# Chapter II
## Review of Related Literature

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CHAPTER-II
REVIEW OF RELATED LITERATURE

2.1 Introduction

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, recognizing the significance, suggesting data gathering devices and source of data. A summary of recognized authorities and of previous research clearly tells the researcher what is already known and what is still unknown and untested.

Moality (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 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. Research studies abstracted here includes 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 investigator. 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 been to present 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

Sahajahan (1980) carried out an experimental study of teaching science in standards VI and VII through modules. The results showed that the modular way of learning was more effective than the conventional method in the case of some modules while in the case of other modules it was found as effective as the conventional method.

Ravindranath (1982) developed multimedia instructional strategy for teaching biology at secondary level with the main objectives of developing a duly
validated multimedia instructional strategy for teaching biology using the tool unit criterion test. He found that the experimental group undergone multimedia instructional strategy was effective to 70% and the strategy was quite feasible in terms of time and cost.

**Bhargava** (1983) developed a study of some cognitive processes in science learning with reference to physics for students of higher secondary classes and the tests conducted for the collection of data were Jalota’s general mental ability test and achievement test in physics. Boys were superior than girls on the processes of observing measuring and drawing inferences.

**Vadhini** (1983) had reported an experimental study for developing multimedia instructional strategy for teaching science at secondary level. She had found that almost all the units indicated average and high level of performance on the total test and the strategy was found feasible when seen in terms of its reproducibility and the cost management by individual schools.

**Adinarayan** (1984) conducted “A study on science teaching in primary school- a training programme” and found that there was a significant difference in the development of skills among students in the experimental group.

**Ghosh** (1985) experimented “A study of the achievement of the students in chemistry and finding relationship with some of its determinants” Rural student’s better performance in the achievement test in Chemistry. The relationships were significant in terms of the intelligence test, the academic motivation test and the socio-economic status scale.

**Agnihotri** (1987) experimented the study of influence of some of the methods of teaching physics on the achievement in physics of different groups of students taught by different methods. The major finding of the study was the relative
effectiveness of all the four methods with respect to achievement in physics was the same for all the levels of students.

**Joshi** (1987) had reported an experimental study for developing multimedia instructional strategy for teaching science at the secondary level and studied the effectiveness in terms of student’s performance on criterion test and student’s reaction towards various components of the instructional strategy as a whole. He had found that the achievement scores of the students taught through the developed instructional strategy did not significantly differ from those taught through the traditional method.

**Karpaga kumaravel** (1990) in his study found that there is no significant difference in the achievement of CAI (Computer Assisted Instruction) group and VAI (Video Assisted Instruction) group in terms of its gain scores and CAI and VAI are equally effective. He also found that the achievement of CAI group and VAI group are better than the achievement of conventional instructional group.

**Sundarajan** and **Srinivasan** (1990) in their study on “Higher secondary students attitude towards the study of mathematics and their achievement in it”, found that the higher secondary girls have a more favourable attitude towards the study of mathematics than the higher secondary boys. There is significant at (0.01 level) and positive correlation between the higher secondary students attitude towards the study of mathematics and their achievement in it.

**Koortz** (1991) made an assessment of teacher trainer’s attitude towards selected instructional media after formal training or after student teaching. This study indicates the student teacher’s developed positive attitude towards the use of technology in the classroom.

**Kumar, U.S** (1991) explained that the development of scientific attitudes depended upon their perception of science teaching and nature of learning experience.
Sundarajan and Rajmohan (1991) in their study on “Higher secondary student’s attitude towards the study of economics and their achievement in it” The finding were,

i. A large number of higher secondary students (88.45%) have a favourable attitude towards the study of economics.

ii. There is positive but not a significant relationship between the higher secondary students’ attitude towards the study of economics and their achievement in it.

Suresh (1993) has conducted a study on “Higher secondary students attitude towards the study of commerce” The finding were,

i. Students have a favourable attitude (84.26%) towards the study of commerce.

ii. Positive and significant relationship exists between the higher secondary students’ attitude towards the study of commerce and their achievement.

iii. The boys and girls do not differ significantly in respect of their achievement in commerce.

iv. The boys and girls do not differ significantly in respect of the attitude towards the study of commerce.

Ibrahim (1995) examined whether Field Dependence Independence (FDI) and experience in using computer had any relation with attitudes of teachers towards computer. Many problems related to microcomputer technology, hence become evident since the introduction of microcomputers into school. One problem that has been observed in the inequity of computer use by males versus females.

Thirunavukkarasu (1995) in his study found that the application of co-operative learning approach in the classroom improves the achievement of students
and also there is a significant difference between the pre and Post-test scores of the experimental group.

Vidhate, Sulabha (1997) prepared teaching programme for the development of scientific attitude based on standard VIII science syllabus and studied its effectiveness, and found that this teaching programme was useful to develop scientific attitude among students.

Koreswara and Reddy (1998) explored “A study of reading achievement in relation to demographic variables, experiments in education” The finding were,

i. Girls were better than boys in reading achievement.

ii. Class as a variable affected reading achievement. Students were found to be far better in class X than in Class VIII or Class IX.

iii. Students of residential schools performed better than day scholar students in rural and urban areas.

iv. Region and locality have no significant influence on reading achievement of high school students.

Jayanthibai (1999) in her study on, “A study of students’ attitude towards nationalization” The finding were,

i. The samples have shown slightly favourable attitude towards nationalization.

ii. The sex of the sample caused no significant difference in respect of their attitude towards nationalization.

iii. The type of the schools caused significant difference in respect of their attitude towards nationalization.

iv. The locality of the schools caused significant difference in respect of their attitude towards nationalization.
Ponnusamy (1999) conducted a study on “Effectiveness of team teaching in enhancing the academic achievement of the students at middle school level.” The finding were,

i. There is a significant difference between the mean achievement scores obtained by the VII standard control group and experimental group students.

ii. There is a significant difference between the mean achievement scores obtained by the VIII standard control group and experimental group students.

iii. The performance of female students of standards VII and VIII standard experimental group is better than the performance of male students of standards VII and VIII.

iv. The performance of the private school VII standard experimental group students is better than the performance of the Government school VII standard experimental group students.

Kalia Ashok, K. Levine, Tamar and Viji Sanjna (2000) studied on “Computer self-confidence and Computer experience in Relation to Computer – related Attitudes and commitment of learning.” The major findings of the study were,

i. Students with greater confidence in their ability to learn new computer, reflected more favorable attitudes towards computers.

ii. It was revealed that there was a negative effect of computer confidence on commitment to learning as the more confidence in computer; the lower the commitment to learning computer applications.

iii. There was no significant relationship between computer experience and computer attitude.
Mohanasundaram and Kumar (2000) studied the “Hemisphericity and achievement of standard XI students studying history in higher secondary school.” The finding were,

i. There is a significant difference in achievement between the students with right and integrated hemisphere dominance.

ii. There is no significant difference in achievement in history between the students with left and right and left and integrated hemisphere dominance.

iii. There is no significant correlation between left and right and left and integrated hemisphere dominance and achievement in history of the students.

iv. There is a significant correlation between right and integrated hemisphere dominance and achievement in history of the students.

Mohanasundaram and Murugesan (2000) studied the “Personality, scientific creativity and achievement of higher secondary students.” The study reveals that by cultivating and improving the extrovert personality of the students. We can enhance the scientific creativity which in turn enhances the achievement of the students.

Panda, Subhash Chandra and Chaudhury, Jayakrishna (2000) studied the “Effect of Computer Assisted Learning (CAL) in Achieving Higher Cognitive Skills” The major findings of the study were,

i. Computer Assisted Learning (CAL) resulted in greater learning achievement in all hierarchies of cognitive domain.

ii. Male students were found to be superior to female students in learning physics.

Ramachandran (2000) in his study “On interest in learning social science and attitude towards democracy of secondary school pupils” The finding were,
i. The pupils studying in secondary schools have unfavourable attitude towards democracy.

ii. There is no significant difference between the sub-sample (sex, locality and management of schools) of secondary school pupils in respect of the attitude towards democracy.

iii. There is positive and significant relationship between interest in learning social science and attitude towards democracy of secondary school pupils.

**Shah, B. (2000) studied** the presented article on web based instruction- online learning. According to Shah, the main features of web based teaching are,

i. Students can access course materials through internet / CD

ii. CD based video support

iii. Contact programme may be organized at a few identified study centres to give support for complicated content subject.

iv. Web access through dial up connections on internet, cable modems can be used.

v. Learners can send their queries to the tutor through internet.

Mode of evaluation can be both summative and formative and can be carried out through study centres and web respectively.

**Xavier Prince (2000) studied** on development of HTML based learning package for VII standard students in science and its effectiveness. The findings of the study are,

i. In the control group 36.63% of students got desirable level of gain score and 60.87% experimental group students got desirable level of gain score.

ii. There was a high effectiveness in experimental group. When it compared with the control groups their knowledge, understandings and application.
Yadav (2000) verifies “The vocational preferences of adolescents in relation to their intelligence and achievement” and found that achievement and intelligence had good correlations with the area of physical science and executive jobs.

Ellekkakumar and Elanakathirselvan (2001) studied the “Achievement motivation of higher secondary students and their achievement in physics” and found that the mean scores of achievement related motivation was higher for girls than boys.

Jenitha Rani (2001) studied on development of visual basic package for XI standard students in commerce and its effectiveness. The major findings of the study were,

i. In the control group 13% of students got high level of gain score and 20% experimental group students got high level of gain score.

ii. There was no significant difference between control and experimental groups in their gain scores and

iii. There was no significant difference between control and experimental groups in their retention score.

Pramila, K.S (2001) studied “The effect of CAI in learning mathematics among high school students” and reported that there is significant change in their attitude towards computer after learning mathematics through CAI and self learning method.

Vaidyanathan, et al., (2001) conducted a study on “Effectiveness of multimedia approach on the achievement of primary children in Mathematics” with the aim of developing multimedia package for the teaching of mathematics, and experimentation of the same with the set of children in IV standard. Finding of the study revealed that the experimental group children fared better in the achievement test than the control group children and showed that learning through multimedia will
increase the achievement of children better than the learning through conventional method.

Vyas (2002) conducted “A study of learning style, mental ability, academic performance and other ecological correlates of under graduate adolescent girls of Rajasthan” and found that the environmental, emotional, sociological dimension of learning style does not affect significantly the academic performance of girls. Residence as urban/rural and ecological correlates has significant effect on the academic performance of girls. Parents’ education, occupation and income do not affect significantly the academic performance of girls. The environmental dimension of learning style preference does not affect the academic performance where as mental ability influence the academic performance of students.

Xavier Prince, L. (2002) studied on “Development of PowerPoint and Visual Based Learning package for VIII standard students in science and its effectiveness” The major findings of the study were,

i. There was no significant difference between control and experimental group students with reference to residence such as day scholar, hostel and studying guardian’s house in knowledge, understanding and application objectives.

ii. There was no significant difference between the effectiveness of learners through traditional method of teaching (Control group students) and learning through PowerPoint and Visual Basic based CAI method of teaching (Experimental group students).

Jayaraman (2003) conducted a study on “Facilitate children’s achievement in mathematics at primary level through learning activity centred style” and found that high achievement is possible in learning fractions in mathematics at upper primary level due to the application of the activity entered style as experimental
approach when compared with the conventional approach, the usage of the technology accessed low cost learning kit for mathematics and by following the drill and practice approach.

**Seenivasan** (2003) studied on “Effectiveness of computer integrated method of teaching psychology for DTE students” The major findings were,

i. Experimental group were better than the control group teacher-trainees in their gain score and

ii. Experimental group were better than the control group teacher-trainee in their Pre-test and Post-test score.

**Suresh** (2003) conducted “A study of the relationship of extraversion-introversion in adolescents to their adjustment and academic achievement” and found that the relationship between introversion and academic achievement was positive introversion adolescents who belong to ‘high income families’.

**Anbuchelvan** and **Ahmed** (2004) studied the efficiency of using working models in primary education. This experimental study comprises of Pre-test score as well as gain score achieved by the experimental group students were in favour of using of working models in science based on the results, it is concluded that the use of working models improve the learning efficiency of the students. The working models are stimulating the students to learn the concepts concrete and retention of the knowledge gained.

**Bharadwaj** (2004) studied the “Institutional climate of DIETs in relation to morale and job satisfaction of teacher educators and academic achievement of pupil-teachers” and found that out of the eight dimensions, only three dimensions namely, psychophysical hindrance, intimacy and humanized thrust were found to exert a positive influence on academic achievement.
Jeyanthi, Krishnamoorthi and Anandharaj (2004) studied the “Primary school teachers attitude towards using audio visual aids in science teaching” The findings of the study were, Primary teachers in rural schools and urban schools do not differ in their attitude towards using audio-visual aids in science teaching. But male and female teachers in urban schools differ in their attitude towards using audio-visual aids in science teaching.

Antony Gracious, F.L. (2005) studied on the “Development of hypermedia learning package in science for IX standard students and its effectiveness” The finding of the study were,

i. In the control group 20% of students got high level of gain score and 20% of experimental group students got high level of gain score and

ii. There was a high effectiveness in the experimental group, when compared with control group in knowledge and application objectives in their gain score.

Begum and Phukan (2005) explored the “Correlation between academic achievement and intelligence” and results revealed that the positive correlation (r = 0.70) was observed between academic achiever had high intelligence level than that of the low academic achievers had high intelligence level than that of the low academic achievers which may make difference in their intelligence scores.

Nirmala Sundaraj and Annaraja, P. (2005) studied the “Effectiveness of PowerPoint presentation in teaching zoology for higher secondary students” The finding of the study were,

i. There was significant difference between the Pre-test and Post-test scores of the students
ii. There was significant difference between Pre-test and Post-test scores of the students in attainment of knowledge, understanding and skill objectives. That is experimental group students are better than the control group students.

**Vamadevappa** (2005) conducted a study on “*The effectiveness of parental involvement on academic achievement among higher primary students*” and found that was a positive significant relationship between parental involvement and academic achievement.

**Bobin Antony** (2006) studied on “*Development of CAI package in XI standard computer science and its effectiveness*” The finding of the study were,

i. Experimental group students are better than control group students in attainment of knowledge and application objectives in their gain score.

ii. There was no significant relation between computer self-efficacy and achievement in computer science of the experimental group students.

**Fauzia Khan, et al.,** (2006) explored the “*Factors contributing to the academic achievement in early childhood education*” and the analysis shows that out of the enlisted back ground variables, the child’s mental (r = 0.41) the child’s put in effort in learning at school (r = 0.74) as well as at home (0.74) and child’s regularity to school (r =0.70) have a significant positive correlation with the Jr.KG children’s academic achievement.

**Nima, M. Joseph** and **Annaraja, P.** (2006) studied about teacher trainee’s attitude towards information and communication technology. The findings of the study were,

i. There is no significant difference between male and female teacher trainee in their attitudes towards ICT.
ii. There is no significant association between attitude towards ICT and Father’s educational qualification, Mother’s educational qualification and Father’s occupation.

Subramanian, G. (2006) studied on “Effectiveness of CAI for teaching triple column cash book at higher secondary level.” The major findings of the study were,

i. CAI package significantly improved the performance of students in learning accountancy at higher secondary school.

ii. Male students do not differ much from their female counterpart in their academic achievements even after exposed to CAI.

Thiyagu, K. (2006) studied the “Effectiveness of web-based instruction in learning mathematics education among teacher trainees” The major findings were:

There is significant difference in mean achievement scores between the students taught through traditional method and by taught through web-based instruction. Web based instruction has brought about positive impact on learning outcomes. There is no significant difference in achievement scores between the experimental boys and control boys. And there is significant difference in achievement scores between the experimental girls and control girls. Hence the experimental girls have higher mean scores than the control group girls. There is no significant difference in achievement scores between the experimental and control group students based on their age below 25. And there is significant difference in achievement scores between the experimental and control group students based on their age above 25. There is no significant difference in achievement scores between the experimental arts students and control arts students. Similarly there is no significant difference in achievement scores between the experimental vocational students and control vocational students.
There is significant difference in achievement scores between the experimental science students and control science students.

**Vinod Kumar** (2006) conducted the study about the result of self learning module in English in relation to classroom circumstances. The findings were,

i. Experimental students are better than the control group students. So, the self learning module is highly effective in teaching.

ii. There is no effectiveness of class environment in achievement students.

iii. There is no significant difference between interaction mode of teaching and classroom circumstances.

**Kishore, et al.,** (2007) conducted a study on “Physical fitness and academic achievement of class VIII pupils” and found that there is no apparent association between physical fitness and academic achievement over the whole sample and also of the boys group but in case of girls there is a significant association.

**Bucheria Murahari** and **Vijaya Kumar** (2008) studied on new technologies for teaching and learning in the information age. During the past two decades, telecommunication technologies combined with web-enabled technologies have created a new technology based focus called web-based teaching and learning. This new areas have changed the concept of education around the world, creating new challenges and opportunities offered by this new technology based concept. Web based teaching technology can be utilized to enhance the teaching and learning environment.

There is a little doubt that the World Wide Web is the most successful educational tool to have appeared in a long time. It combines and integrates text, audio, and video, with interaction amongst participants. It can be used on a global scale and its platform is independent. While largely an asynchronous medium it can
also be used for synchronous events. It is not surprising, therefore, those trainers, distance education providers and teaching institutions at all levels are increasingly using the web as a medium for delivery. With General Agreement on Trade in Services (GATS) becoming fully operational under the WTO regime, it will be difficult for India to survive as a nation without developing our intellectual knowledge through diligent monitoring expansion, strengthening with new technologies and reorientation of our educational system as per the ever-increasing demands of the market’s is really a timely reminder that cannot go unnoticed.

Gershom Jebaraj and Mohanasundaram (2008) conducted a study on “The effectiveness of e-Content in teaching of physics at tertiary level” and the experimental group and control group teacher trainees differ in their achievement.

Soosairaj, J. (2008) studied “Effectiveness of web-based class room instruction in learning mathematics with reference to attitude, interaction and web skills of higher secondary students” and found that the experimental group students who learnt through web based class room instruction achieved more in mathematics than control group students who learnt through conventional method.

Surekha (2008) verified the “Relationship between students’ adjustment and academic achievement” and the study revealed that the boys and girls from private schools are well adjusted and academically performed better than the boys and girls from government schools. The co-efficient of correlation between the students, adjustment and academic achievement is found to be 0.29, which is significant at 0.01 levels. It indicates that low scores in adjustment tend to accompany with high scores in academic achievement.
Jayasree, P.G. and Suramya Mathi (2009) studied the “Effectiveness of Yoga as an educational strategy for practicing peace education among student teachers.” The findings of the study were,

i. 28.6% of student teachers who practice yoga possess high level of internalization of peace behaviour where 54.3% of student teachers fall in medium level and 17.1% of them possess low level of internalization of peace behaviour.

ii. 11.4% of student teachers who belong to the control group possess high level of internalization of peace behaviour while 68.6% of them fall in medium level and 20% of student teachers possess low level of internalization of peace behaviour.

iii. There is a significant difference between the means scores of internalization of peace behaviour of experimental group and control group with regard to all the selected components of peace behaviour.

Since the co-efficient of correlation between classroom behaviour and internalization of peace behaviour of the experimental group is 0.69, and is higher than the value set for significance at 0.01 levels (0.07), there exists significant relationship between the classroom behaviour of the experimental group and their level of internalization of peace behaviour.

Anboucarassy, B. (2010) studied the “Effectiveness of multimedia in teaching biological science to IX standard students.” This experimental study reveals that there is a significant difference in the achievement of the experimental group over the control group. IX standard students in biology-due to the exposure of multimedia-based learning to the experimental group. Thus multimedia helps the students to sustain their interest and also their retention power compared to the traditional method.
of teaching. The mean gain in achievement test of the controlled group and experimental group shows that there is better performance due to the treatment gain to the experimental group. That is why the mean of the experimental group is higher than the mean of the controlled group. Therefore there should be more and more number of multimedia packages used in classroom. The constant use of multimedia will make students understand more and achieve more in their academic achievement. Hence it is concluded that the multimedia approach is considered to be one of the best techniques for biology teaching at IX standard level.

**Gopal Sakarkar** and **Sachin Upadhye** (2010) studied “A Survey of Software Agent and Ontology” A survey of software agent by studying the characteristic software agent, component of agent communication languages and type of software agent. Also focus on the number of different tools available for developing a software agent. Also explain ontology, need of ontology for developing a software agent with different ontology language and tools.

**Ahuja Vandana** and **Medury,Y.** (2011) studied about using corporate blogs for supporting interactive marketing and CRM. Corporate Blogs, Online communities and social networks are some tools offered by the new age collaborative web. Corporate blogging is being utilized by organizations for the core business processes of market sensing, customer acquisition and CRM. Our research focuses on the role a corporate blog can play in supporting the organizational functions of interactive marketing and CRM. We explore the dimension of interactivity in a corporate blog which contributes significantly to build a brand relationship and stimulating consumer engagement and further move on to explore the usage of blogs for Customer Relationship Management. This is done by studying the ability of specific blog content typologies to generate greater consumer engagement and tracking the
consumer responses in the form of consumer comments. These are subsequently subjected to the process of mining to gauge consumer sentiment and to serve as a decision support system for better segmentation and response management under the aegis of Campaign management in a CRM solution. A conceptual framework is developed for routing the consumer responses, clustered by creation of tags based on comment typologies to the appropriate CRM functionalities for auctioning.

Farida Begam, M. and Gopinath Ganapathy (2011) studied “Knowledge Engineering Approach for constructing Ontology for e-Learning Services” OWL has greater strength of providing complete expressiveness. FOAF provides additional constructs which helps to include more relationships between classes and resources. In this work, they established a different approach for developing Ontologies for e-Learning knowledge base. This gives insight for developing knowledge base for any particular domain. The approach used in this study introduces two important aspects 1) easiness in developing knowledge representation based on UML 2) OWL maximum expressiveness achieved using knowledge engineering approach. Instead of beginning construction of semantic entities in haphazard manner, well defined approach can facilitate semantic web based service development to get better results.

Gopinath Ganapathy and Ravi Lourdusamy (2011) studied “Matching and Merging of Ontologies Using Conceptual Graphs” The study revealed that algorithms for matching and merging of m-conceptual graphs are developed further these algorithms can be implemented using any ontology management software to support its application to the health care domain.

Gopinath Ganapathi., Ravi Lourdusamy and Veeraraghavan Rajaram (2011) studied “Towards Ontology Development for Teaching Programming Language” Our java ontology can be integrated with any e-Learning platform for
class room teaching purposes. The java ontology developed can be further enhanced by adding Semantic Web Rule Language (SWRL), to infer more knowledge. This research stresses the role of knowledge structuring for developing ontology rapidly, professionally and successfully. The visual paradigm which is used to represent and support the teaching process not only helps a professional trainer to concentrate on problem rather than on details, but also enables a trainee to process and understand great volume of information.

Jegan, M. (2011) studied “The attitude towards web based learning of school teachers in relation to awareness about computerized test in Nagapattinam District”

The following are the main findings of the study:

i. School teachers are having favourable attitude towards web based learning and irrespective of sub samples the school teachers are having favourable attribute towards web based learning.

ii. School teachers are having high level of awareness about computerized test and irrespective of sub samples the school teachers are having high level of awareness about computerized test.

iii. There is a significant relationship exist between attitude towards web based learning and awareness about computerized test of school teachers.

Nirmala, T. and Shakuntala, B.S. (2011) studied “Concept Mapping-An Effective tool to promote Critical Thinking Skills among Nurses” The study was able to show a significant improvement in the critical thinking skills of nursing students. However, the critical thinking scores were poor due to the high standard of the assessment tool. It is needed to develop critical thinking skill assessment tool which will suit the nursing community and further research is required to promote concept mapping as a teaching and learning strategy.
Sivakumar, R. and Arivoli, P.V. (2011) studied “Ontology Visualization Protégé Tool - A Review” The work is an attempt to summarize the research that has been done so far in this area, providing an overview of the protégé tools and their main advantages and limitations. It can be concluded, there is no one specific method that seems to be the most appropriate for all applications and, consequently, a viable solution is providing the user with several visualizations, so as to be able to choose the one that is the most appropriate for one’s current needs.

Sivakumar, R. and Arivoli, P.V. (2011) studied “Reducing the Complexities in the cognition of Ontology Knowledge Representation” The finding of the study was in spite of availability of number of plug-ins that supports visualizations in ontology tools, there exist still challenges for easier representation of visualization. In this work a study of various protégé plug-ins for ontology visualization is presented by analyzing various characteristics and notations. Also this work proposed a simplified version of various notations to represent classes, properties and individuals for visualization that synchronizes ontology representations.

Chandra, Vinesh and Watters, James J. (2012) studied “Re-Thinking Physics Teaching with Web-Based Learning” Pre and Post-test results of the treatment (N = 48) and comparison group (N = 32) were compared. The MANCOVA analysis showed that the web-based learning experience benefitted the students in the treatment group. It not only impacted on the learning outcomes, but qualitative data from the students suggested that it had a positive impact on their attitudes towards studying physics in a blended environment.

Mary Thomas and Celane Joseph (2012) have conducted a study on “Thinking Skills and Attitude towards Science Learning” The major findings of the study were,
i. There is no significant difference between the means of scores on thinking skills among the boys and girls of standard eight of Kottayam District.

ii. There is no significant difference between the means of scores on attitude towards science learning among the boys and girls of standard eight of Kottayam District.

iii. There is a significant relationship between the means of scores on thinking skills and the means of scores on attitude towards science learning among the male students of standard eight of secondary schools of Kottayam district.

**Rafeedali, E.** (2012) conducted a study on “Web Based Technology and it’s Pedagogical Utility” The findings of the study were,

i. More than 70% higher secondary school teachers are used to surf internet.

ii. Most of the higher secondary school teachers are maintaining E-Mail accounts in internet.

iii. Awareness of higher secondary school teachers on chatting and search engines are below satisfactory level.

iv. Higher secondary school teachers are not properly utilizing the internet facility for communication, job seeking process.

**Ram Prakash Gupta** and **Kritika Katoch** (2012) “A Comparative Study of Vocational Interests of Speech Impaired and Normal Adolescents” on speech impaired adolescents have higher interest in artistic area of interest, boys are more aware about their vocational interests than that of girls. Speech impaired boys have higher interest in artistic area of interest and normal have higher interest in other areas. Normal girls are more superior to that of speech impaired.

**Sattanathan, P.** (2012) studied “A Study of the effectiveness of Advanced Visualization Tool on Pupils’ Achievement in Biology at High School Level” It is
inferred that the effectiveness of Advanced Visualization Tool on achievement in biology is higher compared to traditional method. But the high school students achievement in biology do not differ significantly on the basis of their sex, parents educational qualification, parents’ occupation locality and study habit. Since Advanced Visualization Tool is having effectiveness on achievement in biology, introduction of Advanced Visualization Tool should be encouraged at high school level.

Swaminathan, V. and SivaKumar, R. (2012) studied “A Study of Advanced Comprehensive Ontology Visualization Tools” A comprehensive ontology tools using ontology presentation characteristics were surveyed and analyzed. The visualization of comprehensive ontology tool is a particular sub problem of this area with many implications due to the various features that ontology visualization should present. The current work is an attempt to summarize the research that has been done so far in this area, providing an overview of the comprehensive ontology tools.

Pachaiyappan, P. and Ushalaya Raj, D. (2013) have conducted a study on “Attitude of Student Teachers towards Teaching Profession” In this study reveals attitude towards teaching profession of student teachers is highly favourable. The student teachers do not differ significantly in their attitude towards teaching profession with respect to gender, medium of instruction and type of college.

Sattanathan, P. and Muthaiyan, R. (2013) studied “An Advanced Visualization Method of Creating Teaching Ontology” and found that creative teaching ontology for any domain for clear visually designed concept and any person can easily understand the concept without any confusion.
2.4 Studies done abroad

**Patten son, Lord** and **Gressard** (1984) indicate that computer experience and age are significant factors in computer anxiety, confidence and attitude but gender is not. To move towards greater equity in computer use, gender preferences need to be more clearly set forth, underlying causes for these differences need to be determined, and alternative accommodations to the differences proposed and implemented.

**Johnsons** (1986) took up a study was investigated to determine the attitude of educational administrators and teachers towards computer network and factors that effect these attitudes. The data collecting instrument was author made questionnaire, which was administrated directly to groups on site. The analysis of the data revealed that when considered as a total experience were significant at the 0.01 level the degree of involvement was found to make a difference in the attitudes with the position and location significant at the 0.05 level and school size at the 0.01 level. The results of the study suggested that those who plan for a teacher training and for the implementation technologies. Critically examine three areas of teacher preparation technological change and availability of resource.

**Swadendar** and **Jarrett** (1986) was an attempt to determine gender differences in middle grade students’ perception and preference for computer use. The Gender discrepancy in middle grade student computer use in apparently not as great as the literature and some observes would indicate. Middle grade girls perceive women as computer users more frequently than do boys middle grade girls also have definite non standard ideas on how they would like to use computers themselves. On the other hand, the type of computer use middle grade girls seek is perceived to be in short supply than what middle grade boys will probably continue to use computer more than middle grade girls.
Merica, Mable (1993) founded that the computer technologies in teacher education the measurement of attitudes and self-efficacy. The development and initial validation to two instruments for use with teacher education students and practicing teacher. Attitude towards Computer Technologies (ACT) and Self-efficacy for Computer Technologies (SCT). ACT assesses perceived usefulness of and comfort anxiety for computer technologies of (word processing, electronic mail a CD ROM data bases) is measured by the SCT. The results of exploratory analysis examine predicatars of self-efficacy is presented. Finally, the implications of these findings are discussed for the training of pre service and in service teachers. While the instruments they designed for administration, to teachers and education students. They could easily be adapted for use with other specialized population groups, such as those related or medicine.

Plem Girly (1994) states that since the use of computers is becoming increasingly common in school administrative and instructional programs training is of utmost importance for teachers and administrators.

Paulose, P.J. (1995) assessed that the influence of scientific attitude of University entrants on their process out comes in physics and stated that students with higher scientific attitude will, other factors remaining the same, achieve higher in science and the potential for higher science achievement will be carried to all forms of science achievement. The above studies clearly indicate that the attitude towards academic work is an important factor influencing academic achievement.

Albert Marcial (1997) investigated the sex related differences in computer interest, attitude and confidence. The purpose of this study was to examine their relationship of high schools students sex, gender role identify, socio economic and
computer relevant variables (computer interest, computer trades, computer experiences)

i. A respondent’s socio economic status was associated with greater computer interest greater computer confidence and greater computer experience.

ii. Both male and female genders role identity was associated with computer confidence.

iii. There was little sex difference in attitude towards computer.

iv. One dependent variable computer confidence gender role identify contributed significantly in a multiple regression equation.

v. Multiple regression analysis that perceived parental encouragement was most important background variable.

This study has implication for policy guidelines on computer education. Students, parents and teachers need to be educated about how training in computer technology is recommended by the federal government constitute a compulsory literature requirement to ensure that all children gain basic knowledge about computer technology.

Martha Daugherty and Barbara, L. Funke (1998) studied the investigated University Faculty and Student Perceptions of Web-Based Instruction. The findings of the study were,

i. Student benefits included (a) meaningful learning of technology through the integration of course content and computer applications, (b) increased access to the most current and global content information available, (c) increased motivation and (d) convenience. Faculty reported a wide range of challenges in the development and delivery of Web-based instruction.
The most frequently identified barriers included (a) lack of technical support, (b) lack of software/adequate equipment, (c) lack of faculty or administrative support, (d) the amount of preparation time required to create assignments, and (e) student resistance. Faculty respondents consistently identified convenience and improved learning as advantages for students enrolled in Web-based instruction.

Schneider, John Allan (1998) analyzed the “Psychological factors in school achievement” and results of multiple regression analysis indicated that only two variables (motivation and information processing from the LASSI) added significantly to predictions of grades after controlling for academic skills at entrance. In addition, analysis of performance by gender indicated that girls outperformed boys as measured by trades, although skill levels measured by standardized testing were identical.

Allison Piguet and Daniel Peraya (2000) studied on “Creating web-integrated learning environments: An analysis of WebCT authoring tools in respect to usability” and found that a positive linear dependence between users’ perception of satisfaction and control was observed for a variety of Web CT tools.

Griggs, John Richard (2000) studied the “Effects of a web-based homework delivery and submission system on student achievement and student attitudes in a one-semester calculus course.” The findings of the study were,

i. The results of this study indicate that overall achievement is not harmed by using Web Assign, and in fact, is probably helped in the single area of homework achievement.

ii. Students favour the immediate response and multiple submission features of the system and are motivated to work to perfection.
iii. Most students felt that Web Assign helped them learn the material for the course. Continued research using Web Assign in mathematics courses should be undertaken.

Gueldenzoph, Lisa Ellyn (2000) studied the “College students’ use of computer technology and its relationship to constructivist learning.” It was determined that technology has not yet, been effectively implemented as a learning tool in the classroom. If it is maintained that educational technology is necessary to meet the challenges of the information society, efforts must be made to increase faculty's familiarization with and incorporation of technology.

Monk, Thelma Young (2000) studied the “Variables associated with academic achievement of African-American males in four year undergraduate educational institutions: a synthesis of studies” and found that the personal non-cognitive variable includes emotional intelligence, self-confidence, self esteem and self concept. Theses personal non cognitive variables are positively associated with academic achievement of African- American male under graduate’s students.

Parark, Hong Kyun (2000) studied the effects of different ways of employing self-regulated learning strategies in Computer-Based Instruction (CBI); detached instruction self-regulated learning strategies, embedded self-regulated learning strategies, and a combination of the two. The results of this study indicated that embedded self-regulated learning strategies and the combination of detached instruction and embedded strategies improve student’s achievement, use of self-regulated learning strategies and student’s perception of Meta cognitive awareness.

Perry and Stephen (2000) studied “The effect of psycho-social variables on the academic achievement of 8th and 9th graders” and the results indicate that psycho-
social factors are significant predictors of academic achievement when demographic variables are controlled.

Ross, Jonathan Lewis (2000) studied “An exploratory analysis of post-secondary student achievements comparing a web-based and a conventional course learning environment” The findings of the study were,

i. 'By Distance' students achieved significantly higher on the post-treatment examination than the 'On-Campus' group.

ii. While all learning styles were equally accommodated on-line, Concrete Random (CR) learners achieved significantly poorer when learning face-to-face.

iii. There was a higher level of student-instructor interaction reported by the 'By Distance' group while overall time spent on course-related learning was significantly higher- for the 'On-Campus' group.

iv. Of all measured variables, collaboration was a significant predictor of achievement for the 'By Distance' group.

v. 'By Distance' students who were more realistic about potential barriers to course performance At the outset of the semester were more likely to achieve higher than those who were not Implications and recommendations for post-secondary distance program designers and facilitators are included.

Peter, J. Patsula (2001) studied in his experimental thesis examines web design for effective online training and instruction. The major findings of the study were,

i. The comparison study showed 2.1% learning gains that under closer analysis were found to be non-significant.
ii. The server analysis study confirmed the importance of designing for ‘speed of access’ and ‘navigation ease.’ It also brought into question the reliability of web mining data and the need for proper operational definitions.

iii. The evaluation study produced WeBIC scores for ESLenglish.com and the comparison study learning materials that could be used as benchmarks for further research.

Stewart, Ingrid (2001) attempted to study the development and validation of an instrument for student evaluation of Web Based Instruction and found that a final version of the questionnaire, entitled Web Based Course Evaluation, was place on the Internet to be used by interested educators. Additionally, the code facilitating import of the questionnaire into the WebCT Survey Module and guidelines for evaluation of each item were posted to the World Wide Web.

Stinson, Samantha Taylor (2001) studied the “Effect of a Web-based museum tour on the social studies achievement of fifth grade students” and the author concluded that charter schools do not, in and of themselves, guarantee an improved teaching and learning environment. Where autonomy is fully utilized and accountability is evident, however, they can be the conduit whereby third wave reform efforts are easily implemented and encouraged, and meaningful educational experiences are provided.

Arbaugh, J.B. (2002) studied managing the on-line classroom: A study of technological and behavioural characteristics of web based MBA courses. The study found that the behavioural characteristics tended to be stronger predictors of student learning and satisfaction. These findings suggest that while technological characteristics are important, the primary drivers of successful course experiences are the extent to which class participants emphasize and invite interaction. These findings
should be both encouraging and challenging to business schools. The findings are encouraging in the sense that teaching skill may be more transferable from the classroom to the Internet than originally thought, thereby providing a potential source of advantage against emerging for-profit education providers. They are challenging because they suggest the need for faculty to develop skills using constructivist, rather than objectivist, models of education.

**Daniel Barron, Joan K. Gallini** (2002) studied “Participants' Perceptions of Web-Infused Environments: A Survey of Teaching Beliefs, Learning Approaches, and Communication” The survey findings are discussed in the context of student-centred learning. Implications for instructional design of online environments are referenced, with emphasis given to the role of theoretically based frameworks to guide technology-mediated research and design.

**Eugenia M. W. Ng** and **Ada W. W. Ma** (2002) studied “An innovative Model to Foster Web-based Collaborative Learning” and found that the evidence will be gathered through quantitative and qualitative means to examine if there is any relationship between collaborative learning and peer assessment with the final assessment grades received.

**Jeff Boulton** (2002) studied “Web based Distance education: Pedagogy, Epistemology, and Instructional Design” Web based course delivery can offer a vibrant learning environment created through different teaching strategies, activities, and technologies and found that understanding student epistemology and ontology is essential for the design, support, and growth of the virtual learning community and address the theoretical underpinnings of virtual learning, as well as strategies for designing online instruction and issues surrounding this form of education.
Understanding this new educational milieu will help instructional designers, and educators in the struggle to create and deliver successful inclusive online courses.

Lynch, Monique C., Moyer, Patricia S., Frye, Denise, and Suh, Jennifer M (2002) studied “Web-based learning: Telecollaboration models to enhance mathematics instruction” Telecollaborative activities demonstrate how the integration of web-based learning projects can effectively promote new paradigms and provide avenues for future research in the use of technology in mathematics teaching and learning.

Maria, C.M. de Guerrero and Olga, S. Villamil (2002) conducted a study on “Metaphorical conceptualizations of ESL mathematics and learning” This study, framed within a socio-cultural theory approach, explored the basic conceptualizations of ESL mathematics and learning reflected in metaphorical representations of an ESL teacher. Nine distinct conceptual metaphors for an ESL teacher (co-operative leader, provider of knowledge, challenger/agent of change, nurturer, innovator, provider of tools, artist, repairer, gym instructor) with entailed views of the ESL learner and the mathematics /learning processes emerged. Appropriation of various theoretical models of language learning was observed in the participants’ metaphors.

Nguyen, Diem Mai (2002) studied the “Developing and evaluating the effects of web-based mathematics -instruction and assessment on student achievement and attitude” and found that there was no significant difference between male and female students' performance in WALA. Interview data showed that students were specifically interested in the instant feedback, automated scoring and the mathematics display on web-based mathematics assessment. Students in the WALA group believed that web-based mathematics assessment offers them more control over their work and helps them to improve their confidence in mathematics problem solving.
Pfister, Tammy Lodge (2002) studied “The effects of self-monitoring on academic procrastination, self-efficacy and achievement” and the results indicated no significant differences between high and low procrastinators on procrastinatory tendencies. High procrastinators in the treatment group did have higher achievement.

Sanchez, Bernadette (2002) studied “Mentorship of Latino older adolescents: An alternative definition and its role in academic achievement” and the data analysis revealed a process of mentorship that is distinct for this sample. Also, differences were found between the higher-achieving and lower-achieving participants in their mentorship relationships.

Tandoh, Kwesi Armah (2002) studied the “Web-based instruction and students with learning disabilities: Examination of strategies and limitations” The findings suggest that learning via the Web helps increase students' motivation, self-esteem, and a sense of autonomy. Students are able to accomplish more complex task and develop greater learning skills. On the other hand, students report frustration in WBI stemming from three sources, namely technological problems, lack of timely feedback from instructors and among students and ambiguous messages on the Web site as well as through e-mail. Learning strategies that lead to positive academic participation include clear instructor directions, proof reading help from family and friends, and asynchronous rather than synchronous online discussions. The results have implications for instructors and course designers to take individual differences into account. There is the need to create a more inclusive Web-based environment as technology advances and more and more students with LD join Web-based classes. The study concludes with recommendations for improving Web-based instruction for students with LD.
Tatana, M. Olson and Robbert, A. Wisher (2002) studied the “Effectiveness of web based instruction: An initial inquiry.” The study revealed that as the use of web based instruction increases in the educational and training domains many people have recognized the importance of evaluating its effects on student outcomes such as learning, performance, and satisfaction. A tabulation of the documented findings in to eight characteristics is offered along with their assessments of experimental designs, effect sizes and the degree to which the evaluations incorporated features unique to web based instruction.

Wallace, Tary L. (2002) studied the examined reducing face-to-face instructor contact time with web based and web enhanced instruction: An examination of achievement and attitudes of undergraduate students in a pre-service teacher education course and the findings explain 21 percent of the variance in the academic success rating calculated using the mathematical formula developed from this study.

Benson, Ella (2003) studied “The relationship between school climate and student achievement in low-income elementary schools” and found that school climate and student achievement were positively (almost linearly) related. When ranked by achievement the climate means of the four schools fell in perfect rank-order. Moreover, significant effects were found on all 8 CFK domains (trust, respect etc.)

Crame, Josephine Kocian (2003) studied evaluation of the design, development, and implementation of the School Performance Network Portal and communication institute. The School Performance Network (SPN) Portal was envisioned during the formation stage of SPN as the primary mechanism for K-12 educators and SPN partners, to communicate and to collaborate. The findings were,
i. Descriptive statistics revealed very similar skill acquisition and academic motivation across groups.

ii. No significant differences in achievement or attitudes were found between groups experiencing different levels of instructor contact.

Jean Margaret Plough (2004) studied students using “Visual thinking to learn Science in a Web based Environment.” The result of the study showed clearly that 1) making visual representations helped students understand science knowledge, 2) making links between web pages helped students constructs science knowledge Structures and, 3) students themselves said that visual thinking helped them learn science. In addition, this study found that when using Visual learning Logs, the main overall ideas of the science concepts were usually represented accurately. Further, looking for information on the internet may cause new problems in learning. Likewise being absent, starting late or dropping out all may negatively influence students proficiency on the standards. Finally, the way science structures are constructed and linked may provide insights in to the way individual students think and process information.

Judith MacBean, et al., (2004) conducted group work in mathematics: a survey of students’ experiences and interests. Results revealed some significant differences between the universities in the students’ experiences of, and interests towards, group work. Overall their interests were positive, but mainly utilitarian, and the most common form of group work they experienced was of an informal nature. No difference was found between the three cohorts in their school experience of group work.

Lawrence (2004) has made study on Computer Assisted Instruction and the findings were,
i. The CAI programme was viewed as being beneficial to principals as well as teachers.

ii. The principals believed that teachers should be involved in some decision making in building a lesson.

iii. The class-room teachers rated CAI programmes are successful than conventional method of teaching.

iv. The students enjoyed working on computers.

Nizamudin and Kazi Golam (2004) have conducted a research study about the role of instructional strategies in improving micro search for intelligent computer aided instruction in algebra. The study designed, developed and evaluated a set of domain independent instructional strategy to teach problems solving outcomes in algebra through intelligence computer aided instruction. The results indicated that instructional design enhanced micro search group exhibited significantly more correct answers on the test than either micro search group with multiple problems or the micro search group only.

Yildirim, Zahide (2004) explored the “Relationship between achievement goal orientation and collaboration in project-based learning process” and found that the correlation analysis showed no significant relationship between attitudes towards group work and profiles of achievement goal orientations.

Bezjian, Vicken A. (2005) studied consumer expectations of quality in “Master of Business Administration programs: A comparison between face-to-face learning and web delivered distance learning in school of business” The problem the intent of this study was to examine the important of five dimensions of program quality expectations for face to face and web delivered Master of Business Administration programs, as perceived by American and international student, as well
as the extent to which programme quality contributed to students selection of face to face or web delivered learning programme. Five dimensions of pre-program quality were examined: (a) tangibility, (b) program content and course structure, (c) responsiveness, (d) assurance and (e) empathy. American students perceived program content and class structure significantly more important than did international students. Female students were more concerned about the faculty and staff compassion, and younger students were more likely to expect faculty and staff to be responsive to students needs. Students in traditional face-to-face courses had higher expectations for the quality of the faculty than did students in web delivered programs. The overall predictors for the selection of the type of MBA programs were associated with three service quality dimensions: (a) program content and class structure, (b) responsiveness to student’s needs, and (c) assurance or quality of faculty.

**Clark, Thomas George** (2005) studied “Defining a competency framework to shape the professional education of national security master strategies: a web based Delphi study.” The results of the study provided support to the description of master strategists as strategic leaders, strategic theoreticians, and strategic practitioners. Panellists highlighted content domains of personal attributes, security framework, theory based knowledge, and culture and values that encompass the range of competencies for a master strategist to have a higher order temporal perspective to conceive time as epochs and ages defined as shifts in development punctuated by events and prominent periods in progress respectively. Panellists described a matter strategist professional education framework that mirrored the theory of profound knowledge with meta-competencies as the basic building blocks.
Pearson, Jeremy (2005) made a study on “The relationship of social skills and learning behaviours to academic achievement in a low-income urban elementary school population” and found that the resulting model comparison indicated that school ability and learning behaviours both have significant direct effects on academic achievement.

Allan Hewitt (2006) conducted a study on music teachers “Interests towards the significance of individual differences for mathematics and learning in music. Classroom teachers” beliefs and interests regarding the role and significance of individual differences have received relatively little attention in the literature to date, notwithstanding the well-documented importance both of teachers’ beliefs and factors of individual difference for the learning and mathematics process. Results suggest that a small number of ‘typical’ belief patterns could be identified in each of the two contexts, and that the focus of study makes future development of this investigation appropriate. It appears that some music teachers may focus more on perceived strengths amongst their pupils while others concentrate instead on areas of weaknesses.

Bell, Paul David (2006) studied “Can factors related to self-regulated learning and epistemological beliefs predict learning achievement in undergraduate asynchronous web based course” Study findings were analyzed and reasons offered for why the predictive model of learning achievement in asynchronous online course included only one self-regulated learning sub factor, no epistemological belief sub factors, and only one of the three covariate factors. Future research that looks at other factors affecting learner achievement and that employs other research methodologies, such as qualitative analysis, are warranted and would greatly add to the literature related to learning achievement in undergraduate asynchronous online environments.
Hutchison, Julia marie (2006) studied “Experienced teachers learning meaningful classroom integrations of web based technologies: A grounded theory study of the process.” Findings of the study indicated that the teachers introduced the technology as they recognized its usefulness in accomplishing their present purposes for students and curricular goals. They evolved gradually towards more purposeful and innovative uses of the WWW as they observed its effect on students and became more confident in themselves as users of web based technology. Most experienced this process as humanly challenging as it was technically challenging. Their evaluation in to more effective and substantive users of the technology took place over time measured in years rather weeks or months. As they acquired new understanding of its positive effect on their students, the teachers changed their understanding of their role as teachers and of the students as learners. This study concluded that classroom teachers learn more meaningful uses of educational technology in a lengthy process that is personally and professionally transformative, context- specific, and as humanly demanding as it is technically challenging.

Moore, Barbara (2006) studied the “Examined goal conflicts, self-regulation and course completion: A comparison of web based learners to traditional classroom learners.” The findings of the study shows that distinctions between distance learners and traditional learners are becoming less clear since some traditional courses have began to offer web completion as an option. Many students who live on or near campus and who are otherwise traditional students now included web based courses in their schedule.

Porter, Lance J. (2006) investigated that the “Instructional utility of a web based progress monitoring system” Results suggest that the diagnostic feedback contained in the web based progress monitoring system may affect teacher planning
for modified instruction for individual students and no difference were noted for whole-class planning.

Sarah Meegan and Ann Macphall (2006) conducted a study on “Irish physical educators’ interest towards mathematics students with special educational needs.” Results from ANOVA analysis found that female physical educators displayed more positive interests than male physical educators towards Specific Learning Disabled (SLD) and Moderate-Severe Mentally Impaired (MSMI) students. For previous experience, a significant difference in physical educators’ interests was found for MMMI students only. Results also found low numbers of physical educators having completed initial teacher training (ITT) in SEN relevant to physical education (PE) at undergraduate as well as postgraduate levels. The results provide evidence that there is a need to promote positive interests among Irish physical educators toward mathematics students with SEN as well as improved ITT and postgraduate training for SEN in PE.

Ward, Pamela (2006) conducted a study on “Achievement and self-concept in diverse populations of gifted middle school students” and found that the achievement scores in reading, language expression and usage, mathematic problem solving and data interpretation and mathematic concepts and estimation for the Caucasian group were significantly above those of the African, American and Hispanic groups in all areas.

Brian H. Wells, H. Alex Sanchez and Joanne M. Attridge (2007) studied on “Modelling student Interest in Science, Technology, Engineering and Mathematics” and found the model provides a highly effective tool for understanding trends and for organizing the research process. Continuation of research efforts, especially in those areas needed to enhance the model, combined with additional model development and
validation, can eventually provide an effective tool for predicting with some certainty
the results of policy decisions on the U.S. education system.

Elizabeth Gadd, et al., (2007) compared the academics’ interests towards the
rights protection of their research and mathematics materials. This paper compares
two JISC-funded surveys. The study reports confusion amongst both researchers and
teachers as to copyright ownership in the materials they produced. Researchers were
more restrictive about the permissions they would allow, but were liberal about terms
and conditions. Teachers would allow many permissions, but under stricter terms and
conditions. The study concludes that a single rights solution could not be used for
both research and mathematics materials.

Levy and Yair (2007) have conducted a study on “Comparing Dropouts and
Persistence in E-Learning Courses” This study explores two main constructs.
i. Academic local of control:
ii. Student’s satisfaction with e-Learning results show that students satisfaction
with e-Learning is ask indicator in students decision to drop out from courses.
Additionally, results of this study show that the academic local of control
appears to have no impact on students” decision to drop from e-Learning
courses.

Traci, M. Sitzmann., Kurt Kraiger., David, W. Stewart., Rober, A.
Wisher (2007) carried out “An investigation in to the Comparative Effectiveness of
Web-based and Classroom instruction: A Meta-Analytic technique were used to
examine the effectiveness of Web-Based Instruction(WBI)” relative to Classroom
Instruction(CI) and to examine moderators of the comparative effectiveness of the
two delivery media. Overall the results indicate WBI is 6$ more effective than CI for
teaching declarative knowledge. The two deliveries are equally effective for teaching
procedural knowledge, and trainees are equally satisfied with WBI and CI. However, WBI and CI were equally effective for teaching declarative knowledge when the same instructional methods were used to deliver the two courses, suggesting media effects are spurious and supporting Clark’s (1983,1994) theory. Finally, WBI was 14% more effective than CI for teaching declarative knowledge when trainees were provided with control during WBI and it long training courses.

**White, Carol Turner** (2007) explored “Effect of highly qualified teachers on student achievement in high school algebra in North Carolina” and the results of the data indicated that there was a statically significant difference in the achievement levels of students when taught by a highly qualified teacher versus a non-highly qualified teacher.

**Jurisevic, et al.,** (2008) developed a study on “Intrinsic motivation of pre-service primary school teachers for learning chemistry in relation to their academic achievement.” And their results show that students are more or less equally motivated for chemistry as for any other subject, but that the intrinsic motivation plummets as the level of abstraction in individual subjects, such as chemistry and mathematics, increases.

**Olatoye, R.A.** and **Ogunkola, B.J.** (2008) studied “Parental Involvement, Interest in schooling and Science Achievement of Junior Secondary School Students” and found that the contribution of the two independent variables is significant on science achievement. The low percentage contribution of the two independent variables to science achievement only shows there are other factors that account for the remaining variance in science achievement. Such factors may be self-concept, test anxiety, availability, and use of instructional materials, to mention few. Parents should make sure they complement teachers’ efforts in school by monitoring and
supervising their children’s academic activities in order to enhance science achievement. Teachers, parents, and school counsellors alike should make school an interesting place to learn in order to sustain student’s interest in schooling. Necessary materials should be provided to remove frustration in the process of learning.

Williams, Michelle (2008) studied the “Moving Technology to The Centre of Instruction: How One Experienced Teacher Incorporates a Web-Based Environment over Time” The results suggest that the teacher's classroom practices shifted meaningfully over time, thus moving WISE from the peripheral to the centre of his science class instruction. There was an increased integrated use of the technology by this teacher during the WISE enactments in years two and three. The teacher also engaged his students in significantly more science dialogues during the WISE online investigations. Further findings suggest that this shift in pedagogy can be attributed to repeated opportunities for the instructor to teach an inquiry-based curriculum, as well as reflecting on his teaching experiences.

Chen, C.M. (2009) conducted a study on “Intelligent Web-based Learning System with Personalized Learning Path Guidance” Based on the results of Pre-test, the proposed genetic-based personalized e-learning system can conduct personalized curriculum sequencing through simultaneously considering courseware difficulty level and the concept continuity of learning paths to support web-based learning. Experimental results indicated that applying the proposed genetic-based personalized e-learning system for web-based learning is superior to the freely browsing learning mode because of high quality and concise learning path for individual learners.

Liu, Mingzhuo (2009) conducted a study on “Design of a Web-Based Course for Self-Directed Learning” The development of a successful web-based courses
needs to focus on multiple perspectives-pedagogical, psychological, technological-in order to be based on these dimensions were flexible, useful and welcomed.

**Baturay, Meltem Huri** and **Bay, Omer Faruk** (2010) studied the “Effects of Problem-Based Learning on the Classroom Community Perceptions and Achievement of Web-Based Education Students.” The results indicated that students who worked on problem-based projects felt much more "connected" to other class members when compared to the control group. They achieved higher scores in the Post-tests although their online midterm and final examination scores did not indicate any difference between the groups.

**Liu, Ming-Chou** and **Wang, Jhen-Yn** (2010) investigated on “Knowledge Integration in Web-Based Thematic Learning Using Concept Mapping Assessment.” The following conclusions were reached, (a) the Web-based thematic learning, system has positive effect on learners concept learning (b) the Web-based thematic learning first providing learners with a framework from which develops the related concepts, is a more stable learning mode (c) the Web-based thematic learning system is suitable for students with different abilities. The middle achievement group of students is particularly suited to using a sharing and observation Web-based learning strategy.

**Kathryn, E. Merrick** (2010) “An Empirical Evaluation of Puzzle-Based Learning as an Interest Approach for Teaching Introductory Computer Science” Results of an empirical study indicate that the course revisions significantly changed the student experience. This included increasing students’ interest and scope for active participation in the course and developing their critical thinking and problem-solving skills.

**Tsai, Chin-Chung** (2010) conducted a study on “Conceptions of Learning versus Conceptions of Web-based Learning: The Differences Revealed by College
By interviewing 83 Taiwanese college students with some web-based learning experiences, this study attempted to investigate the students conceptions of learning, conceptions of web-based learning, and the difference between these conceptions. Using the phenomenographic method of analyzing student interview transcripts, several categories of conceptions of learning and of web-based learning were revealed. The analyses of interview results suggested that the conceptions of web-based learning were often more sophisticated than those of learning. For example, much more students’ conceptualized learning in web-based instruction may be a potential avenue for promoting students conceptions of learning. By gathering questionnaire responses from the students, this study further found that the sophistication of the conception towards web-based learning was associated with better searching strategy as well as higher self-efficacy for web-based learning.

Luminita dinescu, Cristina Miron, E.S. and Barna (2011) studied “New Trends: Promotion of Didactic Methods that favour the increase of students’ Interest and Motivation for studying Physics.” The results of the study prove that the differentiate instruction can ensure the increase of the school performance and implicitly of the motivation for studying Physics.

Paul McCrory (2011) studied “Developing interest in science through emotional engagement” and the study has attempted to explore some of the subtitles and dangers which lie behind teaching approaches which claim to “make science fun”. It suggests that the strategic use of emotional engagement hooks throughout a lesson can help to retain the attention of pupils, improve their recall, engage them cognitively and increase their interest in science. It is perhaps reassuring to realise that psychological and neuroscience evidence is increasingly demonstrating that it is not a question of whether teachers should focus on short-term cognitive outcomes or on
the generally longer-term affective impact of their teaching. Effective teaching appears to depend on simultaneously engaging both cognitive and affective processes in the brains of pupils.

Rampai, Nattaphon and Sopeerak, Saroch (2011) studied “Development Model of Knowledge Management via Web-Based Learning to enhance Pre-Service Teacher's Competency” The research results exhibited that the model of knowledge management via web-based learning was appropriated and enhanced the pre-service teacher's competency.

Diane, O. Inglis, Marek, S. Skrzypek, Martha, B. Arnaud, Jonathan Binkley, Prachi Shah, Farrell Wymore and Gavin Sherlock (2012) studied “Improved Gene Ontology Annotation for Biofilm Formation, Filamentous Growth, and Phenotypic Switching in Candida albicans” and found that specifically on manually assigned Gene Ontology (GO) annotations in the defined BP categories of adhesion, biofilm formation, filamentous growth, pathogenesis, and phenotypic switching. However, all three GO aspects (molecular function, cellular component, and biological process) are extensively curate at Candida Genome Database (CGD), and CGD also includes a comprehensive set of computational annotations derived from InterPro domain matches, which have particularly high utility in representing predictions within the Molecular Function (MF) branch of the GO. Thus, GO enrichment analysis at CGD provides researchers the ability to evaluate both function and localization terms, as well as annotations within the biological process branch of the hierarchy.

“Trait Ontology for Modelling Knowledge of Plant Traits and Phenotypes” and found that Ontology is necessary to unify the clade-and crop-specific ontologies and provide the semantic framework for querying, reasoning and data mining across the various species databases. Cross-referencing species-specific terms will unite the ontologies into a network and, by linking plant phenotypes and traits to information, images and documentation across species and even taxa, the community is building a knowledge base with a broad reach, which will be useful to elucidate functional aspects of plant and agricultural biology.

Christopher, J. Mungall, Carlo Torniai, Georgios, V. Gkoutos, Suzanna, E. Lewis and Melissa, A. Haendel (2013) studied “Uberon, an integrative multi-species anatomy ontology” and found that Uberon is housed in a github repository and is made available via the (OBO) registry and website. It is available as a ‘minimal’ ontology, with the links to other scAOs represented as cross-references, and also available as a multi-merged ontology, which has all referenced ontologies included, together with SubClass links. Uberon exists in two versions—an editor’s version, with a minimal number of asserted links, and a deployed version, with equivalent links that have been pre-reasoned.

Peter, J. Haug, Jeffrey, P. Ferraro, John Holmen, Xinzi Wu, Kumar Mynam, Matthew Ebert, Nathan Dean, and Jason Jones (2013) studied “An ontology-driven, diagnostic modelling system” The study reveals that the system was used in the preliminary development steps of a tool to identify patients with pneumonia in the emergency department. This tool was compared with a manually created diagnostic tool derived from a curate dataset. The manually created tool is currently in clinical use. The automatically created tool had an area under the receiver
operating characteristic curve of 0.920 (95% CI 0.916 to 0.924), compared with 0.944 (95% CI 0.942 to 0.947) for the manually created tool.

2.5 Conclusion

The above review of research studies carried out in India and abroad on various topics that are related to the problem under study helped the investigator to a great extent in looking at the problem under study from different angles. The review not only widened the perspective of the investigator, but also threw great light on the various aspects of the problem under study.

The review has revealed the extent of contribution of educationalists in the area of the present study. The investigator found that no research has been done sofar to find out the effectiveness of Advanced Visualization Tools on pupils’ Achievement and Interest in Science at high school level. Hence the researcher has chosen this topic for the present study which is centred at high school level.