Chapter - II
Review of Related Literature
# CHAPTER II
## REVIEW OF RELATED LITERATURE

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CHAPTER II
REVIEW OF RELATED LITERATURE

2.1 Introduction

Review of related literature is an essential part of research work. It enables the investigator to know about the related studies and their conclusion. This gives an idea for the present investigator to do his work. Sometimes, even the research problem selected, from the studies reviewed. The review helps the investigator to acquire through knowledge about the present problem and help in the development of research procedures. The investigator could collect about studies related to the present one. The view of related literature is a significant part of a research study. This helps the research worker together up-to-date information about what has been done in the particular area which he intends to study.

According to Best (1971) the search for related literature is one of the first steps in the research process. It is a valuable guide in defining the problem, recognising the significance, suggesting data gathering devises and source of data. A summary of recognised authorities and of previous research clearly tells the researcher what is already known and what is still unknown and untested.

Moalty (1964) says, “survey of related literature avoids of risk of duplications, provides theories, ideas, explanations or hypothesis valuable in formulating the problem and contributes to the general scholarship of the investigator”

The aim at this chapter is to record briefly the findings of a few research studies conducted in India and abroad on the topics that are related to the problem under study. Inferences of the review of related literatures also find its place at the end of this chapter. Abstracts of the research studies are included here in addition to reported problems and closely related problems, studies, areas of agreement or disagreement.
The research studies reviewed here include closely related investigations, which have been carried out in India and abroad on various dimensions of the research problem selected by the researcher. Many similar results, which are described in technical reports of various journals, and papers delivered at conferences, are also reviewed at relevant places.

2.2 Need for related literature

Any worthwhile research study in any field of knowledge requires an adequate familiarity with the work which has already been done in the same area. Citing studies that show substantial agreement and those that have presented conflicting conclusions help to sharpen and define understanding the background for the research project and makes the reader aware of the status of the issue.

“For most scholars and scientists crucial reading of the literature serves as a stimulus for thinking and creativity”

Review of literature pertaining to a problem makes the researcher familiar with the summary of previous research and the writings of recognized experts with what is already known, what is still unknown and untested and thus provides a background of the present study.

A number of studies have been made on the different aspects of non-projected aids in education both in India and abroad. In India few studies have attempted to find the effectiveness of non-projected aids. It is better to review such literature which will help in developing greater insights into the study under investigation.

2.3 Studies done in India

Krishnakumari (1980) did an investigation into “The use of Mathematics Textbook (Class 11) as a tool of Teaching in Haryana” The main findings were:
i. Thirty six percent of the teachers did not look into the methodology at all provided in the textbook; rather they continues with the old pattern of teaching methods and did not even study the change in the syllabus.

ii. Forty-nine percent of the teachers made partial use of the methodology suggested in the textbook.

iii. Fifteen percent of the teachers studied the textbook thoroughly and tried their best to assimilate the new concepts and methods.

Rao, T.G. (1983) conducted a comparative study of “Programmed Learning and conventional Learning Methods in the Instruction of Mathematics - A psychological Approach” The findings of the study are:

i. The mean performance scores of the programmed learning group and conventional group on the achievement test were less than the normative means of the tests.

ii. The mean performance scores of all the Programmed Learning groups were higher than those of the corresponding Conventional Learning groups.

Patel, N.R. (1984) did an investigation into “The Mathematical Ability of pupils of classes IX and X in the context of some cognitive and Affective Variables” The findings were:

i. The population under the testing programme was normally distributed and the curve was leptokurtic in nature.

ii. The pupils possessing high reasoning ability were found to be better in mathematical ability than those with low reasoning ability.

In a study conducted by, Yadav (1984) on “The Effect of Mastery Learning Strategy on pupils’ Achievement in Mathematics, their self-concept and Attitude towards Mathematics” The major finding of the study was the experimental group of pupils
exhibited a significantly higher achievement in Mathematics than the control group of pupils and higher gain scores of achievement in Mathematics.

**Chitkara, M.** (1985) studied “The effectiveness of Different Strategies of Teaching on Achievement in Mathematics in Relation to Intelligence, Sex and Personality” The major finding of the study was all the three strategies, namely, Lecture-discussion, Inductive drill and Auto-instruction group discussion were found to be equally effective in terms of achievement in Mathematics irrespective to the levels of intelligence, sex and personality type.

**Kolhe, S.P.** (1985) did a study on “The construction of Attitude Scales and Measurement of Attitudes of students of Jalgaon District towards Mathematics” The main finding of the study was the students had favourable attitude towards Algebra, Geometry and Mathematics as a whole.

**Rao, A.V.R.** (1986) conducted an investigation into “The Relative effectiveness of Guided Discovery and Expository Approaches of Teaching Mathematics” The major finding of the study was there was no significant difference in achievement in Mathematics when taught by the guided discovery and expository approaches.

**Kalia Ashok and Tamar** (2000) conducted a study on “Computer self-confidence and computer experience in relation to computer-related attitude of commitment” The finding was, Students with greater confidence in their ability to learn new computer reflected more favourable attitude towards computers.

**Panda** (2000) conducted a study on “Effectiveness of Computer Assisted Learning (CAL) in Achieving Higher Cognitive skills” He has found that Computer Assisted Learning (CAL) results in greater learning achievement in all hierarchies of cognitive domain.

**Prabakaran** (2000) conducted a study of “The learner and the teachers stress in Computer science at tertiary level” The findings were:
i. Learners in Computer science courses at tertiary level undergo moderate stress.

ii. When compared with learners, teachers undergo more stress.

iii. There exists significant difference in learner’s stress sure.

Arulprakash (2001) has conducted a study on “The coping ability of the college teachers with the invasion of Internet” The major findings of this research were:

i. The College teachers are found to be coping up with Internet invasion.

ii. Type of college has no association with coping ability.

iii. Teaching experience does not appear to be associated with coping ability.

Kumaran, D. and Deivaraju, K. (2001) conducted “A study of cognitive & effective computer attitudes of teachers” The major findings of this research were:

i. In general, teachers had more favourable computer attitude.

ii. The gender of the teacher had significant influence on effective computer attitude and no significant influence on cognitive computer attitude. Male teachers had more favourable effective computer attitude.

Kumaran, D. and Selvaraju, K. (2001) conducted “A study of cognitive and effective computer attitudes of Teachers” and found that teachers had more favourable computer Attitude.

Phalachandra (2001) in his study entitled “Satellite based Primary Teachers’ Training versus other models: A Comparative study” reported that the achievement gained among the participants of all the three modes of training (Tele-conferencing, face-to-face and multi-channel approach) on all the themes were significant and almost equal.

Sivakumar, R. (2001) in his study “A study of computer awareness among student-teachers of Colleges of Education in Tamilnadu” reported that there was no adequate computer awareness among student-teachers of Colleges of Education in Tamilnadu.
Preetha Viswanath, N. (2003) investigated "The utilisation of Internet by Educants" and found that the descriptive and inferential statistics computed revealed that the educants utilised the Internet facilities adequately and it was found that the e-mail is the most often used mode of usage of Internet and the file transfer and archiving are used by the educants in small number.

Vanitha, K. (2004) studied on "Integrating Information and Communication Technology in Teacher Education" and found that the teachers have adequate knowledge in integrating ICT in their teaching.

Ashok, R. (2005) investigated "The use of Educational Technology by the D.T.Ed. Trainees in Dindigul district" and found that the usage of Educational Technology among the D.T.Ed. trainees was adequate, but it showed only little rise above the average utilisation percentage of 81.50%.

Ezhilarasan, G. (2005) experimented "The effectiveness of Video Assisted Program on teaching geography at IX standard" He found that the performance of the urban students in the experimental group was higher than that of rural students in the sample group at the Post-test.

Vijaya Rani, K. (2005) conducted a study on "Attitude towards Educational Technology among B.Ed. Students of Bharathidasan University" and the findings were: under the different optional and elective subjects of the B.Ed. Programme, the objectives were not totally achieved only among 32% of subjects and the B.Ed. Students have favourable attitude towards Educational Technology.

Muthuchamy, I. and Senthilkumar, G. (2007) conducted a study on "Attitude of Higher Secondary School teachers towards the Introduction of Human Rights in the School curriculum" The findings revealed that the higher secondary school teachers’ attitude towards the introduction of human rights differs in terms of sex, educational Qualification, teaching experience and locality.
Sebastian, S.J. and Bella Pragash (2007) conducted a study on “Stress Management of Higher Secondary Students in relation to their Academic Achievement.” The findings of this study revealed that academic achievement of the higher secondary students does not depend upon their stress management.

Sangeetha, V. (2007) conducted a study on “Effect of Demonstration Method on Achievement in Science among the students of Standard IX” and found that there is a significant difference between the Post-test mean scores of control and experimental groups in total. Experimental group had higher than control group.

Sundaravarathan, S. (2007) conducted a study on “Attitude towards computer in Education among High School Students” and found that the attitude towards computer in education among high school students is adequate.

Selvaraj Gnanaguru, A. and Suresh Kumar, M. (2008) conducted a study on “Underachievement of B.Ed., students in relation to their Home Environment and Attitude toward teaching” and the study reveals that the underachievers have satisfactory home environment and unfavourable attitude towards teaching. There is no significant relationship found between the underachievers’ home environment and their attitude towards teaching.

Abdul Gafoor, K. and Lavanya, M.P. (2008) conducted a study on “Thinking Styles and Achievement of Higher Secondary Students” and found that local thinking style suits achievement in Physics. Executive, anarchies’ style negatively affect Physics achievement. External thinking favours achievement while conservative thinking negatively affect students’ achievement.

Sahaya Mary, R. and Paul Raj, I. (2008) conducted a study on “Scientific Attitude of Upper Primary Students towards Science Learning.” The result shows that the factors like being a domicile, gender, locality of the School, medium of instruction and size of the family do not influence their scientific attitude and achievement in Science.
The age and religion of the students influence their scientific attitude and achievement in Science.

**Thangarajathi, S.** (2008) conducted a study on “Effectiveness of Mind Mapping Technique in Teaching Mathematics” and found that Mind Mapping Technique is more effective than the conventional Method. The Mind Mapping Technique is effective in teaching students irrespective of their sex, parental education and parental income.

**Aruna, P.K.** and **Amanulla, A.K.** (2009) conducted a study on “Academic Achievement in relation to Social Phobia and Socioeconomic Status” and it showed that a negative correlation between Social Phobia and Socioeconomic status suggesting that if the parents are educated and economically sound, the Social Phobia can be removed.

**Ebenezer, J.A.** and **Leo Stanly, S.** (2009) conducted a study on “Adjustment and Achievement in Physics of XI Standard Students” and found that there is no significant relationship between Adjustment and Achievement of class XI students in Pondicherry region.

**Mala Sharma** and **Suman Sharma** (2009) conducted a study on “Attitude of Science Teachers towards Project Method” In the study the teachers have in general positive attitude towards project method of teaching Science.

**Vandana Mehra** and **Dilli Raj Newa** (2009) conducted a study on “School teachers’ Attitude towards Information and Communication Technology (ICT)” The main findings of the study were:

i. Private and Secondary School teachers exhibited comparable attitude towards ICT.

ii. Teachers belonging to different academic streams, viz., language, Science/Mathematics and Social Sciences exhibited comparable attitude towards ICT.
Behera Biswajit (2009) conducted a study on “Problem-Solving Skills in Mathematics Learning” and revealed that higher ability groups were superior to lower ability groups irrespective of sex. The higher performance of high achievers over the low achievers in both core and Non-core problems. It revealed that those who can verbalise the process of solution are better at solving problems.

Noorjehan, N. Ganihar and Wajiha, A.H. (2009) conducted a study on “Factors affecting Academic Achievement of IX standard students in Mathematics” and conclude that many factors like mathematical creativity, attitude towards Mathematics, achievement motivation and a low level of anxiety influence the academic achievement in Mathematics at secondary stage and recommend the inclusion of curricular and co-curricular programmes to improve performance in Mathematics.

Sameer Babu, M. (2009) conducted a study on “Self-experience in school and its relationship with Social Science Achievement” and concluded that the parents and teachers should be highly conscious of reducing the victimisation in schools. There should be certain valid, scientific measures in reducing bullying and aggressive incidents at schools.

Gurubasappa, H.D. (2009) conducted a study on “Intelligence and Self-concept as correlates of Academic Achievement of Secondary School Students” and found that the highly intelligent students and students with better self-concept achieve high in School that is., the academic achievement of students is certainly influenced by psychological factors like intelligence and self-concept.

Kanmani, M. and Annaraja, P. (2009) conducted a study on “Influence of Self-esteem and awareness of ICT on Academic Achievement of M.Ed., Students” The result shows that there is a significant difference between the Government-aided and University department M.Ed., students’ academic achievement; there is no correlation
between self-esteem and awareness on ICT, and there is no influence of Self-esteem and awareness of ICT on academic achievement.

Mahmood Alam (2009) conducted a study on “Academic Achievement in relation to creativity and Achievement motivation - A correlation study” The findings revealed a significant positive relationship between (i) creativity and academic achievement (ii) achievement motivation and academic achievement.

Usha, P. and Rekha (2009) conducted a study on “Emotional Competence and Mental health as predictors of Academic Achievement” The results of the study revealed that both Emotional Competence and Mental health have high correlation with Achievement. The result also revealed that among the variables studied, the best predictor of academic achievement is emotional competence.

Ravichandran, T., Merlin Sasikala, J.E. and Maya George (2009) conducted a study on “Attitude of Teachers towards web-based learning” and found that access to digital communication technology has made learning more interesting and joyful, the investigators of the study stress that teachers should be encouraged through training and support to use web and other IT systems in their teaching.

Umadevi, M.R. (2009) conducted a study on “Relationship between Emotional Intelligence, Achievement Motivation and Academic Achievement” He revealed that there is a positive relationship between emotional intelligence and academic achievement and achievement motivation and academic achievement.

Aruna, P.K. and Smitha, E.T. (2009) conducted a study on “Effectiveness of Concept Attainment model of teaching on Achievement in Biology” and found that a significant difference was found between the mean scores for achievement between the experimental group and the control group. It has revealed that the superiority or Concept Attainment Model of teaching over the constructivist method of teaching.
Nalini, H.K. and Ganesha Bhatta, H.S. (2009) conducted a study on "Study Habits and Students Achievement in relation to some influencing factors", found the significant relationship between study habits and the influencing factors such as Socio economic status, learning environment, school adjustment and intelligence.

Rajeeedali, E. (2009) conducted a study on "Computer Based Technology and its Pedagogical Utility" found that most of the teachers have basic computer knowledge, and that most of the teachers use computers for educational purposes.

Nimavathi, V. and Gnanadevan, R. (2009) conducted a study on "Developing study habits through Multimedia Program" and the study shows that the students learning with the help of multimedia fared better in their study habits than the students learning through conventional method.

Rita Arora and Kuldeep Kumar Saharan (2009) conducted a study on "Effect of Peer-Assisted learning and Teacher-Assisted learning on the Scholastic Achievement of Secondary classes" and found that the boys taught through Peer-Assisted Learning and Teacher-Assisted Learning yielded significantly different scores as compared to the girls.

Lavanya (2009) conducted a study on "Development, Validation and Effectiveness of e-content in Physics at Tertiary Level" The main finding of the study is the experimental group who learnt through e-content technique is highest level than the control group who learnt through conventional method.

Mani, P. (2009) conducted a study on "A comparative study on the Achievement in Mathematics among the students of standard VIII of Middle, High and Higher Secondary Schools in Dindigul district" and the study reveals that the Mean Achievement in Mathematics is moderate in total among Middle Schools, it is comparatively higher in schools with the highest mean scores of Teacher Morale. However, surprisingly the schools where the teachers Morale is comparatively lower,
have recorded higher mean achievement scores. This demonstrates the fact that students have intrinsic motivation and perform well irrespective of the Teacher morale.

Ravanan, R., Blessing Mary, A. and Julie (2009) conducted a study on “Attitude towards Mathematics of XI Standard Students in Trichy district”, found that, there is no significant difference in Attitude towards Mathematics of XI Standard Students in Trichy district, owing to differences in their gender, region and medium of instruction. There is significant difference in Attitude towards Mathematics of XI Standard students in Trichy district, owing to differences in their stream of study, type of school management and socio economic status.

Rajeshkumar, M. (2009) conducted a study on “Impact of e-Learning on Teacher Effectiveness” and found that the teachers working in universities and colleges differ significantly with respect to teacher effectiveness as the mean difference of the teachers working in universities are more than the teachers working in colleges.

Anboucarassy, B. (2010) conducted a study on “Effectiveness of Multimedia in Teaching Biological Science to IX Standard Students” and found that the multimedia approach is considered to be one of the best techniques for Biology teaching at IX Standard level. Multimedia helps the students to sustain their interest and also their retention power compared to the traditional method of teaching.

Vijayakumari, K. (2010) conducted a study on “Some correlates of Academic Achievement of Secondary School Students” Findings of the study reveal that academic achievement is negatively related to academic anxiety and positively related to achievement motivation. The main effects of the three variables, academic anxiety, achievement motivation and sex on academic achievement is significant and the interaction effect of academic anxiety and sex as well as achievement motivation and sex are significant on academic achievement.
Jose Augustine (2010) conducted a study on “Teaching Aptitude, Competency, Academic Background and Achievement in Educational Psychology” and found that academic background should not be the sole criterion for the selection of students in the colleges of education. And the study emphasises the need for aptitude testing in the selection of student teacher.

Mahender Reddy Sarsani and Ravi Maddini (2010) conducted a study on “Achievement in Mathematics of Secondary School students in selected variables” and found that

i. Girls performed better than boys in Mathematics Scholastic Achievement Test (M-SAT).

ii. There is no caste influence on the performance in M-SAT.

iii. Type and Medium of School have influence on the performance on M-SAT.

Ponraj, P. and Sivakumar, R. (2010) conducted a study on “Computer-Assisted Instruction in Zoology in relation to Learners Personality” and found that the experimental method of teaching is more effective than the traditional method in teaching Zoology. In otherwords teaching the topic Zoology by using CAI is more effective.

Ajatha Swamy, A.M. (2010) conducted a study on “Internet Awareness and competence among High School Students and Teachers” and found that

i. Mahiti Sindhu project has significantly enhanced the awareness and competence to use Internet among high school students.

ii. Mahiti Sindhu project has significantly enhanced the awareness of internet among the teachers who were involved with the project.

iii. Mahiti Sindhu project has significantly enhanced the competence to use internet among the teachers who were involved with the project.

Meenakshi Mehta (2010) conducted a study on “Personality needs and Academic Achievement of Senior Secondary Students” and the study has revealed that
need-achievement, need-dominance, need-nurturance and need-endurance are positively and significantly related to students' academic achievement while needs - succorance, affiliation, a basement and aggression and significantly, but negatively related to academic achievement.

Parvathamma, G.H. and Sharanamma, R. (2010) conducted a study on “Anxiety level and level of Self-confidence and their relation with Academic Achievement” and found that
i. There is a significant correlation between anxiety and academic achievement.
ii. There is a significant correlation between self-confidence and academic achievement.

Vasimalai Raja, M. and Anna Raja, P. (2010) conducted a study on “Influence of Self-Efficacy and Reflectiveness on the Academic Achievement of High School Students” The study reveals that there is a significant difference between IX and X standard students in their self-efficacy and academic achievement.

Dakshinamurthy, K. (2010) conducted a study on “Effect of Teachers Personality, Attitude towards profession and Teaching Effectiveness on Academic Achievement of Students” and found that there is impact of teacher personality, attitude towards profession and their teaching effectiveness on academic achievement of the students. But in 2-way interaction there is no significant relationship found between teachers’ personality and teaching effectiveness on academic achievement of students and teachers’ attitude towards profession and teaching effectiveness on academic achievement of students. In the 3-way interaction there is a positive relationship between teachers’ personality, attitude towards profession and teaching effectiveness of Secondary School teachers on academic achievement of students.

Neeraj Kaushik and Anita Sharma (2010) conducted a study on “Computer and Internet Awareness in School-Going Students” and found that whatever the schools
and authorities claim, the bitter truth is that Internet penetration and awareness to the desirable extent is not there in school going students.

**Amutha Sree, N. and Krishnamurthy, S. (2010)** conducted a study on “Academic Achievement of Commerce students in relation to their Study habits” In the study it was found that the higher secondary school students have high achievement and average study habits. There is significant relationship between achievement in Commerce and the study habits of higher secondary school students.

**Muthupandi, P. and Amalraj, A. (2010)** conducted a study on “Relationship between ICT Competency and knowledge Competency of Distance mode B.Ed. Students” A major finding of this study is, there is a significant difference in ICT Competency between male and female distance mode B.Ed. Students and ICT Competency of distance mode B.Ed. students is found to be average.

**Suryawanshi, D.A. and Rahul Gopichand Saner (2010)** conducted a study on “Impact of L-21 Software on the Development of Listening and Speaking Ability of Secondary School students” and found that the experimental group was exposed to L-21 Software to develop listening and Speaking ability and other group was taught through traditional method. The L-21 Software proved more effective in developing the listening and speaking ability of the Secondary School students.

**Pallavi Kaul (2010)** conducted a study on ‘The effect of Learning together techniques of Cooperative Learning Method on students Achievement in Mathematics” Findings showed that there is a significant difference between the results of experimental and control groups. Learning together technique of Cooperative Learning Method is more effective than traditional teaching methods.

**Sahaya Mary, R. and Manorama Samuel (2010)** conducted a study on “Influence of Emotional Intelligence on Attitude towards Teaching of Student-Teachers” The study reveals that the student-teachers have favourable attitude
towards teaching and their Emotional Intelligence was found to be satisfactory. The Emotional Intelligence influences the attitude toward teaching of Student-teachers.

Srinivasan, P. and Muthumanickam, R. (2010) conducted a study on "An Innovative Computer-Assisted Instructional Programme" and found that the students who participated in the Computer Assisted Instructional Programme (CAIP) not only enjoyed it and were self-motivated but also showed higher achievement when taught through CAIP.

Vasanthi, A. (2010) conducted a study on "Learning Environment and Academic Achievement of Higher Secondary Physics Students" and found that Learning Environment of Higher Secondary Physics students with respect to Teacher component evaluated between male and female students, Hindu and Non-Hindu students, rural and urban area students differ significantly. Learning environment with respect to School and home environment - all the factors such as sex, religion, community, year of study, type of school, group and residing area have failed to make any significant impact. The correlation between the learning environment and academic achievement of Hindu students, Non-BC students and rural students vary significantly. The correlation between the Learning Environment and Socio economic status of Government-aided school student, science group students vary significantly.

Leela Gñanalet, S. and Ramakrishnan, K.S. (2010) conducted a study on "Effectiveness of Multimedia Programme in Teaching Environmental Education - A Study". The result show that the multimedia programme prepared by the researcher is more effective for the achievement of the objectives of environmental Education of ninth standard students. The students learning through multimedia programme are found to be better than the students learning through the conventional method of teaching.

Radhamani, K. and Arulsamy, S. (2010) conducted a study on "Relationship between Internet Addiction and Depression". The major findings of the study are, the
Internet addicted college students have moderate depression and there is a significant relationship between Internet addiction and depression among college students.

Rani, K.V. and Porgio, G. (2010) conducted a study on “A study on the effect of Multiple intelligence on the Academic Achievement of Higher Secondary students” In this study, it was found that plus one students show more logical mathematical Intelligence than plus two students. Also co-education students show more interpersonal intelligence than Girl’s School students and there is no significant difference between Higher Secondary Students in their Achievement. There is significant relationship between verbal and logical mathematical intelligence and the achievement of Higher Secondary Students.

Francisca, S. and Mary Rani (2010) conducted a study on “Internet Knowledge of Research Scholars and their usage”, found that there is no significant difference between research Scholars in Internet knowledge with reference to Gender, Area of specialisation, location of the Institution and Research status. There is significant difference between research Scholars in Internet knowledge with reference to Research degree. But the M.Phil and Ph.D Scholars do not significantly differ in Internet usage.

Uma Maheshwari, K., Samma Reddy, P. and Gyanmudra (2010) conducted a study on “Assessment of ICT Literacy among High School Students” The findings indicate that the performance of Mean differences of Urban and Rural is in favour of Urban (2.91), Boys and girls in favour of Boys (1.71), Private and Government in favour of Private (6.51), English medium and Telugu medium in favour of English medium (5.04).

Annie Isabella, S.A. (2010) conducted a study on “Academic Achievement to the B.Ed. student teachers in relation to their socioeconomic status” This study intended to explore if there was any significant relationship between Academic Achievement and Socio economic status of the B.Ed. student teachers of Lady Willingdon Institute of
Advanced Study in Education and found that there was no significant relationship between Academic Achievement and Socioeconomic status of B.Ed. student teachers.

Rai, R.P. (2010) conducted a study on “Effects of participatory-learning Technique on Attitude towards and Achievement in Educational Statistics of B.Ed. Students.” Using a Pre-test - Post-test Control group design and a test for independent samples (n=10), it was found that the participatory learning technique group was found significantly higher on achievement in attitude towards the subject. It was concluded that the participatory-learning technique was effective in not only increasing learning output of the student teachers but also developing favourable attitude towards the subject as well.

Smitha, N.R. and Sujatha Acharya (2010) conducted a study on “Attitude of Teachers towards Inclusive Education for the Disabled” The investigator finds that the teachers have unfavourable attitude towards inclusive education for them.

Vandana, V. Jadhav and Ajaykumar, B. Patil (2010) conducted a study on “Emotional Intelligence among student teachers in relation to General intelligence and Academic Achievement” On the basis of findings of the study it was concluded that (a) there is no significant relationship between emotional intelligence and general intelligence of student teachers (b) there is no significant relationship between emotional intelligence and academic achievement of student teachers.

Sasikumari, K. (2010) conducted a study on “Computer Phobia of IX Standard Students and their Attitude towards Educational usage of computer” The result showed that the factors like locality of the school, gender, types of school management do not influence Computer Phobia of IX Standard students and their attitude towards computer in education.

Sibichen, K.K. and Annaraja, P. (2010) conducted a study on “Teacher Trainees’ Computer Competency enhances their technology use in classroom Teaching”
The Investigators found that teacher trainees’ competency in computer usage helps them to improve their techno-pedagogical skills in the classroom.

Suresh Chand and Kulwinder Singh (2010) conducted a study on “School organisational climate as Determinant of Learning Achievement” The results showed that (i) familiar climate followed by open and autonomous climate are significantly more facilitative in learning achievement of elementary school students in Hindi and Mathematics (ii) control type of school organisational climate is most debilitating in Hindi language and Mathematics achievement.

Kannan, B. (2010) conducted a study on “Development and Validation of e-content package on ‘p-Block elements’ for XI Standard students” and found that the e-content programme on ‘p-Block elements’ for XI Standard students is more effective for above average students followed by average and below average students.

Aravindan, S. and Ramganesh, E. (2010) conducted a study on “Effectiveness of e-content in concretising the concepts of Physics among the Heterogeneous Teacher Educators” The result reveal that e-content was effective in concretising the concepts of Physics, even to the students with no science background.

Divya, C. Senan (2010) conducted a study on “Attitude of Student-Teachers towards MOODLE (Modular Object-Oriented Dynamic Learning Environment)” The findings indicated that most of the participants think MOODLE as a great way to structure a course in reality. They believe that MOODLE play an important role in teaching learning process.

Mahesh, D. Dalvi (2010) conducted a study on “Information Literacy for effective use of e-Resources: A study of selected colleges in Mumbai” The study found that most of the students are aware of the e-Resources but are not able to use them effectively as they do not possess the required skills.
Rengarajan, P. (2010) conducted a study on "Use of e-Learning by the teacher Educators." The major findings of the study are:

i. More than 23.13% of the teacher Educators’ have 2 to 4 years experience in computer and only a very few of them 13.13% have less than one year experience in Computer.

ii. Only 18 teacher educators out of 160 (11.25%) are making use of the computer daily and 35 teacher educators out of 160 (21.87%) are not using the computer at all.

iii. When it comes to the length of experience with the internet, 41 (25.62%) of the selected teacher educators has no experience with the internet.

Sridevi, K.V. (2010) conducted a study on "Attitude of Secondary School Teachers towards e-learning" and it is found that only 34% of teachers were having positive attitude towards e-learning.

Anil Ambasana (2011) conducted a study on "University Teacher’s attitude towards Professionalism." The findings were: most of the teachers were possessing high attitude towards professionalism. Gender, faculties (Social sciences, Sciences and Linguistics) and teaching courses (Professional-non professional) had no significant effect upon teachers’ attitude towards professionalism. Teaching experience was positively influencing teachers’ attitude toward professionalism particularly up to twenty years. After twenty years, a slight decline was observed in teachers’ professionalism. Well-experienced teachers (more than fifteen years) had higher attitude towards professionalism than the newly recruited teachers, i.e., having teaching experience of five or less than five years.

Anthony raj, P. and Annaraja, P. (2011) have conducted a study on "Relationship between Risk-Taking Behaviour and Academic Achievement in Ho Tribe students studying in High Schools in Kolhan, Jharkhand" and the findings revealed that
there is significant predictive relationship between academic achievement and risk-taking behaviour in Ho Tribe students.

Sahaya Mary, R. and Manorama Samuel (2011) conducted a study on “Attitude of the B.Ed., Student-Teachers towards Teaching and Academic Achievement.” The investigators find that the students’ attitude towards teaching and academic achievement falls under the average category with a significant difference between the male and female student-teachers.

Hemalatha, G. and Venkataraman, P. (2011) conducted a study on “Identifying Learning Attitude towards Chemistry among Higher Secondary Students.” The findings were:

i. Sex has no significant bearing on attitude towards learning Chemistry. However, the girls had more favourable attitude towards learning Chemistry than boys.

ii. The managements of Schools seem to have a significant bearing on attitude towards learning Chemistry.

iii. The locality of School has significant bearing on Students’ attitude towards learning Chemistry.

iv. The parental educational qualification and Socio economic status also contribute to the students’ attitude towards learning Chemistry.

Megha, M. Uplane., Sanjeev, A. Sonawane and Padmini, M.S. (2011) conducted a study on “CAI: An effective Instructional Method for Secondary School low Achievers.” The study employed development of a text book based computer software with the help of computer personnel based on Story boards (considering teacher’s views and students’ learning difficulties) prepared by researchers by using Microsoft PowerPoint, Adobe Flash and Adobe Photoshop, Statistically significant difference was found providing that the developed software is effective.
Antony Raj, M. and Amalraj, A. (2011) conducted a study on "Cognitive style and Academic Achievement of outgoing undergraduate History Students". It was found that the outgoing undergraduate history students differ in their cognitive style and academic achievement. This study revealed that there was a significant relationship between cognitive style and academic achievement of outgoing undergraduate history students with reference to certain background variables.

Jaganath, K. Dange (2011) conducted a study on "Effectiveness of peer-tutoring on English Language Achievement and nurturing Effects". It was shown that peer tutoring would contribute to the development of language achievement as well as nurturing effects like self esteem, team spirit, socialisation, mental horizon, social interaction, communication skills and leadership.

Sasipriya, P. and Annaraja, P. (2011) conducted a study on "Relationship between Performance in Soft Skills and Academic Achievement among higher secondary students". The major finding is that there is a significant relationship between academic achievement of the students and their soft-skills, oral communication skill, written communication skill, collaboration skill, computer skill, time-management skill, leadership skill, self-motivation skill.

Anita Sharma, Kartar Sigh Thakur, Poonam Sharma and Dalip Malhotra (2011) conducted a study on "Prediction of Different Streams in Academic Achievement through verbal and non-verbal Intelligence Tests". It is indicated that Academic Achievement in different subjects could be tapped only by different types of intelligence Tests. An interesting observation was the superiority of males on SPM (Standard Progressive Matrices, Raven, 1960), Mathematics and Science, i.e., the Practical Mechanical aspect of generalability and female’s dominance on GMA (General Mental Ability Test, Jalota, 1973), Language and Social sciences i.e., the verbal-educational aspect of generalability.
Hemamalini, H.C. (2011) conducted a study on “Anxiety and Academic Achievement of High School students of Mysore city.” The study revealed that both very high and very low anxiety levels lead to low academic achievement among the High School students.

Madhu Asthana (2011) conducted a study on “Self-Concept, Mental Ability and Scholastic Achievement of Secondary School Students of Varanasi” The findings revealed that there was a significant difference in male and female students regarding their Scholastic achievement. Girls were better than boys in academic performance. Mental ability and self-concept were positively and significantly related to Scholastic achievement. Moderated regression analysis as well as subgroup analysis revealed that relationship between mental ability and scholastic achievement is moderated by self-concept.

Manika Sharma and Tahira Khatoon (2011) conducted a study on “Family Variables as Predictors of students Achievement in Science” The results indicated that parental education, parental occupation and family size contributed significantly to achievement in Science of the students; but no difference in science achievement was found between the children whose fathers’ were either in the professional or in businessmen group.

Premalatha, S.R. and Porgio, G. (2011) have conducted a study on “Relationship between Selected Personality Traits and Achievement in Mathematics of Higher Secondary Students” and it was found that there is significant relationship between personality traits and level of achievement in Mathematics of higher secondary students.

Surjit Singh and Praveen Thukral (2011) conducted a study on “Emotional Maturity and Academic Achievement of High School Students” The results revealed that there exists no significant relationship between emotional maturity and academic achievement.
achievement. No significance differences were observed between boys and girls as well as rural and urban students on the basis of their emotional maturity.

Muthaiyan, R. (2011) conducted a study on "Effectiveness of e-content in Physics at Higher Secondary Level" and found that the experimental group who learnt through e-content technique achieved better results than the control group. The experimental group students who learnt through e-content technique, did not differ in their achievement with respect to sex and locality. But the experimental group students who learnt through e-content technique, differed in their achievement at 0.01 level of significance with respect to parents' occupation.

Mumthas, N.S. (2012) conducted a study on "Attitude towards teaching before and after B.Ed program" and found that students who enroll for secondary teacher education programs are not homogeneous in their attitude towards teaching profession.

Sivakumar, D. and Arunachalam, N. (2012) conducted a study on "Attitude towards e-Learning among Prospective Teachers" and found that there is significant difference in the mean scores of attitude towards e-Learning among the prospective teachers with respect to their sex, residence and those having computer at home.

Harmeet Kaur (2012) conducted a study on "Attitude towards teaching profession in relation to adjustment of secondary school teachers" and the study found adjusted and maladjusted teachers differ significantly in their attitude towards teaching. It further revealed that adjusted teachers had high attitude as compared to mal-adjusted teachers.

Shaik Fehameeda and Humiera Jawad (2012) conducted a study on "The effectiveness of CAI program in High School Biology" and found that the Post-test scores on achievement test are significantly higher than Pre-test scores which means that the CAI program is effective.
Ajit Anandmani (2012) conducted a study on “Factors influencing Achievement in Science at Secondary level” and found that gender of the students had no significant relationship with the achievement in Science.

2.4 Studies done abroad

Gardner, P.L. and Siek Toon Khoo (1988) have conducted a study on “Measuring interest in Mathematics” and the findings provide good general support for the conceptualisation underlying the study. Factor analysis indicates that there are distinct topic based patterns of interest in Mathematics. Eight clear factors emerged, displaying a reasonably good fit with the seven topics originally proposed. There was also good support for the conceptualisation of the learning modes instrument, although the reception learning scale split into two factors (inside and outside the classroom). Three career factors were identified (academic, technical and business).

Coldwell, R.A. (1993) has conducted a study on “University students’ attitudes towards computer crime: a research note” and found that students from machine based disciplines are less able to predict the social consequences of computer crime than those from people based disciplines. We conclude from this that the concepts of machine-people and people-people are valid but that it would be inappropriate to conceive of these as a dichotomy regarding occupational types: forming either end of a continuum might be more acceptable. The likely source of these individual social leanings is linked back to early childhood socialisation and suggests that, by subjecting students of machine based disciplines to socially-oriented modules at the university, would be occurring fifteen years too late.

Mitchell, Mathew and Gilson, Judy (1997) studied the “Interest and Anxiety in Mathematics” and the results indicated that environments high in situational interest were associated with substantial increases in the mean individual interest of students and had a
beneficial but smaller impact in terms of associated decreases in Mathematics anxiety. In addition, there did appear some gender effects with females being more affected by the level of situational interest in Mathematics. Finally, the environments appeared to be particularly effective for students with previously low individual interests in Mathematics.

S. Paul Wright, Sandra, P. Horn and William L. Sanders (1997) have conducted a study on “Teacher and Classroom Context Effects on Student Achievement: Implications for Teacher Evaluation” and the results showed that teacher effects are dominant factors affecting student academic gain and that the classroom context variables of heterogeneity among students and class sizes have relatively little influence on academic gain. Thus, a major conclusion was that teachers make a difference.

Fred, O. Ede and Bhagaban Panigrahi (1998) have conducted a study on “Attitudes toward computers: a comparison of Indian and Nigerian students” and the results of the study indicated that Indian students like computers more, find computers more useful, have more confidence in computers, have less computer anxiety, and have a more general positive attitude toward computers than Nigerian students do. With regard to gender and attitudes toward computers, the results showed that male students had slightly (although not statistically significant) more favorable attitudes than female students. Surprisingly, correlation analysis revealed no relationship between age and attitude toward computers.

Tomas Galguera (1998) has conducted a study on “Students’ Attitudes toward Teachers’ Ethnicity, Bi-linguality, and Gender” and the study revealed significant main effects but no interactions between any of the three within-subject variables. Students rated African American, bilingual, and female teachers highest. A number of between-subject variables were also found to have significant main effects on student attitudes, including language of response, length of U.S. residency, and current teacher's...
bi-linguality. Evidence was found of student preference for same ethnicity teachers but only partial evidence of student preference for same bi-linguality teachers. No evidence of student preference for same gender teachers was found.

Katherine, A. Phillips, Meera Chandrasekhar and Lloyd Barrow (2000) have conducted a study on “Physical Science Interests and Strong Interest Inventory Profiles of Females in a Residential Summer Program” and found that the participants of the Newton Academy showed fairly strong interest in taking further physical science courses in high school, with 78 percent indicating an interest in taking chemistry and 53 percent in taking physics.

Koeppar and Andre (2000) conducted a research entitled “Internet as the goal of project linking at low state university Furbish lays projects abroad program” This projects linking established as international dialogue among middle school teachers and students in Moscow, Russia & in the USA. For each of five consecutive years, a new group of twelve as teachers joined a new group of twelve Russian teachers in Moscow to collaborate in developing curricular designed to prepare middle school youth to participate in a global society.

Tawvir-Us-Zaman, et. al. (2000) found in their study that out of all the audio-visual aids, computers and Internet were ranked first and TV was ranked second by the participants. The study also found that the students had the same attitude about the effectiveness of TV/Recorded Video, Computer/Internet, OHP, Recorded Audio and Multi-media in teaching.

Funk Daniel, C., Mahony Daniel, F., Nakazawa, Makoto and Hirakawa, Sumiko (2001) have conducted a study on “Development of the Sport Interest Inventory (SII): implications for measuring unique consumer motives at team sporting Events” and analysis revealed that sport and team interest, excitement, supporting women’s opportunity in sport, aesthetics and vicarious achievement explained 35% of the variance
in spectators' interest in the event. Results provide sport marketers with consumer-based marketing strategies, particularly for women's sport.

Juan Manuel Ortiz (2001) has conducted a study on "e-Learning" and the researcher found e-Learning very useful but with some problems to change the systems that work nowadays. The main problems appeared to be the old mentality and the lack of technology, but we also identified some others, together with the positive aspects. When we focused on the interaction of the system and on the equality, we arrived to the point that the interaction was real, but the equality was prohibited more than promoted. Despite all the disadvantages and problems we finally concluded that e-Learning should be promoted, because it offers a great amount of new possibilities which could complement the current system, with the only restriction of the needed money for achieving the project. The system can be achieved with government investments, good interfaces that make the system attractive, with trainings to change the mentality, etc.

Selma Karmi, et. al. (2001) in their study among Bangladesh Open University students, found that 85% of the student respondents appreciated BOO TV programmes and 19% of the respondents reported the TV programmes were helpful to gather general knowledge.

Judith, B. Strother (2002) has conducted a study on "An Assessment of the Effectiveness of e-Learning in Corporate Training Programs" and the study revealed that Corporate managers are constantly looking for more cost-effective ways to deliver training to their employees. e-Learning is less expensive than traditional classroom instruction. In addition, many expenses-booking training facilities, travel costs for employees or trainers, plus employee time away from the job-are greatly reduced. However, some firms that have spent large amounts of money on new e-Learning efforts have not received the desired economic advantages.
Stamovlasis, D., Kousathana, M., Angelopoulos, V., Tsaparlis, G. and Niaz, M. (2002) have conducted a study on "Achievement in chemistry problem-solving as a function of the mobility-fixity dimension" and the results of this study supported the hypothesis that the Mobility-Fixity dimension can serve as a predictor variable of students' performance on chemistry problem-solving.

Hong, K.S., Ridzuan, A.A. and Kuek, M.K. (2003) have conducted a study on "Students' attitudes toward the use of the Internet for learning: A study at a university in Malaysia" and the results from the study indicated that students had positive attitudes toward using the Internet as a learning tool, adequate basic knowledge of the Internet, and viewed the learning environment as supportive of using the Internet for learning. Students with better basic Internet skills and who viewed the learning environment as promoting the use of the Internet favoured using the Internet for learning.

Joan Laing., Kyle Swaney and Dale, J. Prediger (2004) have conducted a study on "Integrating vocational interest inventory results and expressed choices" and the results indicated that persistence in an expressed choice increases systematically as congruence between choice and interests increases.

Martha, M. Bleeker and Janis, E. Jacobs (2004) have conducted a study on "Achievement in Math and Science: Do Mothers' Beliefs Matter 12 Years Later?" and the Past research has indicated an association between parents' beliefs and adolescent children's self perceptions of ability and has shown the importance of accounting for parents' gender-stereotyped beliefs when examining boys' and girls' self-perceptions of math-science ability. The current study extends these findings by examining the longitudinal relations between mothers' earlier gender stereotypes and perceptions and adolescents' later math-science achievement beliefs and career choices. As predicted, mothers' earlier perceptions of their adolescents' abilities were related to adolescents' math-science self-efficacy 2 years after high school, with adolescents' self-perceptions of
math ability during 10th grade mediating the relation with mothers’ perceptions. Moreover, mothers’ earlier predictions of their children’s abilities to succeed in math careers were significantly related to later career choices.

Zarah Zavarrki's (2004) research "Attitude of University Teachers towards the Internet Technology" is a study conducted on Indian Higher Education level. It is focused around the attitude of university teachers towards the role and impact of computer & Internet technology use in higher education. The evolution of Internet has profoundly impacted the mode of instructional delivery at higher education level.

Diana Saparniene, Gediminas Merkys and Gintaras Saparnis (2005) have conducted a study on "Students' Attitudes towards Computer: Statistical Types and their Relationship with Computer Literacy" and the study data has revealed that students having formed a positive contact with a computer (both male and female) usually demonstrate higher computer literacy level, whereas persons expressing a negative attitude are of lower computer literacy level.

Fan Lianghuo, Quek Khiok Seng, Zhu Yan, Yeo Shu Mei, Lionel Pereira-endoza and Lee Peng Yee (2005) have conducted a study on "Assessing Singapore Students' Attitudes toward Mathematics and Mathematics Learning: Findings from a Survey of Lower Secondary Students" and the results suggested that Singapore secondary students have generally positive attitudes toward Mathematics and Mathematics learning. However, they hold relatively negative attitudes about working on challenging Mathematics problems and about the usefulness of Mathematics in their adult life.

Heinze, A. (2005) has conducted a study on "Mathematics achievement and interest in Mathematics from a differential perspective" and the results showed that the development of an individual student's achievement between grade 7 and grade 8 depends on the achievement level of the specific classroom and therefore on the specific Mathematics instruction. Interest in Mathematics could be regarded a predictor for
Mathematics achievement Moreover, our findings suggest that the students show hardly any fear of Mathematics independent of their achievement level.

James, B. Grissom (2005) has conducted a study on “Physical fitness and Academic achievement” and the results indicated that a consistent positive relationship between overall fitness and academic achievement. That is, as overall fitness scores improved, mean achievement scores also improved. This relationship between fitness and achievement appeared to be stronger for females than males and stronger for higher socio-economic status (SES) than lower SES students.

Johnson, G. M. (2005) has conducted a study on “Student Alienation, Academic Achievement, and WebCT Use” and the findings suggested that peer alienation was associated with increased WebCT use; learning alienation and course alienation were associated with low WebCT use. Learning alienation demonstrated an inverse relation to academic achievement. In most cases, significant predictive relationships between academic achievement and student use of WebCT were curvilinear.

Steven, G. Rivkin., Eric, A. Hanushek and John, F. Kain (2005) have conducted a study on “Teachers, Schools, and Academic Achievement” and the results suggested that the effects of a costly ten student reduction in class size are smaller than the benefit of moving one standard deviation up the teacher quality distribution, highlighting the importance of teacher effectiveness in the determination of school quality.

Altun, A. and Cakan, M. (2006) have conducted a study on “Undergraduate Students’ Academic Achievement, Field Dependent / Independent Cognitive Styles and Attitude toward Computers” and it was found that there was no significant relationship between cognitive styles and academic achievement ($r = 0.14, p = 0.15$); cognitive styles and attitudes toward computers ($r = 0.01, p = 0.84$); and, cognitive styles and attitudes toward computers when their academic achievement scores were covariate
The findings indicate that students’ attitudes toward computers are not associated with field dependency, even when their achievement levels were controlled. Attitude toward computers is found to function independently from cognitive styles.

Christopher Lubienski and Sarah Theule Lubienski (2006) have conducted a study on "Charter, Private, Public Schools and Academic Achievement: New Evidence from NAEP Mathematics Data" and this analysis of US Mathematics achievement found that, after accounting for the fact that private schools serve more advantaged populations, public schools perform remarkably well, often outscoring private and charter schools.

Dana, E. Craker (2006) has conducted a study on "Attitudes Toward Science of Students Enrolled in Introductory Level Science Courses at UW-La Crosse" and this study analyzed the attitudes toward science of students enrolled in entry-level general education courses at the University of Wisconsin-La Crosse in the areas of personal confidence, usefulness of the subject, perception of the subject as a male domain, and perception of the teacher’s attitude. Males were found to have more confidence than females, and females perceive science as a male domain more than men. Expected achievement and attitude toward science were shown to be strongly related. The number of science and math courses taken in high school has a direct impact on a students’ attitude toward science.

Kyong-Jee Kim and Curtis, J. Bonk (2006) have conducted a study on “The Future of Online Teaching and Learning in Higher Education: The Survey Says...” and the study revealed that respondents' experience with online teaching varied from none to more than 10 years. Although not every respondent had online teaching experience, more than 95 percent had experience integrating computer or Web technology into their face-to-face teaching.
Theresa, M. Akey (2006) have conducted a study on "School Context, Student Attitudes and Behavior, and Academic Achievement: An Exploratory Analysis" The findings of the study are:

i. Both prior student engagement and perceived academic competence had a significant positive influence on subsequent levels of math achievement, but the influence of perceived academic competence was three times larger than that of engagement.

ii. Perceived academic competence had a positive influence on reading achievement; the influence of engagement was more complex.

iii. Prior achievement was also significantly related to perceived competence, suggesting that students who do well on reading and Mathematics assessment tests then perceive themselves as able learners, which promotes more reading and Mathematics success.

iv. Several aspects of school context-teacher support, clear and consistent expectations of behavior, and student-to-student interactions in the classroom were significantly and positively related to engagement. Teacher support and expectations of conduct had an immediate influence on student engagement that was stronger than the longer-term influence, although both influences were statistically significant.

Bekim Fetaji., Nada Pop-Jordanova., Jordan Pop-Jordanov., Tatiana Zorcec and Silvana Markovska (2007) have conducted a study on "Measuring e-Learning effectiveness through e-content and attention correlation" and this study found a strong correlation between the two e-Learning indicators: e-content and attention. Such findings were: consistent with the idea that e-Learning content (e-content) is the main vehicle behind knowledge dissemination and increased learning and it is primarily depended on learners attention.
Chang, S. Nam and Tonya, L. Smith-Jackson (2007) have conducted a study on “Web-Based Learning Environment: A Theory-Based Design Process for Development and Evaluation” and the study confirmed that for an e-Learning environment to be successful, various aspects of the learning environment should be considered such as application domain knowledge, conceptual learning theory, instructional design, user interface design, and evaluation about the overall quality of the learning environment.

Jaime, R.S. Fonseca (2007) has conducted a study on “Can We Reduce Students’ Negative Attitude Towards Math?” and concluded that the negative attitude toward Mathematics’ learning until the 9 year (compulsory) schooling, influenced their performances on the Quantitative Methods (QM) subject, at the secondary level, but the same did not happened with the Data analysis performance at University.

Jessica Fricke and Lincoln (2007) have conducted a study on “Generating Interest in Mathematics through Discussion in the Middle School Classroom” and as a result of this research, it is clear that discussion packets are very useful as a part of daily instruction. While there are modifications that must be made to the original packets to more clearly express the expectations in question, discussion packets will continue to be an effective tool in the classroom.

Mojeed Kolawole Akinsola., Adedeji Tella and Adeyinka Tella (2007) have conducted a study on “Correlates of Academic Procrastination and Mathematics Achievement of University Undergraduate Students” and the Findings indicated that: a significant correlation was found in the academic procrastination and academic achievement of the subjects in Mathematics, significant difference also exists in the levels of procrastination and Mathematics achievement of the subjects, with low procrastinators performing better than the moderate and the high procrastinators. Results further reveals that the subjects procrastinate the same way irrespective of their gender.
Nugrahenny, T. Zacharias (2007) has conducted a study on “Teacher and Student Attitudes toward Teacher Feedback” and the findings showed that generally teachers and students have a marked preference for teacher feedback. The high preference for teacher feedback was mainly the result of the respondents' positive attitudes towards teacher feedback. Interestingly, student preferences for teacher feedback also stemmed from their awareness that teachers control grades. The data collected from the questionnaires and interviews indicated that students preferred teacher feedback that was specific since this kind of feedback would facilitate students in the revision process. Students also show a high preference for feedback which focused on language. Compared to feedback on content, feedback on form was considered to be more helpful. Students often complained that teacher feedback on content tended to be general and sometimes, contradictory to student ideas. Moreover, the interview data illustrated that teacher feedback contributed greatly to students' emotional states particularly their motivation and attitudes towards writing.

Richie Grace, M. Lago and Abundol, A. Nawang (2007) have conducted a study on “Influence of Cooperative Learning on Chemistry Students’ Achievement, Self-efficacy and Attitude” and the findings showed that there is a significant difference in the students’ achievement for experimental and control groups. t-test revealed that there is a significant difference in the student’s self-efficacy for both groups. Furthermore, the study also revealed that there is a significant difference on students’ attitude towards chemistry for both groups. However it was found out that the experimental group had a more positive attitude towards chemistry.

Seda Yucel (2007) has conducted a study on “An Analysis of the Factors affecting Student Achievement in Chemistry Lessons” and the finding was that student achievement should not be assessed and evaluated with the average of written and oral exam grades throughout the year only, but that socio-economical factors, which are
thought to have significant effects, should also be considered. Thus finding is also supported in the interviews with Chemistry teachers.

**Umoren, G. and Aniashi Sylvester Ogong** (2007) have conducted a study on “Prior presentation of behavioural objectives and students’ achievement in biology” and found that there was a significant effect of prior presentation of behavioural objectives of students’ achievement in biology.

**Adesoji, F.A.** (2008) has conducted a study on “Managing Students’ Attitude towards Science through Problem - Solving Instructional Strategy” and the findings in this study showed that students in the experimental group developed more positive attitude towards Chemistry after the treatment. It was then recommended that teachers should adopt problem solving strategies in their teaching in order to win many more students to chemistry. Besides giving students the content, the process is equally important for them to comprehend some scientific concepts and principles. This could make them develop more positive attitude toward the learning of science.

**Donald Boyd., Pamela Grossman., Hamilton Lankford., Susanna Loeb and James Wyckoff** (2008) have conducted a study on “Teacher Preparation and Student Achievement” and results indicated variation across preparation programs in the average effectiveness of the teachers they are supplying to New York city schools. In particular, preparation directly linked to practice appears to benefit teachers in their first year.

**Francis, A. Adesoji and Segun, M. Olatunbosun** (2008) have conducted a study on “Student, Teacher And School Environment Factors As Determinants Of Achievement In Senior Secondary School Chemistry In Oyo State, Nigeria” and the results revealed that 7.20% of the total effect on achievement in chemistry was accounted for by all the seven predictor variables when taken together. It was also revealed that only four variables-school location (X1), laboratory adequacy (X3), teachers’ attitude to chemistry teaching (X5) and teachers’ attendance at chemistry workshop (X4) had direct causal
influence and also made significant contributions to the prediction of achievement in chemistry (X8) (the criterion variable).

Hulusi Cokadar and Cansu Kulce (2008) have conducted a study on “Pupils’ Attitudes towards Science: A Case of Turkey” and according to the result of this study, pupils attitudes towards science were found at medium level. The pupils’ attitude towards science differ depending on pupils’ the favorite subject, attended school, grade, family’s monthly income and perception of self-achievement. On the contrary, there were no significant differences at the pupils’ attitude towards science relating to gender, parents’ educational background and job and social self-perception of the pupil.

Jana Fancovicova and Pavol Prokop (2008) have conducted a study on “Students’ Attitudes toward Computer Use in Slovakia” and found that attitudes toward ICT were positive and gender differences were weak. Although they found school had an effect on the behavioural dimension of attitudes, it was not caused by the accessibility of computers perse. However, large numbers of students per computer (up to N = 68) greatly reduced student’s use of computers at schools. Lack of internet connection at home caused greater supplementation of internet-related activities in schools relative to home. Gender and age related differences in ICT participation were greatly influenced when comparing the home and school environment.

Neil, A. Williams., Will Bland and Gillian Christie (2008) “Improving student achievement and satisfaction by adopting a blended learning approach to inorganic chemistry” and the study revealed that a blended learning approach to the teaching of a level 2 inorganic chemistry module is presented. Lectures were replaced by study packs, which were supported by formative on-line assessment delivered via Blackboard and a programme of 20 workshops. Learning activities written using the Lockwood format were included in the study pack to facilitate active learning. The formative on-line assessments were designed to provide rapid and helpful feedback to the students in advance of the
workshops. The tracking and grade book facilities in Blackboard allowed staff to monitor student activity and progress. Attendance at the workshops was encouraged by including end-of workshop summative assessments. An analysis of module results revealed an improvement in performance compared to previous years and other core chemistry modules, after introducing blended learning to the level 2 inorganic chemistry module in 2004/5. The improvement was maintained in 2005/6. Module questionnaires revealed a significant improvement in student satisfaction with subject content, delivery and performance feedback on adopting a blended learning approach.

Patriciah, W. Wambugu and Johnson, M. Changeiywo (2008) have conducted a study on “Effects of Mastery Learning Approach on Secondary School Students’ Physics Achievement” and the results of the study show that Mastery Learning Approach (MLA) teaching method resulted in higher achievement but gender had no significant influence on their achievement. The researchers concludes that MLA is an effective teaching method, which physics teachers should be encouraged to use and should be implemented in all teacher education programmes in Kenya.

Stephen Asunka (2008) has conducted a study on “Online Learning in Higher Education in Sub-Saharan Africa: Ghanaian University students’ experiences and perceptions” and the study found that the students did not respond favorably to online constructivist teaching approaches such as asynchronous discussions and ill-structured project-based learning activities, and perceived collaborative online learning within their context as a complex, more demanding and time-consuming experience.

Bob, C.S. Yong (2009) has conducted a study on “Students’ Motivational Orientations and their associations with Achievement in Biology” and the results indicated that students exhibited a moderately high level of behavioural intention, belief strength, outcome evaluation and goal importance, and a low level of perceived behavioural control, normative beliefs and motivation to comply. Moreover, significant
positive relationships were obtained between behavioural intention, outcome evaluation and goal importance with achievement. In terms of gender, significant differences were found between male and female students' motivational profiles and achievement in biology.

Charlene Dodd, Dale Kirby, Tim Seifert and Dennis Sharpe (2009) have conducted a study on "The Impact of High School Distance e-Learning Experience on Rural Students' University Achievement and Persistence" and the results of this analysis suggest that first year university performance and persistence is significantly different for students who have previous experience with on-line education experiences and those who do not.

Julia Dilley (2009) has conducted a study on "Research Review: School-based Health Interventions and Academic Achievement" and it provides important new evidence that links students' health and academic performance. It identifies proven health interventions and practical resources that can positively affect both student health and academic achievement.

Salih Birisci, Mustafa Metin and Mehmet Karakas (2009) have conducted a research study on "Perspective Elementary Teachers' Attitudes toward Computer and Internet use: A Sample from Turkey" and results of the study that attitudes of prospective teachers' toward computer and Internet use are at high level. No significance differences were found between Perspective Elementary Teachers' Attitudes toward Computer and Internet use related with class, graduation school type and monthly family income variables. There was no significant relation between gender variable and computer usage, however a significant relationship was found between gender and Internet.

Yara and Philias Olatunde (2009) have conducted a study on "Students Attitude Towards Mathematics and Academic Achievement in Some Selected Secondary Schools in Southwestern Nigeria" and the results showed that the students' attitudes towards
Mathematics were positive and that many of them believed that Mathematics is a worthwhile and necessary subject which can help them in their future career. It is recommended that the teacher should develop positive relationship with students and stress classroom activities that involves active teaching-learning process and students’ participation in the class. Stakeholders should organize periodic seminars and workshops for students, parents and teachers designed to promote positive attitudes towards Mathematics.

**Athar Hussain, M., Zafar Iqbal, M. and Saeed Akhtar, M. (2010)** have conducted a study on “Technology Based Learning Environment and Student Achievement in English as a Foreign Language in Pakistan” and the results showed that there was a significant difference between the mean scores of Experimental group and the Control group. The performance of Experimental group was better on Post-test scores that indicted that teaching through technology based learning environment enhanced the achievement level of the students.

**Dale Kirby and Dennis Sharpe (2010)** have conducted a study on “High School Students in the New Learning Environment: A Profile of Distance e-Learners” the results of the analysis suggested that secondary school distance e-Learners are more likely to be females who are a) completing a demanding academic program, b) positively disposed toward school, c) not employed in a part-time job and d) confident of their computer and reading abilities.

**Fakeye, D. O. (2010)** has conducted a study on “Students’ Personal Variables as Correlates of Academic Achievement in English as a Second Language in Nigeria” and the result of the study showed that there was a positive relationship between Students’ Attitude and their academic achievement in English Language. It also showed significant difference in the academic ability of male and female students with male students having higher academic ability mean scores.
Frenzel Anne, C., Goetz, Thomas., Pekrun, Reinhard and Watt, Helen, M. G. (2010) have conducted a study on “Development of Mathematics Interest in Adolescence: Influences of Gender, Family, and School Context” and results indicated a downward trend of students' Mathematics interest that plateaued in later years, with high variability in mean levels, but little variability in the shape of the growth trajectories. Boys reported higher Mathematics interest than girls, but similar downward growth trajectories. Students from the lowest ability track showed more favourable interest trajectories than students from the middle and highest tracks. Family values and classroom characteristics were positively related to within-person levels of interest over time and to average individual levels of interest, but not to growth parameters.

Gerard, J. Louis (2010) has conducted a study on "The Development of an Interest Inventory Using Holland’s RIASEC Typology D" and Initial results showed that the inventory has an adequate fit using the RIASEC typology.

Jacobson Barineka Nbina, B. Viko (2010) have conducted a study on “Effect of instruction in Meta cognitive self-assessment strategy on Chemistry Students self-efficacy and achievement” and the results suggested that instruction in the meta cognitive self assessment strategy improve the students’ chemistry achievement and self-efficacy.

Kurumeh, M. S. (2010) has conducted a study on “Dienes Multibase Blocks’ Approach an Effective Strategy for Improving Students’ Interest in Number Bases among Secondary School Students in Mathematics” and the result of the study showed that Dienes Blocks’ Approach significantly enhanced students’ interest in number bases [F(1,199) = 71.499, p<0.05] where as gender was not a significant factor in students’ interest in number bases [F(1,199) = 0.020, p>0.05] even with the use of Dienes Block Approach. Similarly, there was significant interaction effect between method and gender on students’ interest in number bases [F(1,199) = 4.820, p<0.05]. The study
recommended that Mathematics teachers should teach Mathematics concepts especially the abstract concepts using activity-based approach like Dienes Blocks’ Approach.

Nand kumar Dhanwade (2010) has conducted a study on “A Study of Effectiveness of U-Learning at Higher Secondary Level by applying Multimedia e-Book on Biological Science” and the major findings of the study were

i. A multimedia e-book for Biological Science can be planned, designed and constructed.

ii. There is significant difference between performance of students from control and experimental group.

iii. The constructed MIS helped the students in performing better than the students from control group.

iv. U-learning is more effective than the CIS of learning.

Nwaocha Vivian Ogochukwu (2010) has conducted a study on “Enhancing students interest in Mathematics via multimedia presentation” and the results from the survey carried out indicate that multimedia presentations can improve students’ understanding, enthusiasm, class attendance and satisfaction.

Aamna Saleem Khan (2011) have conducted a study on “Effects of Teaching Chemistry through Concept Formation Teaching Model on Students’ Achievement” and the results of the study indicated that concept formation teaching model was more effective as compared to traditional method. Furthermore, concept formation teaching model appeared to be favourable for both boys and girls for the understanding of Chemistry concepts.

Aduwa Ogiegbaen, S.E. and Raymond Uwameiye (2011) have conducted a study on “Analysis of factors influencing negative attitude toward teacher education in Nigeria” and results indicated that the low social status accorded teachers, poor remuneration; irregular salaries were influential on university prospective students’ and
public attitude toward teacher education. Also, lack of loans for housing and vehicles, and poor working environment played major role as to why the public showed negative attitude toward teacher education.

Atanda, A.I. and Jaiyeoba, A.O. (2011) have conducted a study on “Effects of School-Based Quality Factors on Secondary School Students’ Achievement in English Language in South-Western and North-Central Nigeria” and the study concluded that instructional materials, quality of instruction and supervision have been adjudged to have contributed significantly to students’ achievement in English Language.

M. Karl, F., Graef, S. Eitner., M. Wichmann., S. Holst and N. Beck (2011) have conducted a study on “Student attitudes towards computer-aided testing” and this study pointed out that Computer-aided testing appeared to be equivalent to written multiple choice tests not only in terms of student performance but also to their perception. This is consistent with previous studies. Interactive multiple choice tests may provide an alternative to written tests, but should allow examinees to have control over the sequence, as well as the length of time the questions are displayed.

Oyinloye, G.O. and Ajayi Ben Babatunji (2011) have conducted a study on “Investigating Technical College Students’ Achievement in speech work in English language” and the findings of the study revealed that, male students performed better than females in the segmental features, female students perform better than male students in the supra segmental features and the female students develop positive attitude to the acquisition of speech work by willing to imitate native speakers model. As a result of the study, it was recommended that English Language teachers should use audio usual aids to teach oral skills in order to enlist the interest of the learners.

Vandana Manapure (2011) has conducted a study on “Effect of Further Mathematics on Students’ Achievement in Mathematics, Biology, Chemistry and Physics” and the findings of the study are:
There is no significant difference between further Mathematics and non-further Mathematics students' achievement in Mathematics, biology, chemistry and physics. This tends to suggest that the impact of further Mathematics does not affect student's achievement in the identified subjects.

Student performance in each of the subject correlates very highly and significantly with each other subject. The highest correlation is between physics and overall achievement, while the lowest but also significant relationship in between Mathematics and biology.

Addy and Christopher Kwabena Kumah (2012) have conducted a study on “Primary school teachers' and pupils' attitudes toward mathematics and their effects on pupils’ achievement in Manya Krobo district” and found that

There was no significant difference between primary class six boys' and girls' attitudes towards mathematics.

There was a significant difference in mathematics achievement between primary class six boys and girls in favour of girls.

Primary class six pupils' attitude toward mathematics contributed significantly to their achievement in the subject.

Primary class six teachers' attitude toward mathematics related to pupils' achievement the subject.

Shamsa Aziz and Hamid Hassan (2012) have conducted a study on “Factors Affecting the Attitudes towards Computers: A Survey at Higher Secondary Level in Punjab, Pakistan” and found that the positive affect of sufficient physical facilities and computer graduate teachers on students’ attitude towards computers so it is recommended that all the required and internationally recommended physical facilities along well qualified and properly certified teachers may be provided in all colleges and schools where computer science / studies are being offered to the students.
Mona Faisal Al-Qahtani (2012) conducted a study on “Students’ perception and attitude towards computer laboratory learning environment” and found that

i. There were significant positive associations between environmental and attitudinal variables.

ii. The year of study influenced the degree of satisfaction with the computer learning environment, attitude and test anxiety.

iii. There were significant positive associations between academic achievement and both the environmental and attitudinal factors.

Danielle, N. Dupuis, Amanuel Medhanie, Michael Harwell, Brandon Lebeau, Debra Monson and Thomas, R. Post (2012) have conducted a study on “A Multi-Institutional Study of the Relationship between High School Mathematics Achievement and Performance in Introductory College Statistics” and found that students with greater prior mathematics achievement took more difficult statistics courses and earned higher grades in those courses. The high school mathematics curriculum a student completed was unrelated to statistics grades and course-taking.

Dilek Sezgin Memnun and Recai Akkaya (2012) have conducted a study on “Pre-Service Teachers’ Attitudes towards Mathematics in Turkey” and found that the pre-service teachers have high level of positive attitudes towards mathematics, but some pre-service teachers’ attitudes need to be developed. There is a significant difference between attitudes towards mathematics of sophomores and seniors pre-service teachers and there is not a significant difference between average points of female and male pre-service teachers in relation to their attitudes towards mathematics.

2.5 Conclusion

The studies reviewed reveals that the multimedia educational material should improve the teaching learning process. e-Learning educational material is more important
because of its distributive property via webcasting. Online articles, streaming video, audio segments, images, specially designed websites and unique learning objects—these electronic elements are created to enhance courses and improve learning. Each new wave of technology brings a burst of enthusiasm on how it can transform instruction and learning. Unlike television and film, however, the Web appears to be delivering on its promise to reshape learning, although at a much slower pace than previously anticipated. And libraries are poised to support Web-based e-Learning by creating and managing e-content, developing new services and linking their current ones to course management systems, the hub for e-Teaching and e-Learning.

The review has also revealed the extent of contribution of educationalists in the area of the present study; from these reviews, the researcher found that no research has been done so far to find-out the effectiveness of e-Learning on pupils achievement and interest in Mathematics and to measure the attitude towards computer and Mathematics at high school level. Hence the researcher has chosen this topic for the present study which is centered at high school level.