievement. Although underachievers here were below the 75th percentile in class rank and extreme underachievers were below the 50th percentile, the mean score of underachievers was still at the 87th percentile on the ACT, using national norms. Sources of Underachievement, Family (F), Environment (E), School (S) Underachievers tend to have high spatial abilities and underdeveloped sequencing skills. This means that they will tend to have difficulty with much of the work in the elementary grades. These problems may be obstinate, as teachers and parents perceive these children as unwilling to do their work rather than being unable.

Psychological: Self-Esteem, Negative/Debilitating Perfectionism, Depression, Dependent, Learners

Parkash (2006) examined Thinking and learning styles of prospective secondary teachers in relation to intelligence and personality. In the survey six pre-service secondary teacher education institutions were selected randomly as sample. Thinking style inventory by R.J. Sternberg and learning style inventory by R.M Dangwal were used. Mean, S.D, t-ratio was calculated and ANOVA technique was used for analysis of data. The results revealed that there were no significant relation between thinking styles and that of intelligence. However learning styles do affect the personality and intelligence of teachers.
Thomas and Joseph (2007) conducted study on Order effects in the affective learning styles of overachievers and underachievers. Researcher tested the predilection to learn positively rated trigram materials more efficiently than negatively rated materials. 64 high school males were identified via GPA and IQ as overachievers, underachievers, above average, and below average students. Ss learned 2 lists of paired-associate trigrams, 1 of which had been rated as liked by the S and 1 which he had rated as disliked (unmixed lists). The overachiever showed the least disparity between positive and negative reinforcement value, and the underachiever showed the greatest reinforcement value effect. Learning disliked lists before liked led to uniformly positive nonspecific transfer for all Ss, whereas learning liked before disliked did not clearly facilitate transfer.

Kenth (2008) conducted A study of academic achievement of prospective teachers in relation to their cognitive styles, learning styles and study skills. Survey study included 800 B.Ed students selected randomly through cluster technique from colleges affiliated to P.U, Chandigarh. GEFT, Learning styles Inventory(Verma,1996) were used to collect data. Pearson product moment correlation and Step-up regression equations were set up by taking dependent and independent variables. Mean, S.D and t-ratio was calculated. Results revealed that there is positive correlation between cognitive styles, learning styles and academic achievement or study skills.

Rasimah, Zurina, Rohaizad, Yeop.U and Anuar.M (2008) conducted a study on “Students’ learning styles and academic performance” Sample of study was taken from first year INTEC students. Cluster analysis was used to segment the subjects into clusters of similar characteristics in terms of learning styles, while discriminate analysis was used to understand the characteristics and difference of clusters. The academic achievement was measured by the final grades obtained by the students for their semester-end final examination. The results indicate that in general the first semester pre-university students are highly collaborative but moderately independent and moderately competitive. There is no strong correlation between learning style and academic performance of students.

Deryakulu, Buyukozturk and Ozçınar (2009) examined “Predictors of Academic Achievement of Student ICT Teachers with Different Learning Styles” The main purpose of this study was to determine the predictors of academic achievement of student Information and
Communications Technologies (ICT) teachers with different learning styles. Participants were 148 student ICT teachers from Ankara University. Participants were asked to fill out a personal information sheet, the Turkish version of Kolb’s Learning Style Inventory, Weinstein’s Learning and Study Strategies Inventory. Stepwise regression analysis showed that the statistically significant predictors of the academic achievement of the accommodators were attitudes and divergers predictor was anxiety whereas convergers were predicted from gender and their epistemological beliefs and the assimilators were predicted from personality, and test strategies.

Wilson (2011) investigated upon students’ learning style preferences and teachers’ instructional strategies: correlations between matched styles and academic achievement. This study examined that there is significant relation between the degrees of match i.e. teaching style matching learning style and the academic achievement of fourth grade students. The sample of consisted of 200 students from three different schools in northwestern Carolina district. A quantitative approach utilizing a correlational design was used to analyze the data and produced Pearson r values for each content area respectively. There was no correlation among two variables.

Carthey (1993) conducted research to determine the relationship between learning styles and grade performance in Principles of Management, Principles of Economics, Intermediate Accounting, and the subject of Business Law. The sample was 64 second-year accounting students from the Community College. The tool of Kolb’s Learning Style Inventory was used to determine their learning styles. Students’ final grade point averages earned in respective subjects were used to measure the academic achievement. The learning style variable was reduced to four styles: Divergerent, Convergent, Accommodators and Assimilators. The results showed a significant relationship between students with the Convergent learning style and high academic achievement.

Miglietti (1994) conducted a study at Firelands College, a two-year branch campus of Bowling Green State University in Huron, Ohio. The researcher investigated, the relationship between grade sense of accomplishment overall course satisfaction combinations of teaching styles classroom environment and learning styles. The subjects were 10 remedial mathematics or
remedial English teachers and 156 students. The results of this study indicated that two teaching styles viz. learner-oriented activities and flexibility in teaching method produced significant differences in achieving higher grades.

In summary, researchers differed in their findings. Lyon (1991) determined that while there was no significant difference in achievement when there was a match between teaching and learning styles, still style fixing by the instructor supported the result that students gain knowledge when there is a style match between teaching and learning. Charkins, O'Toole, and Wetzel (1985) contended that there should be an improvement in student achievement when there is a match between the instructors’ teaching style and the students’ learning style. This study will try to lend support to the theory that student achievement improves when there is a match between learning styles and teaching styles through studying business instructors and their students.

2.4 STUDIES RELATED TO SELF ESTEEM

Coopersmith (1967) in a study of 1700 boys of 10-12 years age group found that the parents of those with high self-esteem showed warmth and interest, set high standards, but were fair though firm in enforcing and used rewards rather than punishment as an incentive. Boys with low self-esteem and permissive parents who showed comparatively lesser interest in their children, but could sometimes be permissive and unfair. The parents of boys with high self-esteem had high self-esteem themselves and wanted their children to be self-confident and independent. He found that persons with high self-esteem are likely to be more assertive, independent and creative than persons with lower self-esteem who are consistently less original and innovative.

Tiwari and Associates (1979) found that adolescent students belonging to high social class have greater self-esteem than low social class students. It appeared that the custodian climate may have a negative impact on students’ self-esteem, whereas the humanistic climate may be a vehicle to facilitate more positive self-esteem.

Darrel (1980) self-esteem is significantly higher for blacks than the whites. In black schools residual self-esteem if lower in racially balanced School than in predominantly black schools but higher than expected in predominantly white schools.
Nangia (1980) conducted a study on the personality characteristics and self-esteem of Indian sportsmen and sportswomen. The sample comprised of 171 sports persons (86 table tennis and 85 badminton) of these 91 were males and 80 females. The high performers were more intelligent, emotionally stable, dominant, surgent, suspicious shrewd, self sufficient and tense; had higher self concept and control, were more reserved, shy tough minded, practical and placid the high performers had high higher need for achievement, aggression, dominance, recognition and sex and a lower need for a basement, play and affiliation. The self-esteem of the high performers was higher than that of the low performers. The personality factors of the sportmen were more tender minded, anxious, introvert and subdued. The sportmen had a higher need for recognition, aggression and self. The self-esteem of the sportmen was not higher than that of sportswomen. The table tennis players were more affected by feelings and were trusting, tender, introvert and adjusted.

Curtis and Shaver (1981) reported a statistically significant difference in favor of slow learners of the experimental group on adjusted mean post test scores than control group on self-esteem inventory.

Power and Sanchez (1982) determined the correlation between self-esteem and two measures of socio economic status and academic achievement for 87 Mexican-American Junior High school students. Self-esteem found to be positively correlated to occupation and reading achievement.

Masquid (1983) conducted a study to find the effects of SES, LOC, IQ and SE on academic achievement. He found that these variables had significant positive effects on academic achievement.

Nelson (1985) found vocationally immature students as having low confidence and self esteem. They are also seen as lacking a strong sense of identity and as having problems with self, personal identity.

Campbell (1986) reported that high self-esteem individuals are more likely to rate themselves as superior to others with low self-esteem.
Rayan and Gnalnick (1986) noted that more the students perceived school climate as allowing student autonomy and initiative, the higher will be his or her self-esteem.

Housely, Martin, Mccoy and Green House (1988) studied the self-esteem of adolescent females and reported that mean self-esteem of upper economic status urban subjects was significantly higher than that of lower economic status. Urban subjects had significantly higher self-esteem than their rural peers.

Rosenberg (1989) in a study reported the effect of school achievement on self-esteem to be more powerful than that of self-esteem on school achievement.

Dennison (1989) conducted a study on effect of brain gym activities on language acquisition, self-esteem, physical development, and academic achievement. His research focused on beginning reading achievement and its relationship to covert speech skills. With his background in curriculum development and experimental psychology he developed Brain Gym. His first research experiment involved 19 fifth grade Special Education students. After they were tested using the Brigance Inventory of Basic Skills, they were repatterened and used Brain Gym for 5 to 10 minutes a day. The results showed a one to two year average gain for all students on the reading and reading comprehension test and an average gain of at least a year for more than 50% of the students on math. The greatest findings revealed that there were improvements on focusing of a task and self-esteem of the subjects.

Scott and Charles (1989) found that self-esteem scores were higher for senior than the freshmen in the school. However, boys’ mean gain on self-esteem was lower for seniors than the freshman. Girls mean gain score was lower for freshman than seniors in the vocational stream but were similar in the collegiate schools.

Brook, J.A. (1991) examined the relationship of reported behavior of both parents to self-esteem of children of higher secondary level with sex of child as a variable. Accordingly question asked was: do one sex have higher self-esteem than the other? The analysis of the data demonstrated that boys had significantly higher self esteem than girls.
Marciano (1991) investigated upon the effect of self-esteem building program on the social participation. He concluded that the intervention led to significant improvement in self esteem. The study also revealed that self-esteem is strongly linked to higher social participation and to extroversion.

Palmer (1994) conducted a study to see the effect of career planning instructions on self-esteem and career efficiency. The study revealed that there exist no significant difference between the experimental and control groups. However the change in self-esteem of students receiving career planning instructions was marginally successful at .01 level. Instructional strategies other than those traditionally used in introduction to business class may be necessary to bring about significant gains in self-esteem, vocational identity and career efficiency.

Danniels (1994) conducted a study on self esteem of pine wood school and variables associated with self-esteem. Subjects for the study were 225 junior and senior high school students from pine wood school located in central Mississippi. On the average the students who got the intervention scored higher on the variable of self-esteem. A significant relationship existed between total self-esteem and achievement in mathematics.

Rosenberg, et al. (1995) investigated upon global self-esteem and specific self-esteem; different concepts, different outcomes. Although global self-esteem was more strongly related to psychological well being, specific (academic) self-esteem was a better predictor of school performance.

Karunanidhi, S., S. Geeta and Priscilla, S. Umbas, Chenn (1996) conducted a study perceived problems and gender differences in relation to self-esteem among adolescents. It revealed that a) girls perceived lesser number of problems and manifested higher self-esteem as compared to boys. B) Overall self-esteem of girls was higher than that of their counterparts. C) Both boys and girls showed least interest for se, courtship and image. D) There existed a significant relationship between perceived problems and self-esteem.

Harshaw (1997) conducted a study to see the self-esteem of the homeless children. The results of the study revealed that the children who were homeless have significantly lower scores on self-esteem as compared to the ones with home and family atmosphere around them. Therefore home environment and family people significantly impacts upon an individual’s self-esteem.
Idstein (1998) conducted a study on finding the determinants of self-esteem. The study revealed that the three determinants of adolescents’ self-esteem which affect the self-esteem were family support, peer support and achievement in different subjects. However, physical attractiveness, supportive siblings and SES act as additional determinants of self-esteem among the participant groups.

Hair (1999) examined the relationship between middle school personality, self-esteem and adjustment towards high school adjustment and school outcome. The investigation suggested that the variables of middle school personality, self-esteem and adjustment are significantly related to high school adjustment and the school outcome.

Sharma (2000) held a study on the relationship between the variables of personal growth and self-esteem. The study revealed that there exists a significant relationship between the dimensions of personal growth and self-esteem.

Bray (2001) conducted a study on the influence of academic achievement on college students’ self-esteem. The original purpose of this study was to see if academic achievement had more of an effect on a college student’s self-esteem if the student was an Honors student versus a student with a general stream. The subjects undertook the Rosenberg Self-Esteem Scale before and after the psychology exam. A sample of 64 college students were used for data collection which was analyzed using 2 X 2 factorial design for comparison on pre-test and post-test scores on Rosenberg Self-Esteem Scale. The results suggested that there is a positive relation between academic achievement and self-esteem.

Martin, F. Peixoto, Periera & Pedro (2002) studied the relation between self-esteem and academic achievement among adolescents. Sample consisted of 838 secondary-school students of seventh to the ninth grades. Harter’s Self-Perception was used for collecting data on self-esteem. Results show that there are significant differences between the self-esteem enjoyed by successful and unsuccessful students in the seventh grade.

Alves-Martins et al. (2002) examines self-esteem and academic achievement among adolescents. The study proposed different strategies that can be helpful in protecting the self-esteem of adolescents when in threatened conditions. Harter’s self perception profile and attitude scale was
used to analyze the data obtained from the sample. It was found that there was significant difference between the self-esteem enjoyed by successful and unsuccessful students in VIIth grade. Students with low academic achievement attributed less importance to school related areas and revealed less favorable attitude towards school.

Raj (2003) conducted a study of self-esteem of adolescents in relation to creativity, intelligence and socio-economic status. The subjects of the survey were 769 students of Xth class of Govt. schools of Punjab. Self-esteem inventory by Saroj Saini (1998) and S.E.S by S.S Mann (1995) were used to collect data. Results revealed that there is no relationship between creativity and self-esteem, however there is positive and significant relationship between self-esteem and intelligence.

Ritchie and Norman (2004) conducted a study on the effect of self-esteem on leadership and achievement: a paradigm and a review studies on leadership. The research suggested that self-esteem is a significant variable for leadership effectiveness as well as individual productive functioning.

Anzi and Swayed (2005) conducted a study on academic achievement and its relationship with anxiety self-esteem optimism and pessimism among Kuwaiti students. The subjects of the study were 400 male and female students. The major findings of the study showed significant positive correlation between academic achievement, optimism and self-esteem however negative correlation were found between academic achievement, anxiety and pessimism among males and females.

Gallagher (2005) investigated on underachievement how do we define, analyze, and address it in schools and found out the reasons of underachievement. It was found that one of the major factors was lack of self-confidence. Accepting and conquering challenges help in developing self-confidence. In case of gifted students, low self-image is related to the high expectations of their teachers and parents and sometimes by the students themselves.

Betsy and Del (2005) examined the factors that differentiate underachieving gifted students from high-achieving gifted students. The sample for the study was 56 gifted
underachievers and 122 gifted achievers from 28 schools chosen by multi-stage sampling. It was found that whether gifted or underachievers the subjects did not differ on their motivation or self-regulation. The results suggest that underachievers cannot be underestimated just on the basis of less academic scores.

Chopra, R. and Sahoo, S. (2006) conducted study on self-esteem of secondary school students in relation to parent involvement. It was found that majority of students had positive and balanced self-esteem in comparison to those students who had lesser parental involvement. Therefore parental involvement had significant impact on self-esteem of secondary school students and the relationship between self-esteem and parental involvement was found to be positive and significant.

Sonia (2008) investigated upon the impact of academic stress on self-esteem of students. She found that academic stress had significant impact on the self-esteem of learners of +1 class. However there was no difference in self-esteem of students with high, average and low level of academic stress.

Naderi, Abdullah and Aizan (2009) conducted a study on self-esteem, gender and academic achievement of undergraduate students. Sample of study was having 105 male and 48 female students. Self esteem was measured using Rosenberg self esteem scale. The cumulative grade point average (CGPA) of students from previous class was used to select the sample. The results indicated that although self-esteem has strong significant relationship with academic achievement when gender is classifying variable, but there is no relationship between self esteem and academic achievement among same group.

Susan (2010) investigated on the power of music and its impact on the intellectual social and personal development of children. The study found that music involvement varies systematically by class, gender and status. However it is having useful implications for both mathematics and reading achievement among children. As a mediator of educational outcomes music involvement was significant for both mathematics and reading achievement. The study also revealed an increased self-esteem among the children.

The studies on self esteem have revealed that self-esteem of students can be improved with the help of intervention strategies. Studies such proposed by Dennison (1989), Palmer (1994),
Alves-Martins et al. (2002), Sousa (2010) have indicated that self-esteem of students can be enhanced by suitable strategies. However, a number of other studies have proved that self-esteem of an individual is very much related to his/her academic achievement. The studies conducted by Masqued (1983), Hair (1999), Martin, F. Peixoto, Periera & Pedro (2002) Alves-Martins et al. (2002), Raj (2003), Ritchie and Norman (2004), have revealed that higher the achievement of an individual higher is the self-esteem. Thus most of the studies found that self-esteem and achievement are significantly related to each other.