CHAPTER II
REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

Ascertaining the rationale and the need to going through the process of reviewing former research ventures in the research journey Borg (as cited in Khan, 2007) views, “The literature in any field forms the foundation upon which all future work will be built. If we fail to build the foundation of knowledge provided by the review of literature our work is likely to be shallow and naive and will often duplicate work that has already been done better by someone else.” Avoiding the duplication makes further a research not only original, but also adds a value of contribution to the already existing voluminous book of knowledge that would be found to worth by the other researchers.

2.2 OBJECTIVES OF REVIEW OF LITERATURE

The fulfilled objectives and benefits of reviewing the previous research and literature are multifaceted. In the views of Mishra and Mohant (2006), the objectives of reviewing of literature as follow:

i) To provide theories, ideas, explanations or hypotheses, this may prove useful in the formulation of a new problem.

ii) To indicate whether the evidence already available to solve the problem adequately without requiring further investigation. It avoids the replication.

iii) To provide the sources for hypotheses. The investigator can formulate research hypotheses on the basis of available studies.

iv) To suggest method, procedure, sources of data and statistical techniques appropriate to the solution of the problem.

v) To locate comparative data and findings useful in the interpretation and discussion of results. The conclusion drawn in the related studies may be
significantly compared and may be used as the subject for the findings of the
study.

vi) To help in developing expertise and general scholarship of the investigator in
the area investigated.

vii) To contribute towards the accurate knowledge of the evidence or literature in
one’s area of activity is a good avenue towards making oneself. Whether one
is employed in an institution of higher learning or a research organization this
knowledge is an asset.

viii) To provide some insight regarding strong points and limitations of the
previous studies.

ix) To enable the investigator to improve his/her own investigation.

2.3 NEED FOR THE REVIEW OF LITERATURE

A need-blind review of literary works is destined to be unfruitful and would be
confounded on the ground of reasons and so the process of review needs to be rock-
bedded to win over the pellets of stones thrown and Yohesh kumarsingh (2007) rolls
out the need to do reviews as stated below:

i) One of the early steps in planning a research work is to review research done
previously in the particular area of interest and relevant area of quantitative
and qualitative analysis of this research usually gives the worker an indication
of the direction.

ii) It is very essential for every investigator to up-to-date in his/her information
about the literature, related to his/her own problem already done by others. It
is considered the most important pre-requisite to actual planning and
conducting the study.

iii) It avoids the replication of the study of findings to take an advantage from
similar or related literature as regards, to methodology, techniques of data
collection, procedure adopted and conclusion drawn. He/she can justify his/hers own endeavor in the field.

iv) It provides a source of problem of study and an analogy may be drawn for identifying and selecting a problem of research. The researcher formulates hypotheses on the basis of review of literature. It also provides the rationale for the study. The results and findings of the study can also be discussed at length.

2.4 CLASSIFICATION OF STUDIES

The studies collected, related to the topic of investigation are given in this chapter under two sections as follows:

i) Foreign studies and

ii) Indian studies

The investigator collected 78 reviewed studies (both in Foreign and Indian) related to the present studies conducted over a decade, which are present under the captions:

i) Foreign studies related to Interpersonal intelligence

ii) Indian studies related to Interpersonal intelligence

iii) Foreign studies related to Emotional maturity

iv) Indian studies related to Emotional maturity

v) Foreign studies related to Achievement

vi) Indian studies related to Achievement

2.4.1 Foreign Studies Related to Interpersonal Intelligence

Gracious et al. (2012) conducted a study on multiple Intelligence and digital learning awareness of prospective B.Ed teachers

The study multiple intelligence and digital learning awareness of prospective B.Ed teachers was probed to find the relationship between multiple intelligence and digital learning awareness of prospective B.Ed Teachers. Data for the study were
collected using self made Multiple Intelligence Inventory and Digital Learning Awareness Scale. The investigator used stratified random sampling technique for selecting the sample. The sample consisted of 242 prospective B.Ed teachers. For analyzing data, "t" test and Pearson's product moment co-efficient were the statistical techniques used. Finding showed that there was no significant relationship between multiple intelligence and digital learning awareness of prospective.

Savas and Perihan (2012) conducted a study on pre-service English as a foreign language teachers’ perceptions of the relationship between multiple intelligences and foreign language learning.

The relationship between intelligence, language, and learning was a challenging field of study. One way to study how this relationship occurs and works was to investigate the perceptions of advanced language learners. Therefore, this paper reports a study that was conducted to explore 160 pre-service English language teachers' perceptions about which type(s) of multiple intelligence(s) play a role in foreign language learning. The findings of the study indicated that virtually all participants (97%) agreed on making use of all intelligence types in the process of foreign language learning and linguistic intelligence alone does not guarantee success in learning a foreign language. The results of the study also illustrated that multiple intelligences and foreign language learning have an ongoing, complex, and interactive relationship. Finally, a foreign language learning discipline MI profile was suggested.

Ghazi, SafdarRehman and Shahzada (2011) conducted a study on relationship between students' self perceived multiple intelligences and their academic achievement.

This study aimed at investigating the relationship between students' self perceived multiple intelligences and their academic achievement. A significant correlation was found between self perceived verbal/linguistic, logical/mathematical, interpersonal, intrapersonal, naturalistic intelligence and students' academic
achievement. There was insignificant correlation between self perceived musical intelligence and academic achievement. Results of the study showed that the relationship between self perceived bodily/kinesthetic intelligence and academic achievement was very weak.

**Khataybeh, Abdalla; Al-Sheikh, Kholoud (2011)** conducted a study on multiple intelligences of students at Jordanian universities.

The study aimed at investigating different intelligence types among Jordanian students at different public and private universities in Jordan. To achieve such aim, it sought to identify and rank multiple intelligences that characterize students at Jordanian universities, and to identify and rank the differences in multiple intelligences according to some variables: the gender, university (public or private), the students' averages, the students' specializations and the academic year. This study has used a survey as an instrument of collecting data. The study sample consisted of 1436 students from the University of Jordan, Yarmouk University, Al-Hashemaya University, the University of Sciences and Technology, Petra University, Al-Zarqa University, Amman Arab University, Al-Isra' University, Al-Zaitunah University and Philadelphia University. The students estimated their own IQ scores on each of Gardner's seven multiple intelligences: logical mathematical IQ, musical IQ, interpersonal IQ, Kinesthetic IQ, Intra-personal IQ, Linguistic IQ and Spatial IQ. After analyzing the data, t-test indicated that interpersonal intelligence is the highest and the most common intelligence among Jordanian students. Following were Intra-personal, Kinesthetic, Linguistic, Spatial, logical mathematical, and musical, respectively. There were significant differences among Jordanian students in the linguistic and interpersonal intelligence in favor of the females. There were significant differences in the logical intelligences in favor of the governmental universities. There were no significant differences in the multiple intelligences that can be attributed to
the averages of the students. There were significant differences in the musical intelligence in favor of the graduates.

**McKethan, et al. (2010)** conducted a study on multiple intelligences in virtual and traditional skill instructional learning environments.

The purpose of this investigation was to examine (a) how Multiple Intelligence (MI) strengths correlate to learning in virtual and traditional environments and (b) the effectiveness of learning with and without an authority figure in attendance. Participants (N=69) were randomly assigned to four groups, administered the Multiple Intelligences Developmental Assessment Scales (MIDAS), were taught to fly cast, and were assessed on skill, form and accuracy. Results from this investigation imply that participants who score high in verbal/linguistic will be more likely to excel in virtual environments for tasks that require skill and accuracy, whereas when tasks require extensive form acquisition components the traditional classroom environment will most likely be more effective. Additionally, traditional instruction correlated with more MI profiles than any groups suggesting that for the gamut of MI in an instructional setting, traditional methods may be more effective than virtual learning environments.

**Owolabi, Tunde; Okebukola, Foluso (2009)** conducted a study on improving the reading ability of science students through study groups and multiple intelligences.

This study explored the effects of appropriate pedagogical skills study groups and multiple intelligences on students' efficiencies in reading skills. It employed a factorial design using three variables. A sample of 90 science students choosing from three intact classes was involved in the study. Data analyses were carried out using mean, standard deviation, analysis of covariance and multiple classification analysis. Findings revealed the significant difference in performance of the groups taught using study groups and multiple intelligences methods.
Stewart-Iles and Gail Marie (2009) conducted a study on examining the interrelationships among students’ personal-logical characteristics, attitudes toward the unified modeling language, self-efficacy, and multiple intelligences with respect to student achievement in a software design methods course.

The purpose of this study was to investigate the interrelationships among student’s demographics, attitudes toward the Unified Modeling Language (UML), general self-efficacy, and multiple intelligence (MI) profiles, and the use of UML to develop software. The dependent measures were course grades and course project scores. The study was grounded in problem solving theory, self-efficacy theory, and multiple intelligence theory. The sample was an intact class of 18 students who took the junior-level software design methods course, CSE 3421, at Florida Institute of Technology in the spring 2008 semester. The course incorporated instruction in UML with Java. Attitudes were measured by a researcher-modified instrument derived from the computer laboratory survey by Newby and Fisher, and self-efficacy was measured by the generalized self-efficacy Scale developed by Schwarer and Jerusalem. Multiple intelligence profiles, which were the proportion of Gardner’s eight intelligences, were determined from Shearer’s multiple intelligence developmental assessment Scales. Results from a hierarchical multiple regression analysis showed that only the collective set of multiple intelligence profiles was significant, but none of the individual intelligences were significant. The study’s findings supported what one would expect to find relative to problem solving theory, but were contradictory to self-efficacy theory. The findings also supported Gardner’s concept that multiple intelligences must be considered as an integral unit and the importance of not focusing on an individual Intelligence. The findings imply that self-efficacy was not a major consideration for a software design methods class that requires a transition to problem solving strategy and suggest that the instructor was instrumental in fostering positive attitudes toward UML.
Abdallah (2008) conducted a study on the effective of multiple intelligence strategies on EFL ninth grader’s achievement in reading comprehension.

This study aimed at investigating the effect of multiple intelligences strategies comprising logical-mathematic intelligence, verbal-linguistic intelligence, intrapersonal intelligence and interpersonal intelligences on ninth grade students' reading comprehension achievement in an EFL setting. The population of the study consisted of all ninth grade students in public schools in Irbid/Jordan in the second semester of the academic year (2005-2006). The sample of the study consisted of four ninth grade sections, which were selected purposefully (two male sections and two female sections). To answer the questions of the study, the researchers used the following procedures and instruments: (i) a reading comprehension test was constructed. It was judged by a jury of three professors, two English supervisors and three experienced teachers; and it was modified according to their comments; and (ii) the instrument was applied on the sample of the study at the beginning of the second semester of the academic year (2005-2006). To analyze the collected data, means, standard deviations and two-way ANOVA analysis were used with multiple Intelligences strategies and Gender as variables. The findings of the study were as follows: (i) there was a significant difference in the students' reading comprehension (alpha less than or equal to 0.05) due to the teaching strategies in favour of the experimental group; and (ii) there was no significant difference in the students' reading comprehension (alpha less than or equal to 0.05) due to the students' Gender.

Mussen, Kimberly (2008) conducted study on comparison of the effect of multiple intelligence pedagogy and traditional pedagogy on grade 5th students’ achievement and attitudes towards science.

This quantitative research study evaluated the effectiveness of employing pedagogy based on the theory of multiple intelligences (MI). Currently, not all students were performing at the rate mandated by the Government. When schools do
not meet the required state standards, the school was labeled as not achieving Adequate Yearly Progress (AYP), which may lead to the study. Due to low state standardized test scores in the district for science, student achievement and attitudes towards learning science were evaluated on a pretest, post test, essay question, and one attitudinal survey. Utilizing the Analysis of Co-variance (ANCOVA) for data analysis, student attitudes towards learning science were statically significant in the multiple intelligence I (experimental) group. No statistical significance was found in student achievement on the posttest, delayed posttest, or the essay question test. Social change can result from this study because studying the effects of the, multiple intelligence theory incorporated into classroom instruction can have significant effect on how children learn, allowing them to compete in a knowledge society.

**Parker, Candace (2008)** conducted study on an examination of the interrelationship between social demographic factors and multiple intelligences among college students.

The purpose of this research was to examine the interrelationships among four social demographic variables and Gardner’s eight multiple intelligences among the college students. The cross-sectional exploratory study used the Multiple Intelligence Inventory (MII), a self-administered questionnaire that emphasized intelligence preference not ability. It was used to examine the multiple Intelligences among 475 first year college students in the Baltimore metropolitan area using convenience sampling. The majority of participants were female (65.1%), Caucasian (58.7%), approximately 37% attended a University. Results revealed that college students preferred interpersonal and linguistic intelligences; and that the multiple intelligence inventory as a total sum score was an instrument with low to moderately reliable ($\alpha = .69$). In the multivariate analysis of variance, the Wilks’ lambda results revealed that both Gender ($F=9.77, p< .001$) and race/ethnicity ($F=4.20, p< .001$) were statically significant, whereas college type as not significant. These finding indicated that
differences existed in multiple intelligences between Gender and race/ethic groups. The position adopted for this study, identified multiple intelligence preference as the degree to which a college student may learn best and should not be focused with learning styles or learning ability. Therefore, the study findings of linguistic and interpersonal intelligences preference provided possible suggestions of how college students may learn. The intelligence of students was dynamic and as such requires a multi modal approach.

Kaya (2007) conducted a study on comparing multiple intelligences approach with traditional teaching on eight grade students' achievement in and attitudes toward Science

The purpose of this study was to investigate the effects of multiple intelligences (MI) teaching approach on 8th Grade students' achievement in and attitudes toward science. This study used a pretest-posttest control group experimental design. While the experimental group (n=30) was taught a unit on acids and bases using MI teaching approach, the control group (n=30) learned the same topic with traditional teaching. The data were collected using a multiple-choice test for students' achievement in science and a Likert scale questionnaire for students' attitudes toward science. The results of statistical analysis (MANCOVA) showed that there were significant differences in favor of the students of the experimental group with respect to both achievement in and attitudes toward science. Empirical evidence indicated that compared to traditional teaching, the MI teaching approach significantly increased 8th Grade students' achievement in and attitudes toward science.

Van den Berg, (2007) conducted a study on opportunities provided in outcomes-based language textbooks for the development of learners’ multiple intelligences.

This study investigated the opportunities provided in outcomes-based language textbooks to develop learners’ full potential. This was done by looking at
how learners’ multiple intelligences can flourish. Howard Gardner’s theory of multiple intelligences, which was used as a framework in the current study, claims that learners have different combinations of intelligences, and that the various intelligences can be developed. By doing so, learners were developed in their totality as knowledgeable, skilful and balanced adults. The focus in this study was on language teaching. Language teaching was ideal for this purpose, because it encompasses every aspect of the reality that learners live in. Furthermore, all learners learn language in school because it was intrinsic to human development and lifelong learning. By giving learners a variety of activities which accommodated the different intelligences, they have the opportunity to use their strong Intelligences in the language classroom. At the same time, learners were given the opportunity to expand their less developed Intelligences. In this study, selected Afrikaans and English language textbooks were analyzed to determine how the different intelligences were covered. Outcomes-based language textbooks were used because outcomes-based Education deals with the development of teaching and learning enables learner to develop their multiple intelligences. The study brought to light that only some intelligence receives attention in language textbooks, namely the linguistic, logical-mathematical, interpersonal, intrapersonal and spatial intelligences. On the other hand, some intelligence go little or even no attention in the textbooks that were analysed, namely the bodily-kinesthetic, naturalistic and musical intelligences. In spite of the important role that music plays in language teaching, it appeared that the musical intelligence was afforded the least attention of all the intelligences in seven of the eight textbooks that were analyzed. As a result, learner’s uniqueness in this regard was not respected, and their total development as knowledgeable, skilful and balanced human beings could therefore be hindered.
Ethan Elliott Hodge (2005) conducted a study on a best-evidence synthesis of the relationship of multiple intelligence instructional approaches and student achievement indicators in secondary school classrooms.

The purpose of this study was to synthesize the literature in order to assess and quantify (if possible) the relationship between multiple intelligence instructional approaches and student achievement indicators in secondary school classrooms (grades 6-12). This study employed the best-evidence synthesis methodology devised by Robert Slavin. Criteria for study inclusion included germaneness, minimization of bias, and validity. This study allowed for several conclusions: (i) a very limited amount of research focusing on the relationship of multiple intelligence instructional approaches and student achievement indicators in secondary school classrooms exists, ii) instances of multiple intelligence instructional approaches vary widely in methodology and implementation but demonstrate a fairly consistent philosophical approach, and (iii) the studies included in this research synthesis failed to prove causation in the relationship of multiple intelligence instructional approaches and student achievement indicators in secondary school classrooms.

2.4.2 Indian Studies Related to Interpersonal Intelligence

Ahila Ruby ShanthaKumari and Ramesh (2013) conducted a study on multiple intelligence of orphan students in Tirunelveli district.

The main objectives of the study were; i) to find out the level of multiple intelligence of orphan students in Tirunelveli district. ii) to find out the significant difference between male and female of orphan students in multiple intelligence. iii) to find out the significant difference among parental, maternal and complete orphan students in their multiple intelligence. The research method adopted for study was the survey method. It was proposed to use simple random sampling technique for selecting a sample of 150 orphan students those who were studying in VIII, IX and X standard. The investigator adopted multiple intelligence inventory by Terry
Armstrong (2007). The findings of the study were; (i) there was no significant difference between male and female of orphan students in multiple intelligence and its dimension of verbal linguistic intelligence, logical intelligence, mathematical intelligence, visual spatial intelligence, bodily kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, and naturalistic intelligence. (ii) there was no significant difference among parental, maternal and complete orphan students in their multiple intelligence and its dimensions of verbal linguistic intelligence, logical intelligence, mathematical intelligence, visual spatial intelligence bodily kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, and naturalistic intelligence.

Premavathi (2012) conducted a study on relationship between interpersonal intelligence and academic achievement of higher secondary school students.

The main objectives of the study were i) to find out whether there was any significant difference between a) male and female, b) rural and urban, c) Tamil and English medium, d) government and private school, e) age of below16 and above 16 in their interpersonal intelligence. ii) to find out whether there was any relationship between interpersonal intelligence and academic achievement of higher secondary school students. The investigator used simple random sampling technique, 11 schools were selected and from each school, the students were selected randomly from higher secondary schools. Totally the sample consisted of 300 students. Interpersonal intelligence scale was prepared and validated by Sheeja. V. Titus and Dr. A. Amalaraj (2008). The questionnaire consisted of 45 items. Each item had fine alternatives such as strongly agree, agree, neither agree or nor disagree, disagree and strongly disagree. The findings of the study were; (i) there was significant difference between male and female students with interpersonal intelligence in total. (ii) there was no significant difference between below 16 and above 16 higher secondary school students in their interpersonal intelligence, (iii) there was significant difference
between Tamil and English medium higher secondary school students with respect to interpersonal intelligence in total. (iv) there was no significant relationship between their interpersonal intelligence and academic achievement of higher secondary school students.

Suba (2012) conducted a study on relationship between multiple intelligence and achievement of teacher training students.

The main objectives of the study were; i) to find out whether there was any significant difference a) male and female b) rural and urban c) Tamil and English medium d) government and private school. e) age of below 18 and above 18 students, f) day’s scholar and hosteller in their interpersonal intelligence. (ii) to find out whether there was any relationship between interpersonal intelligence and academic achievement of higher secondary school students. iii) to find out whether there was any relationship between multiple intelligence and achievement of teacher training students. The investigator had used sampling random sampling technique for collecting the data. The sample consisted of 251 teacher training students. The multiple intelligence inventory developed by Howard Gardner (1983) was used. It had five dimensions in such as the tool consists of 60 statements where responses can be used to mean of multiple intelligence of individual. The findings of this of the study were; (i) there was significant difference between a) male and female b) rural and urban teacher training students in their multiple intelligence. (ii) there was significant difference between a) married and unmarried teacher training students in their multiple intelligence. (iii) there was relationship between multiple intelligence and achievement of teacher training students .

Rani and Porgio (2010) conducted a study on a study on the effect of multiple intelligence on the academic achievement of higher secondary students.

The main objectives of this study were ;( i) to find out the level of multiple intelligence of the higher secondary students. (ii) to find out the level of academic
achievement of higher secondary students. (iii) to find out whether there was any significant difference in multiple intelligence of higher secondary students with respect to background variables. (iv) to find out whether there was any significant difference in the academic achievement of higher Secondary Students with respect to background variables. (v) to find out whether there was any significant relationship between multiple intelligence and the academic achievement of higher secondary students. The investigator selected the normative survey method for the study. Tools include the multiple intelligence inventory prepared and validated by the Investigator herself. For academic achievement marks from the annual examination of S.S.L.C were collected. The findings of the study were; (i) there was significant difference between plus one and plus two students in their logical mathematic Intelligence. Plus one (+1) students showed more logical mathematical Intelligence than plus two students. (ii) There was significant difference between co-education and girl’s school students in their interpersonal intelligence than boy’s school students. Co-education students showed more interpersonal intelligence than girl’s school students. (iii) there was no significant difference between higher secondary students in their achievement. (iv) there was significant relationship between verbal and logical mathematical intelligence and achievement of higher secondary students.

Sujalawatve (2010) conducted a study on correlation among multiple intelligence through parental perceptions.

This study aimed at investigating to correlation among multiple Intelligence through parental perceptions. The ways the parents perceives their wards related to the Investigator selected the normative survey method for the study. Multiple intelligence Checklist - This was a research made partially standardized checklist. The checklist consisted of some activities children enjoy in their school age (check list is constructed for in house purpose). The checklist consisted of 10 statements, 10 for each of the intelligence sample of the items and the answer. Sample consisted of
100 high scholars whose parents gave rating based on their observations regarding intelligence of their ward. A multiple intelligence rating scale based on activities, related to this intelligence was used for the purpose. The findings of the study were; (i) Summated ratings on eight areas were subjected to correlation analysis. Almost all this correlations were found to be significantly high, except that between linguistic and interpersonal. (ii) Significant high correlations between linguistic and intrapersonal, but insignificant correlation between linguistic and interpersonal were revealed. (iii) Logical Mathematical appeared to be least correlated with others. Some probing into various such relationships were discussed, to point new direction in care of parent’s perception of multiple intelligence among their wards. 

Antony Muthu and Annaraja (2009) conducted a study on multiple intelligence of primary school teachers in terms of background variables.

The present study was aimed at in investigating to find out the level of multiple intelligence of primary school teachers in terms of background variables. The investigator has used stratified random sampling technique for selecting the sample for the population. The stratified had been done on the basis of sex, age, marital status, type of school, locality of school, educational qualification of the teacher, teaching experience of the teacher, in-service training of the teacher. The sample consisted of 200 primary school teachers from 67 schools. Among them 44 were male and 156 were female. The major findings of the study were(i) there was no significance difference between male and female teachers in their verbal linguistic intelligence, bodily kinesthetic intelligence, interpersonal Intelligence, intra personal intelligence, musical rhythmic Intelligence, naturalistic and existentialistic intelligence. (ii) there was significant difference between male and female teachers in their visual spatial intelligence.
**Hema Nalini (2008)** conducted a study on impact of the theory of multiple intelligence on children with autism

The main objective of the study was to find out the impact of the theory of multiple intelligence of children with autism. The investigator has adopted the survey method of research to study the impact of the theory of multiple intelligence on children with autism. The populations were high school students and the sample consisted of 200 high school students. The main findings of the study was that multiple intelligence provided insight into the different learning styles of children and enable the teacher to provide optimum learning environment and experiences for the pupils.

**Vijay Amirtharaj and Porgio (2009)** conducted a study on impact of anxiety on the multiple intelligence of higher secondary schoolstudents.

The main objectives of this study were; (i) to find out the level of anxiety of higher secondary school students. (ii) to find out the level of multiple intelligence of higher secondary school students. (iii) to find out the relationship between anxiety and multiple intelligence of higher secondary school students. The investigator has adopted the survey method of research to study the impact of anxiety on the multiple intelligence of higher secondary school students. Population of the survey was higher secondary school students from Trichy district, and the sample consisted of 200 higher secondary school students from 8 schools. The findings of the study were: (i) there was significant difference between rural and urban students in their level of anxiety. (ii) there was significant difference between boys and girls students in their multiple Intelligence and its dimension.(iii).there was no relationship between anxiety and multiple intelligence of higher secondary school students.
**Kanmani and Annaraja (2008)** conducted a study on logical - mathematical intelligence and achievement of computer science degree Students.

The main objectives of this study were; (i) to find out the level of logical-mathematical intelligence among computer science degree students. (ii) to find out the level of Academic achievement in computer Science of degree students. iii) to find out the relationship between logical mathematical intelligence and academic achievement of computer science degree students. The Investigator has adopted the survey method of research was adopted for the study. Logical-mathematical intelligence scale developed by Kannan (2008) and Annaraja (2008) was used for data collection. The major findings of the study were; (i) 16.94% of computer science degree students had high level of logical-mathematical Intelligence. (ii) male and female computer science degree students did not differ in their logical-mathematical intelligence. (iii) there was no significant difference between the computer science degree students studying in co-education college and women’s colleges in their logical-mathematical intelligence. (iv) there was no significant difference between government and government aided computer science degree students in their logical mathematical Intelligence. (v) there was no significant association between logical mathematical intelligence and educational qualification of parents of computer science degree students. (vi) there was no significant association between logical-mathematical intelligence and occupation of the parents of computer science degree students. (v) male and female computer science degree students did not differ in their achievement in computer science. (vii) there was no significant difference between government and government aided college student’s achievement in computer science. (viii) There was no significant difference between the students from women’s and those from co-education college in their achievement in computer science. (ix) there was no significant association between achievement in computer Science and educational qualification of the parents of computer science degree students. (x) there
was no significant association between achievement in computer science and the occupation of the parents of computer science degree students. (xi) there was a low negative correlation between logical-mathematical intelligence and achievement of computer science degree students. xii) there was no relationship between logical mathematical intelligence and academic achievement of computer science degree students.

**Jeba and Annaraja (2007)** conducted a study a study on the relationship between multiple intelligence and achievement in Chemistry among high school Students.

The main objective of the study was to find out the relationship between multiple intelligence and achievement in chemistry among high school students. The investigator used stratified random sampling technique for selecting the sample from the population. The populations were high school students and the sample consists of 250 high school students. The investigator has used inventory was Gardner’s Multiple Intelligence inventory (MII). The major findings of the study were; i) 16.4% of students had high level of multiple Intelligence and 19.5% of students had high level of achievement in chemistry. (ii) There was no significant relation between achievement in chemistry and linguistic intelligence, logical mathematical intelligence, spatial intelligence, bodily kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, naturalistic intelligence and multiple intelligence of the high school students.

**Robert Lawrence and Alphonse Raj (2007)** conducted a study on relationship between multiple intelligence and achievement in Mathematics among high school students.

The main objectives of this study were; (i) to find out the level of multiple intelligence of high school students in terms of background variables. (ii) to find out the level of achievement in mathematics among the high school students. The Investigator has adopted the survey method of research to study relationship between
multiple intelligence in mathematics among the high school students. Populations of the Survey were high school students from Trichy district and the sample consisted of 200 High School Students from 10 schools. The findings of the study were; (i) there was significant difference between rural and urban high school students in their level of multiple intelligence with reference to verbal linguistic intelligence and musical rhythmic intelligence. (ii) There was significant difference among boys, girls and co-education high school student in their level of multiple intelligence with reference to verbal linguistic intelligence, logical mathematical intelligence, interpersonal intelligence and naturalistic intelligence. (iii) there was relationship between multiple intelligence and achievement in Mathematics among high school students.

Xavier and Annaraja (2007) conducted a study on effectiveness of multiple intelligence based teaching mathematics on achievement of VI standard students.

The main objectives of this study were; (i) to find out the performance of control and experimental group in their gain scores. (ii) to find out the difference between control and experimental groups in their multiple intelligence. The Investigator used Simple Random sampling technique for selecting the sample from the population. The populations were high school students and the sample consisted of 200 high school students. The investigator has used tool was Gardner's multiple intelligence tool. The findings of the study were; (i) 10% of the control group students had high level of gain scores and 26.67% of the experimental group students had high level of gain scores. (ii) there was no significant difference between control and experimental group students in their multiple intelligence.

Ajith Raj and Sebastian (2006) conducted a study on learning styles and multiple Intelligence of B. Ed. students

The study was aimed to find out the relationship between learning style and multiple intelligence of B. Ed. students. The investigator has used stratified random sampling techniques for the selecting sample from the population. The stratified has
been done on the basis of sex, age, community, nature of college, type of college, parent’s educational qualification, and parent’s income. The sample consisted of 300 B. Ed. students. The tools used were learning style inventory and multiple intelligence. The major finding that there was no significant relationship between learning style and multiple intelligence.

Abilash, Benedict, Annaraj (2005) conducted a study on awareness on biotechnology and multiple intelligence of the college students.

The present study was aimed to find out the relationship between awareness on biotechnology and multiple intelligence of college students. The investigator has adopted the survey method of research to a study on awareness on biotechnology, and multiple intelligence of the college students. The populations were college students and the sample consists of 200 high school students. The findings of this study were:

(i) 17.7% of students have high level of awareness on biotechnology and 14.3% of college students have high level of awareness on multiple intelligence. (ii) there was no significant relationship between awareness on biotechnology and logical mathematical, visual spatial, bodily-kinesthetic and musical rhythmic intelligence. (iii) there was significant relationship between awareness on biotechnology and verbal linguistic, interpersonal, intrapersonal and multiple intelligence of college students.

Manju Krishna (2004) conducted a study on effectiveness of strategies involving multiple intelligence theory on the achievements in mathematics at higher secondary level.

The study was aimed to compare the effectiveness of strategies involving multiple intelligence theory on mathematics achievement at secondary level with reference to instructional objectives. The researcher adopted experimental method for the present study and selected the pre-test post test non equivalent group design for the study. The tools used were lesson transcripts based on strategies involving multiple intelligence, lesson transcripts based on present strategies involving multiple
intelligence theory. The major finding was that lesson transcripts based on present strategies involving multiple intelligence theory was more effective than the present method of teaching on achievement on mathematics.

2.4.3 Foreign Studies Related to Emotional Maturity

Keertivibha (2012) conducted a study on the effect of emotional maturity and family environment on the spiritual intelligence of B.Ed. students.

The study was aimed to effect of emotional maturity and family environment on the spiritual intelligence of B.Ed. students. The study was conducted on a sample of 500 B.Ed. students from school of education, lovely professional university, Phagwara. Spiritual intelligence was taken as the dependent variable and whereas emotional maturity and family environment were taken as independent variables. Each independent variable was varied at two levels, emotional maturity as-low and high, whereas family environment as- non congenial and congenial. The results of ANOVA showed that low and high emotional maturity groups exhibited significant differences on spiritual intelligence and in favour of low emotional maturity group. In case of family environment groups-non congenial and congenial, the differences were found significant on spiritual intelligence and in favour of congenial family environment group. The double interaction effect of the variables of emotional maturity and family environment was not significant on spiritual intelligence.

Sahab Ram Kumawat (2012) conducted a study on emotional maturity in post graduate students of vocational education.

The purpose of this study was to find out difference between emotional maturity in vocational education postgraduate students. The survey method was applied on 600 samples. Emotional Maturity Scale (EMS) by Prof. YushvirSen and Dr. Mahesh Bhargava, questionnaires were administered and (600 post graduate students of vocational Education) responses were received. The results of the study were; (i) there was no significant difference in emotional maturity of master of
technology and master of business administration students. (ii) there was no significant difference in emotional maturity of master of business administration and master of computer application students. (iii) there was no significant difference in emotional maturity of master of computer application and master of technology students. (iv) there was no significant difference of emotional maturity in post graduate students of vocational education.

Zeinab Mortazavi et al. (2012) conducted a study on comparison of attachment styles and emotional maturity between opiate addicts and non-addicts.

The study was to investigate both attachment styles and emotional maturity as two influential factors contributing to the prevention and treatment of addiction. Research has shown that attachment styles contribute to the development of personality traits. Personality was regarded as an effective factor that enhances the inclination towards drug use. Therefore, the study aimed to investigate the relationship between attachment styles and addiction with emotional maturity. The participants of the study consisted of 120 people who were assigned into two groups. In one group, there were 60 opiate addicts who were under treatment in healthy life center for Abandonment in Kerman city during March 2010. In the second group, there were 60 healthy people living in Kerman city during the same time. The instruments used to collect the data included Collins & Read attachment scale and emotional maturity scale. Mann Whitney ‘U’ test and Chi-square test were run to analyze the data. The results showed that there was significant difference in attachment styles and emotional maturity between opiate addicts and non-addicts.

Dharamvir Tali and Anubhagoel (2011) conducted a study on a comparative study on anxiety and emotional maturity among adolescents of co-educational and unisex-education schools.

The study was undertaken to study anxiety and emotional maturity among adolescent boys and girls studying from co-educational and unisex-education schools ( 50 boys & 50 girls of co-educational schools & 50 boys & 50 girls of unisex-educational...
schools). Within the age of 13 to 16 years from three schools of Yamunanagar District of Haryana were selected as a sample. Data was collected by administering Anxiety Scale by S.E. Kurg, I.H. Scheier and A.B. Cattell and Emotional Maturity Scale by Dr. Yashvir Singh and Dr. Mahesh Bhargava. The data obtained was analyzed statistically and the study reveals that there was no significant difference in anxiety and emotional maturity among adolescents’ girls and boys studying from co-educational and Unisex-education school.

Ira Kusumawaty (2011) conducted a study on relations between parent and parenting teenager’s emotional maturity.

The aim of this study was to find out the relationship between parent and parenting teenager’s emotional maturity based on the perception of class X and XI adolescents in senior high school 6 Palembang in 2010. This used analytical survey with cross sectional approach where the total populations were 502 students of class X and XI senior high school 6 Palembang. Sampling was conducted from May to June 2010 by using random sampling method, with the number of 83 respondents. The bivariate data analysis was done by Chi-Square test. Based on bivariate analysis, there was no significant correlation between parenting parents with adolescent emotional maturity (p value = 0.666). The school and teachers hope to provide the patterns and guidance to adolescents. The teenagers hope to be more open to all the information and were advised to get used to add knowledge to know the ways to learn, the methods to understand themselves and others so that they can express emotional reactions, under the terms and conditions that exist so that interaction with others can be established effectively. The major finding was there was no relation between parent and parenting teenager’s emotional maturity.

Narendra Pachpande, Suryakant Patil (2011) conducted a study on the effect of emotional maturity of primary teachers on their teaching attitude.
Emotional maturity means to control on emotions. Emotionally matured person do his/her work successfully. Emotionally matured primary teacher give his/her devotion in educational development of a primary student. To study emotional maturity of primary teacher 140 primary teachers were selected by stratified random sampling method. Emotional maturity test and teaching attitude test were useful for this study. The descriptive and inferential statically analysis was used. It was concluded that emotional maturity of primary teacher affect on had teaching attitude.

Phillip Klever (2009) conducted a study on goal direction and effectiveness, emotional maturity, and nuclear family functioning.

Differentiation of self, a cornerstone concept in Bowen theory, has a profound influence over time on the functioning of the individual and his or her family unit. This 5-year longitudinal study tested this hypothesis with 50 developing nuclear families. The dimensions of differentiation of self that were examined were goal direction and effectiveness and emotional maturity. A qualitative analysis of participants’ goals demonstrated that couples with higher functioning developing nuclear families, when compared with couples with lower functioning families, placed more emphasis on family goals, had more balance between family and personal goals, and pursued more goals over the 5 years. The quantitative analysis supported the hypothesis that goal effectiveness and emotional maturity influenced variation in nuclear family functioning. In addition, couple goal effectiveness and emotional maturity were associated with nuclear family functioning more strongly than individual goal effectiveness and emotional maturity were associated with individual functionin.

Jadhav (2010) conducted a study on relationship between home environment and emotional maturity of college going students of Belgaum district.

The aim of this study was to find out the relationship between home environment and emotional maturity among college going students of Belgaum district in Karnataka. The sample included 200 students selected by the random
sampling technique, out of which 120 were boys and 80 were girls’ students. The
home environment scale and emotional maturity scale were used for data collection.
The Pearson’s correlation coefficient technique was adopted for data analysis. There
was a positive and significant relationship between home environment and emotional
maturity among the boys and girls students, including those of rural background,
including private college students with low socio-economic status and students more
than 20 years age. It was found that, there was no positive and significant relationship
between home environment and emotional maturity among the urban students,
studying in government colleges, with high socio-economic status and students less
than 20 years of age.

Kineret et al (2007) conducted a study on the relationship between emotional
maturity, intelligence and creativity in gifted children.

The purpose of this study was to explore the inter-relationships between
emotional maturity and intelligence in gifted children. Our hypothesis was that
emotional maturity would have an effect on creativity, independent of intelligence. In
the study, 221 children participated, between the ages of 9–13. All were measured for
emotional maturity, intelligence and creativity. Results showed an effect of emotional
maturity on creativity, as well as an effect of intelligence. Among the highly
intelligent group, emotionally mature children were more creative.

Necmi Avkiran (2000) conducted a study on interpersonal skills and emotional
maturity influence entrepreneurial style of bank managers.

Results of this study highlight the importance of human resource managers
and trainers assessing the interpersonal skills and emotional maturity of new recruits
and enhancing the interpersonal skills of the existing managerial workforce. The
entrepreneurial style of the branch manager was projected to play an increasingly
important role in the deregulated finance sector. Currently, the branch manager, who
can best be described as a corporate entrepreneur, could well evolve into an
independent entrepreneur under a franchise banking system. Path analysis was used to
investigate the interrelationships among the three competency factors for a bank branch manager. Emotional maturity and interpersonal skills were modeled as impacting on entrepreneurial style. All the hypothesized effects were supported by decomposition of the zero-order correlations. 


The relationship between emotional maturity and drinking-and-driving involvement among young adults aged 25–34 was investigated. The variables were sex, age broken down into two groups (25–29 and 30–39), and six drinking-and-driving categories. The Revised Huffman Inventory was used to measure emotional immaturity. The inventory was administered to graduate students enrolled at The University of Tennessee at Knoxville during the summer of 1981. A table of random numbers was used to obtain a sample of 326 subjects. A three-factor analysis of variance was used to test the hypotheses. If a difference among groups was significant ($p < .05$), Duncan's Multiple Range Test was applied to determine where those differences were. The conclusions were: (i) among females and males in the same age group, females were more emotionally mature than males; (ii) age was a factor in emotional maturity in that emotional maturity increases with age; and (iii) there appears to be a link between emotional maturity and drinking-and-driving involvement in that persons with lower emotional maturity were more likely to drive while under the influence of alcohol. 

2.4.4 Indian Studies Related to Emotional Maturity

Balakrishnan (2013) conducted a study on emotional maturity of teachers in relation to caste and religion 

The study had been conducted to evaluate the degree of emotional maturity attained by post graduate teachers in relation to caste and religion. The sample of 720 post graduate teachers from the various Higher Secondary Schools of five Districts in
Tamil Nadu, was selected by random sampling method for the study. The Emotional Maturity Scale developed by Roma Pal (1989) was used to examine emotional maturity of the subjects for the study. The study revealed that the difference in the level of emotional maturity among the post graduate teachers belong to four caste was not significant. It was noted that the difference in the level of emotional maturity among the post graduate teachers belong to Hindu, Christian and Islam was significant. It was observed that post graduate teachers belong to Hindu and Christian differ significantly between one another in their level of emotional maturity. The post graduate teachers belonging to Hindu were better than their counterparts on emotional skills viz., interpersonal, intrapersonal stability, adjustment, flexibility, adaptability and stress management.

Komala (2013) conducted a study on emotional maturity and self-esteem: An associational enquiry.

The aim of the study was to assess the association between emotional maturity and self-esteem of higher secondary school students. Fifty private school and government school students participated. Rosenberg’s Global self-esteem (Rosenberg, 1965) and emotional maturity scale standardized by Dr. Yashvir sing and Dr. Mahesh Baraga were adopted by the investigator for the study. Descriptive survey method was adopted for the present study. It was found that there was significant difference between boys and girls and private and government school students in overall emotional maturity and self-esteem, there was significant difference between science and arts group students in their self-esteem. Thus the study revealed there was significant association between emotional maturity and self-esteem.

Meenatchi and Edward William Benjamin (2013) conducted a study on religious attitude and emotional maturity of student teachers in Pondicherry region.

The problem under the research was religious attitude and emotional maturity of student teachers in Pondicherry region. Education plays a vital role in enriching the society and human resource. A highly motivated teacher helps in success of any
educational system. Hence an attempt was made to study the relationship between religious attitude and emotional maturity of student teachers. The objectives of this study were to find out the relationship between religious attitude and emotional maturity of student teachers. Quantitative approach was used in this study. This study was limited to only B.Ed and D.T.Ed students in Puducherry region alone. The population consisted of 300 students, selected from two colleges of education in Puducherry. The results showed that there was a positive relationship between religious attitude and emotional maturity of student teachers.

Panimalar Roja Sasikumar and Parimala Fathima (2013) conducted a study on a study on emotional maturity and self-concept at higher secondary level.

The objectives of the studies were; (i) to find out the level of emotional maturity and self-concept among higher secondary student who were studying in various schools in Pudukkottai district; (ii) to find out the significant difference if any between the different groups of biographical variables such as sex, location of the school, type of the school, parents educational qualification, parents occupation, parents annual income, parents nature, and type of the family in the students of higher secondary course in respect to their emotional maturity and self-concept. The investigator used Emotional Maturity Scale and Self-concept Scale. The investigator used Random sampling technique and samples were collected only from the Students of higher secondary level in various schools located in and around Pudukkottai area which was located in Pudukkottai district. The findings of the study were; (i) there was no significant difference between soft and friendly nature of the mother of higher secondary course students in respect to their self-concept. (ii) there was significant difference in emotional maturity of higher secondary course students with respect to type of school (iii) There was no significant correlation between emotional maturity and self-concept of higher secondary course students.
Subramanian and Veliappan (2013) conducted a study on a study on emotional maturity of high school students

The emotional development of high school students was the foundation for their cognitive development. Emotional support and secure relationships build a student’s self-confidence and the ability to function as a member of a group. So the investigator took the study “A study on Emotional Maturity of high school students”. The objective of the study was to find out whether there was any significant difference in emotional maturity of high school students with respect to gender and type of school. A descriptive survey method was adopted by the investigator to conduct this study. The investigator used the stratified random sampling technique for selecting the sample. The investigator selected 335 high school students from Tenkasi Taluk. The tool used in the study was Emotional Maturity Scale by Yasvir Singh and Magesh Bharagava (1990). The investigator found that the high school boys and private high school students were emotionally matured.

Armin Mahmoudi (2012) conducted a study on emotional maturity and adjustment level of college students.

The present study was conducted to find out the relationship between emotional maturity and adjustment level of college students. Emotional maturity was measured by Singh’s emotional maturity Scale (EMS). While asthenia’s adjustment inventory was used to measure the adjustment level of the students. For this study a sample of 160 female students of age range 18-22 years studying in post graduates were selected from different colleges of Yasouj city. High positive correlation was obtained between emotional maturity and overall adjustment.

Balakrishnan and Viswanathan (2012) conducted a study on value pattern of teachers in relation to social and emotional maturity

The major objectives of the study were; (i) to find out the value pattern of post graduate teachers. (ii) To find out the level of social maturity of post graduate teachers. (iii) to find out the level of emotional maturity of post graduate teachers. (iv)
to find out if there was any significant relationship between value pattern and social maturity of post graduate teachers. To find out if there was any significant relationship between value pattern and emotional maturity of post graduate teachers. The study has been conducted on a random sample of 720 post graduate teachers. The investigators have employed normative research method in this study. The Teachers Value Inventory (Singh, H.L. and Ahluwalia, S.P., 1981), Social Maturity Scale (Nalini Rao, 1998) and Emotional Maturity Scale (Roma Pal, 1989) have been employed for the collection of data. The data has been subjected to descriptive and correlation analysis. It was concluded from the findings of study that post graduate teachers have given the first preference for the social values and least preference for the political values. Further, it was also noted that the post graduate teachers have moderate level of social maturity and have extremely unstable level of emotional maturity. The values of kindness, politeness, service and fellow feeling show one's social capacity. The values of courage, confidence, love and dedication show one's emotional capacity. The social maturity and emotional maturity were the psychological values. Psychological values were concerned with the quality of emotional and mental life of individuals. It was the inner world of our feelings, desires, impulses, motives, goals, attitudes and a myriad of mental processes. They collectively shape our human personality, external behavior and our internal of well-being happiness and harmony.

Dalwinder Singh, Simerjeet Kaur and Gaurav Dureja (2012) conducted a study on emotional maturity differentials among university students

The purpose of the study was to examine the ‘emotional maturity’ among university students. The investigators had selected two hundred (N = 200) male and female subjects, out of which one hundred [N = 100] sportspersons (N = 50 male and N = 50 female) and one hundred [N = 100] non-sportspersons (N = 50 male and N = 50 female) who were studying in various affiliated colleges and campus of Panjab University, Chandigarh. Sportspersons were those who had participated in inter-
college and interuniversity competitions in various games/sports. Non–sportspersons were those students who did not participate in any game or sport activity. The age of all subjects was ranged between 18 to 26 years. To collect the required data for the present study, ‘emotional maturity’ questionnaire prepared by Singh and Bhargava (1988) was administered. ‘t’ test was applied to determine the significance difference and direction of difference in the mean scores of each variable between male sportspersons, female sportspersons, male non-sportspersons and female non-sportspersons. The results revealed there was no significant difference on the sub-variable social maladjustment between male sportspersons and female sportspersons. However, no significant differences were found with regard to emotional instability, emotional regression, personality disintegration, lack of independence, ‘emotional maturity’ (total) between male sportspersons and female sportspersons. The results with regard to male sportspersons and female non-sportspersons revealed significant differences on emotional instability, emotional regression, social maladjustment, personality disintegration, lack of independence and emotional maturity.

**Rajkumar (2012)** conducted a study on higher secondary students’ emotional maturity and achievement in economics in Tirunelveli district.

The aim of this study was to find out the emotional maturity and achievement in economics of higher secondary students in Tirunelveli district. 1060 higher secondary students were taken as sample. The tool used to find out the emotional maturity was constructed and standardized by emotional maturity scale constructed and validated by K. M. Roma Pal (1984). The academic achievement in economics was found out using the tool constructed by the investigator. The mean value of emotional maturity scores (136.53) indicates that the higher secondary students were having extremely unstable emotional maturity. The mean value of achievement in economics scores (m=75.47) indicates that the higher secondary students were having high achievement in economics. There was significant difference between male and female, day scholar and hostel staying higher secondary students with respect to their
emotional maturity. There was no significant difference between rural and urban, government and aided higher secondary school students with respect to their emotional maturity. There was significant difference between male and female higher secondary students with respect to their achievement in economics. There was no significant difference between rural and urban, day scholar and hostel staying, government and aided higher secondary school students with respect to their achievement in economics. There was no significant relationship between higher secondary students’ and achievement in economics.

Thilagavathy (2010) conducted a study on achievement and emotional maturity of teacher trainee in Thanjavur district.

In the present study investigated that to find out the relationship between achievement and emotional maturity of teacher trainees. The present investigation was conducted in Thanjavur district. Out of the population of 1800 teachers trainees belonging to 19 teacher training institution, 300 teachers trainees were selected at sample. For the selection of sample the proportionate stratified random sampling technique was adopted. The descriptive survey method was employed to collect the data. The emotional maturity scale developed by Romapal (1984) was used to assess the emotional maturity level of the students. Descriptive differential and correlation analysis were computed to analyse the data. It was inferred that a positive and significant relationship exists between achievement and emotional maturity.

Manoharan, John Louis and Christie Doss (2007) conducted a study on emotional maturity of post-graduate students in Pondicherry region.

The study was undertaken with the objective of identifying the level of emotional maturity of post graduate students in Pondicherry region. Hence they were moderately sound in their personality integration and independence. The emotional maturity of P.G. students was influenced by sex, class and group. The level of emotional maturity of female students was higher than that of the male students.
Suneetha Hangaland Vijayalaxmi Aminabhavi (2007) conducted a study on self-concept, emotional maturity and achievement motivation of the adolescent children of employed mothers and homemakers.

The present study assessed the impact of maternal employment on the self-concept, emotional maturity and achievement motivation of adolescents. The sample consisted of 75 adolescents of employed mothers and 75 adolescents of homemakers, studying in 8th and 9th standards in Hubli-Dharwad cities of North Karnataka. Children’s Self-concept Scale by Ahluwalia, Emotional Maturity Scale by Singh and Bhargava and Deo-Mohan Achievement Motivation Scales were used to collect the data. The data were analyzed by ‘t’ test and ANOVA. The results revealed that the adolescent children of homemakers have significantly higher self-concept. It was also noticed that children of employed mothers have high emotional maturity and female children of employed mothers were highly achievement oriented.

Anto Boopalarajan, Selvam and William Dharmaraja (2006) conducted a study on a study of emotional maturity of the student teachers.

The objectives of the present study were; (i) to find out the level of emotional maturity of the student teachers with reference to their sex, class, locale, marital status, age, qualification, group selected in +2, marks in +2, parents, education and monthly income. (ii) to find out, if any, the significant difference in emotional maturity of the student teachers in terms of their sex, class, locale, marital status, group, selected in +2, marks in +2, parents education and monthly income. The investigators adopted the survey method for the present study. The population of this study comprised of the student teachers studying in 29 DIET’s of Tamilnadu. A total of 291 students teachers from 3 DIET were selected as sample by random sampling technique. Out of this 126 were male and the rest 165 were female trainers. 159 student teachers were from the 1st year of DTE course and 132 were from the 1st year of DTE course and 132 were from the 2nd year. Among the 184 student teachers happened to be located in the rural areas and the remaining 107 were located in the
urban areas. Among the selected sample, except 86 student teachers, the others were unmarried. “Emotional maturity scale” constructed by K.M.Romapal was used in this study to collect the data. The tool consisted of 40 items 8 items each for emotional instability, emotional regression, faculty social adjustment, lack of independency and flexibility and adaptability test – retest reliability of the five components of the emotional maturity ranges between 0.70 and 0.86. The content validity was found to be 0.84. The emotional maturity of the majority of the student teachers (44%) with reference of their sex, class, locale, marital status, age, qualification, group selected in +2, +2 marks, parent education and monthly income was found to be moderate, the student teachers above 30 were found to be having higher emotional maturity than the student – teachers below 30. This finding depicts that long environmental exposure contribute to their emotional maturity. There was no significant difference in emotional maturity of the student teachers with reference to their sex, age, group locale education and monthly income and marital status.

**Geeta Pastey and Vijayalaxmi Aminbhavi (2006)** conducted a study on impact of emotional maturity on stress and self confidence of adolescents.

As emotions do play central role in the life of an individual, one is expected to have higher emotional maturity in order to lead an effective life. It was also true that our behavior was constantly influenced by the emotional maturity level that possess. Especially, the adolescents who were observed to be highly emotional in their dealings need to be studied. In view of this, an attempt was made in present study to find out the impact of emotional maturity of adolescents on their stress and self confidence. Sample of the study consists of 105 adolescents studying in XI and XII class at Dharwad city Karnataka State, India. The scales such as emotional maturity (Singh and Bhargav, 1994), Self Confidence Inventory (RekhaAgnihotri, 1987) and Students’ Stress Scale (Deo, 1997) were administered on the selected sample. Along with responses to the above scales, some personal data information was also collected from the sample. The obtained responses were scored and converted to standard (T)
scores, further subjected to ‘t’ and ‘F’ tests. The findings revealed that the adolescents with high emotional maturity have significantly high stress ($t=10.44; p< 0.001$) and self-confidence ($t=-2.92; p< 0.01$) when compared to those with low emotional maturity. Adolescents with more number of siblings have shown significantly higher level of self-confidence ($t = 2.96; p< 0.01$) than their counterparts. It was also found that educational level of father has significantly influenced stress of their adolescent children ($F= 5.303; p< 0.01$). Adolescent boys tend to have significantly higher stress than girls ($t=1.72$) and girls tend to have significantly high self-confidence ($t=1.83$).

**Dchennareddy (2005)** conducted a study on emotional maturity of B.Ed students in relation to certain factors.

The major objectives of the study were i) to find out the influence of sex on the emotional maturity of B.Ed. students. ii) to find out the intelligence of locality on the family on the Emotional Maturity scale developed by Dr. Yashivir Singh and Mahesh Bhargava has been adopted for the present study. The sample consists of 100 B.Ed. students studying in Anantapur Town. The sample was selected by random sampling procedure. From the above result, the following findings were drawn out: Female B.Ed. students were more emotional than male students, Locality doesn’t significantly influence the emotional maturity of B.Ed. students, and income of the family has a significant influence on the emotional maturity of B.Ed. students.

**Farah, Mushtag and BharatiKumari (2003)** conducted a study on a study of parental encouragement, academic anxiety and emotional stability of school going Adolescents.

The correlation values between parental encouragement and academic anxiety were very low. Academic anxiety was negatively correlated with parental encouragement and positively correlated with emotional stability in girls. The correlation values between parental encouragement and academic anxiety was positive in Hindu boys and negatives in Muslim boys. There was correlation between
academic anxiety and emotional stability was positive and significant in Muslim boys and negative in Hindu boys.

**Upadhyay, and Upadhyay, Vikrant. (2003)*** conducted a study on a study of emotional stability and academic achievement of boys and girls at secondary level.

The aim of the study was to find out whether there was any significant relationship between emotional stability and academic achievement of the students. This study concluded that the main finding are; i) Boys are significantly emotionally stable than girls. ii) there was no significant difference between boys and girls in academic achievement. iii) there was no significant relationship between emotional stability and academic achievement of the students.

### 2.4.5 Foreign Studies Related to Achievement

**Gbore, and Daramola, (2013)** conducted a study on relative contributions of selected teachers' variables and students' attitudes toward academic achievement in biology among senior secondary school students in Ondo State, Nigeria.

This study investigated the relative contributions of selected teachers' variables and students' attitude towards academic achievement in biology among senior secondary schools in Ondo State, Nigeria. It involved descriptive survey research and ex-post facto research designs. The sample, 360 respondents which consisted of 180 biology teachers and 180 senior secondary school three students were randomly selected from 36 senior secondary schools from the three Senatorial Districts of Ondo State using stratified random sampling technique. Teachers' teaching attitudinal scale, Science oriented attitudinal scale and an inventory which requested for data from records on students' senior secondary school certificate examination grades in biology were used for data collection. Data collected for the study were analyzed using correlation matrix and multiple regression analysis. The results showed that significant relationships existed among the independent variables and students' academic achievement in biology. Also 62.5% of the variance observed
in students’ achievement in biology was explained by linear combination of the five predictor variables. Students’ attitude was the most potent contributor to the prediction. Teachers' workload was the least contributor to the prediction.

**Yapici, Umit and Akbayin, Hasan (2012)** conducted a study on the effect of blended learning model on high school students' Biology achievement and on their attitudes towards the internet.

The present study aims to determine the effect of the blended learning model on high school students' biology achievement and on their attitudes towards the Internet. Among the experimental models, the pretest-posttest control group model was used in the study. The study was carried out with 107 students (47 of whom were in the experimental group, and 60 of whom were in the control group) attending NevzatAyaz Anatolian High School in Diyarbakir in Spring Term of the academic year of 2009-2010. In the experimental group, the courses were taught based on the blended learning model via a website (www.e-biyoji.net), while in the control group, the courses were taught based on traditional teaching methods. An Internet Attitude Scale [image omitted] =0.97) and an achievement test of 40 questions (KR-20=0.88) were used as the data collection tools. For the analysis of the data, mean scores, independent t-test and paired samples t-test were used. The research results revealed that the blended learning model contributed more to the students' biology achievement than traditional teaching methods did and that the students' attitudes towards the Internet developed statistically significantly.

**Asghar Soltani (2011)** conducted a study on attitude towards biology and its effects on student’s achievement.

The main purpose of this study was to examine the relationship between attitudes towards science in biology courses and students’ biology achievement. A total of 185 grade 12 (age 17-18 years) students in Isfahan answered to a 30-item questionnaire provided by authors based on STAQ-R inventory. The results showed
that among attitude towards science dimensions, only “biology is fun for me”, have meaningful and positive relation with students’ achievement in biology. Also there was no significant difference between girls and boys in attitude towards biology, although girls had better achievements in biology in comparison with boys.

Daniel Ngaru Muraya and Githui Kimamo (2011) conducted a study on effects of cooperative learning approach on biology mean achievement scores of secondary school students’ in Machakos district, Kenya

Performance in Biology at secondary school level in Kenya remains poor and one reason is the teaching approach adopted by teachers with teacher-centered approaches being pre-dominant. This study sought to determine the effect of cooperative learning approach on mean achievement scores in Biology of secondary school students. Solomon-four-non-equivalent-control-group design was used and the target population comprised 183 form two students in four secondary schools. Students were taught one Biology topic for five weeks and cooperative learning approach was used in experimental groups while the regular teaching method was used in control groups. Pre-test was administered before treatment and a post-test after treatment. A Biology Achievement Test was used to measure students’ achievement and it attained a reliability coefficient of 0.84 (N=59) at pilot testing. Data was analyzed using t-tests, ANOVA and ANCOVA and hypotheses were accepted or rejected at significant level of \( P \leq 0.05 \). Cooperative learning approach resulted in significantly higher mean achievement scores compared to regular teaching method and gender had no significant influence on achievement. It was concluded that cooperative learning approach was an effective teaching approach which Biology teachers should be encouraged to use.

Gokhan Baş and Omer Beyhan (2010) conducted a study on the effects of multiple intelligences supported project-based learning on students’ achievement levels and attitudes towards English lesson.
The aim of the research was to investigate the effects of multiple intelligences supported project-based learning and traditional foreign language-teaching environment on students’ achievement and their attitude towards English lesson. The research was carried out in 2009 – 2010 education-instruction year in Karatli Sehit Sahin Yilmaz Elementary School, Nigde, Turkey. Totally 50 students in two different classes in the 5th grade of this school participated in the study. The results of the research showed a significant difference between the attitude scores of the experiment group and the control group. It was also found out that the multiple intelligences approach activities were more effective in the positive development of the students’ attitudes.

**Hsiao-Ching (2010)** conducted study on the effects of web-based/non-web-based problem-solving instruction and high/low achievement on students' problem-solving ability and Biology achievement.

This study investigated the effects of two factors: the mode of problem-solving instruction (i.e. Web-based versus non-Web-based) and the level of academic achievement (i.e. high achievers versus low achievers) on students' problem-solving ability and biology achievement. A quasi-experimental design was used, in which the experimental group received six weeks of Web-based problem-solving instruction in biology and the control group received non-Web-based problem-solving instruction for the same content and for the same period of time. Pre-, post- and retention tests of problem-solving and biology achievement were administered before and at two different time intervals after the instruction. With the pretest scores as a covariate, the results of MANCOVA followed by protected univariate "F" tests suggest that Web-based problem-solving instruction has the potential to enhance and sustain the learner's problem-solving skills over an extended period of time.
EsraOzay Ataturk (2009) conducted a study on sequential teaching methods in biology and their effects in academic achievement.

The purpose of this paper was to determine the effects of usage of sequential teaching method on the academic achievement and retention level of students. Three student groups, each of which included 20 biology students in Ataturk University-Erzurum, were offered a topic on general characteristics of enzymes with different sequences of 3 teaching methods. The teaching methods were Laboratory method (student experiment), slide demonstration and lecture method. The first group started to course with experiments in the laboratory, then the relevant theory of enzyme was given lecture method, and then the slides was shown (Group I). The sequence of these three teaching methods used in the first group was changed in both second and third group as follow: The lecture methods, slide show and experiment in Group II, and slide show, experiment and lecture method in-group III, respectively. Lab method used in the study was focused on the topic of enzymic activity. a student experiment was designed for this reason, and including to examine its catalytic features, effective factors, and relation between substrate and enzymes. This experiment was carried out by students. Slide demonstration method included slides about enzyme structure and function. The slides were shown by teachers. Lecture method was performed by teachers as usual. Effectiveness of different sequential teaching methods was measured quantitatively by an achievement test. Achievement test contained 25 questions, testing the knowledge of facts as well as the ability to transfer the knowledge and problem solving ability. This test was used as pre-test before methods’ application, post-test after the methods’ application and retention test after 40 days from methods ‘applied. Tests’ results were evaluated by using one way ANOVA test. According to tests’ results, academic achievements of student in Group I and Group III were higher than academic achievements of student in Group II. Student’s retention (remembrance) level in group I was higher than that of group II and group III.
Ricardo Trumper (2006) conducted a study on factors affecting junior high school students’ interest in biology.

Our study, conducted as part of the ROSE Project, on students' interest in biology at the end of their compulsory schooling in Israel, and its relation to their views on science classes, out-of-school experiences in biology, and attitudes to science and technology, showed that their overall interest in learning biology was relatively positive but not high; girls showed greater interest in it than boys. Students' interest in learning biology correlated closely with their negative opinions of science classes. These findings raise critical questions about the implementation of changes in the Israeli science curriculum in primary and junior high school, if the goal is to prepare the rising generation for life in a scientific-technological era. From deeper analysis of the results curricular, behavioral, and organizational changes needed to reach this goal were formulated.

Adnan Kan and Ahmet Akbas (2006) conducted a study on Affective factors that influence chemistry achievement (attitude and self efficacy) and the power of these factors to predict chemistry achievement-I.

In this research, our aim was to determine students’ level of attitude and self efficacy towards chemistry and to put forth effects of these variables on chemistry achievement for consideration (in other words, to determine how the chemistry achievement were predicted by these variables). In this point of view the research was conducted with 1000 students studying at the 1st, 2nd and the 3rd grade of 10 high schools which were located in the city center of Mersin. Addressed to research problems, data was analyzed via descriptive, correlation, linear and multiple regression statistical analyses. As a result it was determined that 2nd graders group of high schools has maximum attitude scores and the attitude towards chemistry course, on its own, was a significant predictor of chemistry achievement. It was also determined that 2nd graders group of high schools has maximum self efficacy scores.
and the self efficacy towards chemistry course, on its own, was a significant predictor of chemistry achievement.


Abstract Using data from the 1998 high school national census from the ministry of education and culture of Argentina, the present study examines relationships between school composition, some characteristics of schooling (such as institutional culture and climate), and students' achievement in mathematics in the last year of high school. The study applies multilevel linear modeling on the levels of student, school and state. It finds there was relationship between achievement in mathematics and the variables of school composition and schooling processes. It showed that when both variables act together, the effect of all other variables significantly decreases. The variables of schooling processes, however, even when diminished in influence, nonetheless notably continue to affect students' achievements. The study also identified a reference model for future studies evaluating other institutional factors of learning.

2.4.6 Indian Studies Related to Achievement

Kalaivani and Babu (20013) conducted a study on higher secondary students’ achievement in chemistry relation to their study habits.

This study investigates the higher secondary school students’ achievement in chemistry in relation to their study habits at various schools in Cuddalore district. The objectives of the study was to find out whether there was any significant correlation found between study habits and achievement in Chemistry. 565 higher secondary school students were selected to measure the study habit by using Gopal Rao study habit scale and their final exam marks were considered for achievement score. Independent samples T-test for differences were performed across three distinct
groups, that was, Gender, Locality and Type of school. The results of the test conducted indicate that there was positive and significant correlation found between study habits and achievement in Chemistry. There was no significant difference in the study habits of higher Secondary students in respect of gender and type of school.

Anandan and Anandakumar (2012) conducted a study on influence of gender and locality on the achievement in physics among matriculation students of Krishnagiri district Tamilnadu.

The aim of the present study was to measure the influence of gender and locality on the achievement in physics among the matriculation students of Krishnagiri district of Tamilnadu. The study belonged to the normative survey research. The sample consisted of 350 students of which 190 urban and 160 rural students. There were 234 boys and 116 girls totally. The investigators constructed an achievement Test in physics consisting of 120 items with 4 alternatives. To find out the significant difference with regard to the variable ‘t’ test was followed. It was found the achievement of boys in physics in urban Matriculation schools were significantly higher than there counterpart. The higher achievement of the urban boys and urban girls may be due to the reasons of higher motivation of the parents, higher instructional facilities, completion among the motivated students and higher students’ general awareness.

Faheemaimed and Nishatparveen (2012) conducted a study on influence of socio economic status (SES) on achievement in science of secondary school students.

This study was conducted on 300 secondary school students to find out the inference of socio economic status (sec) on achievement in science achievement. The investigators found that there was a significant difference in science achievement scores of upper and lower sec class student. It was also found that there was much difference in achievement of students belonging to upper and middle classes.
Premalatha and Porgio (2011) conducted a study on relationship between selected personality traits and achievement in mathematics of higher secondary students. The aim of the study was to find out the relationship between selected personality traits and achievement in mathematics of higher secondary students. The sample consisted of 1200 students of whom 672 were boys and 528 were girls. The Personality inventory was designed by Manju Rani Agarwal and achievement in Mathematics was prepared and validated by the investigators. It was found that there was significant relationship between personality traits and level of achievement in mathematics of higher secondary students.

Rajkumar and RasulMohideen (2011) conducted a study on enhancing student’s achievement in physics through meta-cognitive strategies. The study investigated that the impact of meta-cognitive strategies towards enhancing student’s achievement in physics. Research was conducted using experimental design with pre-progressive and post-test. A total of 60 students were divided into two groups. The experimental group was taught through the meta-cognitive strategies. The control group was taught using traditional strategies. To teach meta-cognitive strategies for a period of one week. The experiment was carried out for 3 weeks. The aim of the research was to investigate whether Meta-cognitive strategies have an impact on student’s achievement in physics. The study showed that Meta-cognitive strategies had significant impact on academic achievement.

Jayanthi (2010) conducted a study on study involvement of higher secondary students in relation to achievement in English. The study intended to find out (i) the significant difference in the level of study involvement of higher secondary school students with respect to certain variables and (ii) the nature of relationship existing between study involvement and achievement in English. The Study Involvement Tool, constructed and standardized
by Asha Bhatnagar (1982) and the achievement Test in English constructed and validated by the investigator have been administered to a random sample of 950 students studying in different higher secondary schools of Cuddalore educational district on the basis of their sex, location of the school, and the educational status of the parents. The study revealed that there was a significant relationship between the study involvement of the students and the achievement in English, which was really encouraging from the academic point of view.

Subrata Saha (2007) conducted a study on study of academic achievement in mathematics in relation to cognitive style and attitude towards mathematics.

The study investigation was an attempt to analyze the more discrete cognitive and affect abilities and their influence on the academic achievement of primary school children in a specific subject like mathematics. The researcher identified cognitive style and attitude of the learner as the important correlates of their academic achievement. The major objectives of the study were i) to study the significance of gender differences in academic achievement in mathematics, cognitive style and attitude towards mathematics. ii) to study the gender wise differences in mean score of academic achievement in mathematics between the field independent and field dependent students and iii) to study the gender wise differences in mean score of academic achievement in mathematics between the students with favourable attitude and unfavourable attitude towards mathematics. Finding revealed that there was no significant relationship between academic achievement in mathematics in relation to cognitive style and attitude towards mathematics.

Stay Prakash and Patnaik (2005) conducted a study on effect of co-operative learning on achievement motivation and achievement in biology.

The main objective of study was to find out of the effect of co-operative learning on achievement motivation and achievement in biology. The sample of 200 students from 3 schools in Tumkur town of Karnataka students selected for the study.
Out of them 100 students were treated as experimental and 100 students as control group. The students both the groups were matched by pairing their intelligence and achievement scores in biology. Achievement values and anxiety inventory (AVAI) by prayag Mehta and achievement test in biology developed by one of the investigator were used in the study. The findings of the study were (1) there was positive effect of co-operative learning on achievement motivation. (2) Co-operative learning has appositive effect on achievement in biology in terms of knowledge, understanding and application objectives as well as total achievement.

Leuwerke and Robbins (2004) conducted a study on predicting engineering major status from mathematics achievement and interest congruence.

This study proposed that precollege students’ standardized mathematics achievement score and the congruence between their occupational interests and engineering tasks would predict their second-year retention in college and the stability of their major. Binary response models were used to predict second-year major status (i.e., continue, transfer major, or dropout). High mathematics achievement was predictive of retention on campus and within the engineering major. Interest congruence predicted likelihood of staying on campus. A trend was also detected (p < .07) between the MathematicsAchievement · Interest Congruence interaction effect. These findings reinforce the importance of examining both achievement and interest congruence factors when understanding the retention of engineering majors. Future research needs to replicate and extend this model to other majors and institutions to more fully understand the major choice and college retention processed.

Marjorie Montague And F Delinda Van Garderen(2003) conducted a study on a cross-sectional study of mathematics achievement, estimation skills, and academic self-perception in students of varying ability.

This study investigated students' mathematics achievement, estimation ability, use of estimation strategies, and academic self-perception. Students with
Learning Disabilities (LD), average achievers, and intellectually gifted students (N = 135) in fourth, sixth, and eighth grade participated in the study. They were assessed to determine their mathematics achievement, ability to estimate discrete quantities, knowledge and use of estimation strategies, and perception of academic competence. The results indicated that the students with LD performed significantly lower than their peers on the math achievement measures, as expected, but viewed themselves to be as academically competent as the average achievers did. Students with LD and average achievers scored significantly lower than gifted students on all estimation measures, but they differed significantly from one another only on the estimation strategy use measure. Interestingly, even gifted students did not seem to have a well-developed understanding of estimation and, like the other students, did poorly on the first estimation measure. The accuracy of their estimates seemed to improve, however, when students were asked open-ended questions about the strategies they used to arrive at their estimates. Although students with LD did not differ from average achievers in their estimation accuracy, they used significantly fewer effective estimation strategies. Implications for instruction were discussed.

Constantinos Papanastasiou (2002) conducted a study on effect of background and school factors on the mathematics achievements.

Using a structural equation model, this research study investigated the mathematics achievement of 8th grade students in Cyprus enrolled in the year 1994-1995. The model contained 2 exogenous constructs - the educational background of the family and the reinforcement from mother, friends and the individual himself; and 5 endogenous constructs - Socioeconomic status (SES), and student attitudes toward mathematics, teaching, school climate, and beliefs related to success in mathematics. The study demonstrated that although attitudes, teaching, and beliefs had direct effect on mathematics outcomes, they were not statistically significant. It was also found that family educational background directly affected SES, attitudes toward
mathematics, school climate and beliefs related to success in mathematics. Reinforcement exerted a direct effect on attitudes, teaching and beliefs regarding success. There was also evidence that SES directly affects school climate and that teaching directly affects attitudes toward mathematics.

Misra (2003) conducted a study on impact of learning environment on science process and Achievement.

The main objectives of this study were i) to find out whether boys differ from girls in science Achievement. ii) to compare science process of boys and girls. iii) To find out differences in learning environment as perceived by boys and girls. iv) to find our relationship between science achievement and learning environment. v) to find out relationship between science process and learning environment. vi) to find out whether achievement in science was related to science process can contributed to prediction of achievement in science. The survey method was used to collect data. The sample consisted of 209 students of class VIII randomly selected from four urban schools of Allahabad. The tools used were (a) Science achievement test developed by Kalplata Pandey for measuring g VIII class students achievement in science (b) a self made learning environment inventory which measures factors such as academic thrust, inhabitation, support and diversity (c) a self made test of science process to measure process such as drawing inferences, exclusion of variables designing experiment interpreting data and identifying supporting data was analysed using t – ratio, product moment correlation and step wise multiple regression using the SPSS programme. The findings of the study were; (a) boys did not differ from girls with regard to achievement in science (b) boys and girls did not differ on the science process expect on the ability to identify supporting data. Boys show greater ability on this one process (1) boy achievement in science was positively related to cohesiveness, diversity formality and competitiveness. It was negatively related to apathy and girl’s achievement in science was positively related to cohesiveness,
formality goal direction democratic environment competitiveness encouragement and involvement. (2) Boys achievement in science was positively related to cohesiveness, diversity, formality and competitiveness. (3) There was a positive relationship between science process and science achievement of both boys and girls. (4) Science process and apathy dimension of learning difficulty and disorganization together can explain 22.22% of the variance in the girl’s achievement in science. (5) Science achievement and difficulty in learning environment can explain 21.07% of the variance in boy’s science process. 7.09% of the variance in girl’s science in process can be explained by apathy.

2.5 CRITICAL REVIEW

The researcher has collected altogether 78 related reviews of literature, out of which 28 are related to interpersonal intelligence, 28 are related to emotional maturity and 22 are related to achievement. Thirteen abroad studies and 15 Indian studies were reviewed for interpersonal intelligence studies. Eleven abroad studies and 17 Indian studies were reviewed for emotional maturity. Ten abroad studies and 12 Indian studies were reviewed for achievement. In some studies, the standardized tools were used and few studies, the investigators have developed their own tools. Majority of the studies had used survey method, and a less number of studies had used experimental method and case study method. The simple random sampling techniques and others sampling techniques have been adopted. The statistical techniques applied were percentage analysis ‘t’ test, ‘F’ test, chi-square correlation.

2.5.1 Objectives of the Reviewed Study

Interpersonal intelligence

The major objectives of the studies reviewed related to interpersonal intelligence were; i) to find the relationship between multiple intelligence and digital learning awareness of prospective B.Ed teachers, ii) to find the pre-service English as a foreign language teachers' perceptions of the relationship between multiple
intelligences and foreign language learning, iii) to find out whether there was any relationship between students' self-perceived multiple intelligences and their academic achievement, iv) to find out the multiple intelligences of students at Jordanian university, v) To find out the multiple intelligences in virtual and traditional skill instructional learning environments, vi) to find out the effects of appropriate pedagogical skills study groups and multiple intelligences on students' efficiencies in reading skills, vii) to investigate the interrelationships among student’s demographics, attitudes toward the Unified Modeling Language (UML), general self-efficacy, and multiple intelligence (MI) profiles, and the use of UML to develop software, viii) to find out the effect of multiple intelligences strategies comprising logical-mathematic intelligence, verbal-linguistic intelligence, intrapersonal intelligence and interpersonal intelligences on ninth grade students' reading comprehension achievement in an EFL setting; ix) the effect of multiple intelligence pedagogy and traditional pedagogy on grade 5th students’ achievement and attitudes towards science, x) to examine the interrelationships among four social demographic variables and Gardner’s eight multiple intelligences among the college students, xi) to investigate the effects of multiple intelligences (MI) teaching approach on 8th Grade students' achievement in and attitudes toward science. xii) to investigate the opportunities provided in outcomes-based language textbooks to develop learners’ full potential, xiii) to synthesize the literature in order to assess and quantify (if possible) the relationship between multiple intelligence instructional approaches and student achievement indicators in secondary school classrooms, xiv) to find out the level of multiple intelligence of orphan students in Tirunelveli district, xv) to find out relationship between interpersonal intelligence and academic achievement of higher secondary school students; xvi) relationship between multiple intelligence and achievement of teacher training students, xvii) to find out whether there was any significant relationship between multiple intelligence and the academic achievement of higher
secondary students, xviii) to correlation among multiple Intelligence through parental perceptions, xix) to find out the level of multiple intelligence of primary school teachers in terms of background variation; xx) to find out the impact of the theory of multiple intelligence of children with autism, xxi) to find out the relationship between anxiety and multiple intelligence of higher secondary school students, xxii) to find out the relationship between logical mathematical intelligence and academic achievement of computer science degree students, xxiii) to find out the relationship between multiple intelligence and achievement in Chemistry among high school students, xxiv) to find out the relationship between multiple intelligence and achievement in Mathematics among high school students, xxv) to find out the difference between control and experimental groups in their multiple intelligence, xxvi) to find out the relationship between learning style and multiple intelligence of B. Ed. Students, xxvii) to find out the relationship between awareness on biotechnology and multiple intelligence of college students, xxviii) to find out the effectiveness of strategies involving multiple intelligence theory on the achievements in mathematics at higher secondary level.

**Emotional maturity**

The major objectives of the studies reviewed related to Emotional maturity were: i) to effect of emotional maturity and family environment on the spiritual intelligence of B.Ed. students, ii) to find out difference between emotional maturity in vocational education of postgraduate students, iii) to find out the comparison of attachment styles and emotional maturity between opiate addicts and non-addicts, iv) to study anxiety and emotional maturity among adolescent boys and girls studying from co-educational and unisex-education schools, v) to find out the relations between parent and parenting teenager’s emotional maturity, vi) to find out the effect of emotional maturity of primary teachers on their teaching attitude, vii) to study on goal direction and effectiveness, emotional maturity, and nuclear family functioning,
viii) to find out the relationship between home environment and emotional maturity among college going students of Belgaum district in Karnataka, ix) to explore the inter-relationships between emotional maturity and intelligence in gifted children, x) to find out the relationship between interpersonal skills and emotional maturity influence entrepreneurial style of bank managers, xi) to find out the relationship between emotional maturity and drinking-and-driving involvement among young adults, xii) to evaluate the degree of emotional maturity attained by post graduate teachers in relation to caste and religion, xiii) to assess the association between emotional maturity and self-esteem of higher secondary school students, xiv) to find out the relationship between religious attitude and emotional maturity of student teachers, xv) to find out the level of emotional maturity and self-concept among higher secondary student who were studying in various schools in Pudukkottai district, xvi) to find out whether there was any significant difference in emotional maturity of high school students with respect to gender and type of school, xvii) to find out the relationship between emotional maturity and adjustment level of college students, xviii) to find out if there was any significant relationship between value pattern and social maturity of post graduate teachers, xix) to examine the ‘emotional maturity’ among university students, xx) to find out the emotional maturity and achievement in economics of higher secondary students in Tirunelveli district, xxi) to find out the relationship between achievement and emotional maturity of teacher trainees, xxi) to find out the emotional maturity of post-graduate students in Pondicherry region, xxii) to find out the impact of maternal employment on the self-concept, emotional maturity and achievement motivation of adolescents, xxiii) to find out the level of emotional maturity of the student teachers with reference to background variables, xxiv) to find out the impact of emotional maturity of adolescents on their stress and self-confidence; xxv) to find out the influence of sex on the emotional maturity of B.Ed. students, xxvi) to find out the correlation
between academic anxiety and emotional stability was positive and significant in Muslim boys and negative in Hindu boys, xxviii) to find out whether there was any significant relationship between emotional stability and academic achievement of the students.

Achievement

The major objectives of the studies reviewed related to achievement were: i) to investigate the relative contributions of selected teachers' variables and students' attitude towards academic achievement in biology among senior secondary schools in Ondo State, Nigeria, ii) to determine the effect of the blended learning model on high school students' biology achievement and on their attitudes towards the Internet, iii) to examine the relation between attitudes towards science in biology courses and students’ biology achievement, iv) to determine the effect of cooperative learning approach on mean achievement scores in Biology of secondary school students, v) to investigate the effects of multiple intelligences supported project-based learning and traditional foreign language-teaching environment on students’ achievement and their attitude towards English lesson, vi) to find out the effects of web-based/non-web-based problem-solving instruction and high/low achievement on students' problem-solving ability and Biology achievement, vii) to determine the effects of usage of sequential teaching method on the academic achievement and retention level of students, viii) to find out the factors affecting junior high school students’ interest in biology’, ix) to determine students’ level of attitude and self-efficacy towards chemistry and to put forth effects of these variables on chemistry achievement for consideration, x) to examine relationships between school composition, some characteristics of schooling (such as institutional culture and climate), and students' achievement in mathematics in the last year of high school, xi) to find out whether there was any significant correlation found between study habits and achievement in Chemistry, xii) to measure the influence of gender and locality on the achievement in
physics among the matriculation students of Krishnagiri district of Tamilnadu, xiii) to find out the inference of socio economic status (sec) on achievement in science achievement, xiv) to find out the relationship between selected personality traits and achievement in mathematics of higher secondary students, xv) to find out the impact of meta-cognitive strategies towards enhancing student’s achievement in physics, xvi) to find out the relationship existing between study involvement and achievement in English, xvii) to analyze the more discrete cognitive and affective abilities and their influence on the academic achievement of primary school children in a specific subject like mathematics, xviii) to find out of the effect of co-operative learning on achievement motivation and achievement in biology, xix) to study on predicting engineering major status from mathematics achievement and interest congruence, xx) to determine their mathematics achievement, ability to estimate discrete quantities, knowledge and use of estimation strategies, and perception of academic competence, xxi) to find out the effect of background and school factors on the mathematics achievements, xxii) to find out relationship between science achievement and learning environment.

2.5.2 Findings of the Reviewed Study

Interpersonal intelligence

The major findings of the reviewed studies related to Interpersonal intelligence were: i) there was no significant relationship between multiple intelligence and digital learning awareness of prospective, ii) multiple intelligences and foreign language learning have an ongoing, complex, and interactive relationship, iii) There was insignificant correlation between self-perceived musical intelligence and academic achievement, iv) There was significant differences among Jordanian students in the linguistic and interpersonal intelligence in favor of the females, v) the score high in verbal/linguistic will be more likely to excel in virtual environments for tasks that require skill and accuracy, vi) there was significant difference in performance of the
groups taught using study groups and multiple intelligences methods, vii) self-efficacy was not a major consideration for a software design methods class that requires a transition to problem solving strategy and suggest that the instructor was instrumental in fostering positive attitudes toward UML, viii) there was a significant difference in the students' reading comprehension (alpha less than or equal to 0.05) due to the teaching strategies in favour of the experimental group; there was no significant difference in the students' reading comprehension (alpha less than or equal to 0.05) due to the students' Gender, ix) No statistical significance was found in student achievement on the posttest, delayed posttest, or the essay question test, x) Gender (F=9.77, p < .001) and race/ethnicity (F=4.20, p < .001) were statically significant, whereas college type as not significant, xi) there was significant differences in favor of the students of the experimental group with respect to both achievement in and attitudes toward science. xii) Learner's uniqueness in this regard was not respected, and their total development as knowledgeable, skilful and balanced human beings could therefore be hindered, xiii) there was a very limited amount of research focusing on the relationship of multiple intelligence instructional approaches and student achievement indicators in secondary school classrooms exists, xiv) there was no significant difference among parental, maternal and complete orphan students in their multiple intelligence and its dimensions of verbal linguistic intelligence, logical intelligence, mathematical intelligence, visual spatial intelligence bodily kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, and naturalistic intelligence, xv) there was no significant relationship between their interpersonal intelligence and academic achievement of higher secondary school students; there was significant difference between male and female students with interpersonal intelligence in total. there was significant difference between Tamil and English medium higher secondary school students with respect to interpersonal intelligence in total, xvi) there was relationship between
multiple intelligence and achievement of teacher training students, xvii) There was significant difference between Co-education and girl’s school students in their interpersonal intelligence than boy’s school students; there was significant relationship between verbal and logical mathematical intelligence and achievement of higher secondary students, xviii) Significant high correlations between linguistic and intrapersonal, but insignificant correlation between linguistic and interpersonal were revealed, xix) there was no significance difference between male and female teachers in their verbal linguistic intelligence, bodily kinesthetic intelligence, interpersonal Intelligence, intra personal intelligence, musical rhythmic Intelligence, naturalistic and existentialistic intelligence; there was significant difference between male and female teachers in their visual spatial Intelligence, xx) multiple intelligence provided insight into the different learning styles of children and enable the teacher to provide optimum learning environment and experiences for the pupils, xxi) there was no relationship between and multiple intelligence of higher secondary school students; there was significant difference between boys and girls students in their multiple Intelligence and its dimension; there was significant difference between co-education and girl’s school students in their interpersonal intelligence than boy’s school students, xxii) there was no relationship between logical mathematical intelligence and academic achievement of computer science degree students, xxiii) there was no relationship between multiple intelligence and achievement in Chemistry among high school students, xxiv) there was relationship between multiple intelligence and achievement in Mathematics among high school students, xxv) there was no significant difference between control and experimental group students in their multiple intelligence, xxvi) there was no significant relationship between learning style and multiple intelligence, xxvii) there was significant relationship between awareness on biotechnology and verbal linguistic, interpersonal, intrapersonal and multiple intelligence of college students, xxviii) the lesson transcripts based on
present strategies involving multiple intelligence theory was more effective than the present method of teaching on achievement on mathematics.

**Emotional maturity**

The major findings of the reviewed studies related to Interpersonal intelligence were; i) the differences were found significant on spiritual intelligence and in favour of congenial family environment group, ii) there was no significant difference of emotional maturity in post graduate students of vocational education,’ iii) there was significant difference in attachment styles and emotional maturity between opiate addicts and non-addicts, iv) there was no significant difference in anxiety and emotional maturity among adolescents’ girls and boys studying from co-educational and Unisex-education school, v) there was no relationship between parents parenting with teen’s emotional maturity, vi) emotional maturity of primary teacher effect on teaching attitude, vii) goal effectiveness and emotional maturity were associated with nuclear family functioning more strongly than individual goal effectiveness and emotional maturity were associated with individual functioning , viii) there was no positive and significant relationship between home environment and emotional maturity among the urban students, studying in government colleges, with high socio economic status and students less than 20 years of age, ix) effect of emotional maturity on creativity, as well as an effect of intelligence; Among the highly intelligent group, emotionally mature children were more creative, x) Emotional maturity and interpersonal skills were modeled as impacting on entrepreneurial style, xi) Among females and males in the same age group, females are more emotionally mature than males, and age was a factor in emotional maturity in that emotional maturity increases with age, xii) the difference in the level of emotional maturity among the post graduate teachers belong to Hindu, Christian and Islam was significant, xiii) there was significant association between emotional maturity and self-esteem, xiv) there was a positive relationship between religious attitude and emotional maturity of student teachers, xv) there was
no significant difference of correlation between emotional maturity and self-concept of higher secondary course students, xvi) the high school boys and private high school students were emotionally matured, xvii) post graduate teachers have given the first preference for the social values and least preference for the political values, xviii) post graduate teachers had given the first preference for the social values and least preference for the political values, xix) there was no significant differences on the sub-variable social maladjustment between male sportspersons and female sportspersons, xx) there was no significant relationship between higher secondary students’ and achievement in economics; there was significant difference between male and female, day scholar and hostel staying higher secondary students with respect to their emotional maturity, xxi) positive and significant relationship exists between achievement and emotional maturity; xxii) the level of emotional maturity of female students was higher than that of the male students, xxiii) the adolescent children of homemakers have significantly higher self-concept, xxiv) There was no significant difference in emotional maturity of the student teachers with reference to their sex, age, group locale education and monthly income and marital status; xxv) adolescents with high emotional maturity have significantly high stress (t=10.44; p< 0.001) and self-confidence (t=-2.92; p< 0.01) when compared to those with low emotional maturity, xxvi) Female B.Ed. students were more emotional than male students, Locality doesn’t significantly influence the emotional maturity of B.Ed. students, Income of the family has a significant influence on the emotional maturity of B.Ed. students, xxvii) there was correlation between academic anxiety and emotional stability was positive and significant in Muslim boys and negative in Hindu boys, xxviii) there was no significant relationship between emotional stability and academic achievement of the students.
**Achievement**

The major findings of the reviewed studies related to achievement were: i) significant relationships existed among the independent variables and students' academic achievement in biology, ii) the blended learning model contributed more to the students' biology achievement than traditional teaching methods did and that the students' attitudes towards the Internet developed statistically significantly, iii) there was no significant difference between girls and boys in attitude towards biology, although girls had better achievements in biology in comparison with boys, iv) Cooperative learning approach resulted in significantly higher mean achievement scores compared to regular teaching method and gender had no significant influence on achievement, v) multiple intelligences approach activities were more effective in the positive development of the students’ attitudes, vi) Web-based problem-solving instruction has the potential to enhance and sustain the learner's problem-solving skills over an extended period of time, vii) academic achievements of student in Group I and Group III were higher than academic achievements of student in Group II. Student’s retention (remembrance) level in group I was higher than that of group II and group III, viii) students' interest in learning biology correlated closely with their negative opinions of science classes, ix) 2nd graders group of high schools has maximum attitude scores and the attitude towards chemistry course, on its own, is a significant predictor of chemistry achievement, x) there was relationship between achievement in mathematics and the variables of school composition and schooling processed, xi) there was positive and significant correlation between study habits and achievement in Chemistry, xii) the achievement of boys in physics in urban matriculation schools were significantly higher than there counterpart, xiii) The investigator that there was a significant difference in science achievement scores of upper and lower secondary class student, xiv) there was significant relationship between personality traits and level of achievement in mathematics of higher
secondary students, xv) Meta-cognitive strategies had significant impact on academic achievement, xvi) there was a significant relationship between the study involvement of the students and the achievement in English, xvii) there was no significant relationship between academic achievement in mathematics in relation to cognitive style and attitude towards mathematics, xviii) there was positive effect of co-operative learning on achievement motivation; xix) High mathematics achievement was predictive of retention on campus and within the engineering major. Interest congruence predicted likelihood of staying on campus; A trend was also detected (p < .07) between the Mathematics achievements, xx) Students with LD and average achievers scored significantly lower than gifted students on all estimation measures, but they differed significantly from one another only on the estimation strategy use measure, xxi) family educational background directly affected SES, attitudes toward mathematics, school climate and beliefs related to success in mathematics, xxii) Science achievement and difficulty in learning environment can explain 21.07% of the variance in boys science process 7.09% of the variance in girls science in process can be explained by apathy.

2.6 THE GAPS IDENTIFICATION

From the studies reviewed by the investigator, the following gaps have been identified. i) Most of the studies were conducted among teacher trainees, primary school teachers, high school students and college students. ii) Only few variables such as gender, age, nature of school, type of school, parent’s educational qualifications, parent’s occupations, family type and parent’s monthly income have been undertaken. iii) there were more number of studies conducted on multiple intelligence and emotional maturity in relation to anxiety, family environment, vocational education, teaching attitude, home environment, self-esteem, adjustment, value pattern, traditional skills, parental perceptions, socio economic status, personality traits, meta-cognitions strategies. iv) The studies were conducted at large number of multiple
intelligence, emotional maturity, and achievement separately, whereas no foreign studies in interpersonal intelligence and only two Indian studies have taken conducted. v) Emotional maturity in relation to student’s achievement other than biology subjects were undertaken. vi) Interpersonal intelligence and emotional maturity have not been correlated. vii) Interpersonal intelligence, Emotional maturity and students achievement in Biology have not been correlated. ix) Interpersonal intelligence, emotional maturity and achievement in higher secondary students in terms of few background variables have been correlated, whereas nineteen background variables have been included in the present study.

2.7 THE PRESENT STUDY

In order to bridge the gap mentioned above, the present study is undertaken to find out the interpersonal intelligence and emotional maturity of higher secondary +1 biology students in relation to their achievement in Biology. Besides, the researcher endeavors to correlate interpersonal intelligence, emotional maturity and achievement in Biology in the present study. The present study includes different background variables such as gender, community, religion, no. of siblings, locality of students, residence, type of family, medium of instruction, locality of school, nature of school, type of school, father’s education, mother’s education, father’s occupation, mother’s occupation, parents monthly income, no. of schools transfer, social activities, and games you like.

2.8 CONCLUSION

This chapter starts with introduction and purpose of the review followed by the literature relating to Interpersonal intelligence and emotional maturity and achievement. This chapter concludes with the interferences of the study and identified the gap. The ensuring chapter describes the tool design and research methodology of the study.