CHAPTER – II

REVIEW OF RELATED LITERATURE
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The present chapter focuses mainly on the work that has already been done in this area, and which direction future research activity should be geared so as to attain better perspective in this particular innovation in the field of education.

The use of computers in education is a new innovation and it may be justifiably said that research in the field of computer education is still in its infancy in India. Countries of the west are taking the lead in this field in both the theoretical as well as practical aspects. Wide range of studies have already come up. However, in India both in national and state levels very few studies have been conducted in computer education. In Assam, to the best of our knowledge, no concrete work has been reported that concentrates on the educational implications of computers in the field of education. Hence the present study aims at making a comprehensive study in computer education in this part of the country.

The review of literature for the present study has been classified under six heads, keeping in view, the relevance of the topic.

2.1 Studies related to students performance in relation to computer assisted learning

Atkinson (1982) developed a programme for the computer based instruction in reading, using IBM – 1500 instructional system and found that computer assisted instruction in general is more effective in improving students performance but the major drawbacks are its prohibitive cost and the need for more and more sophisticated
programmes and terminal devices for enabling computer assisted instruction to make significant impact.

Wright, Pamela (1983) – conducted a study on computer assisted instruction for remediation in mathematics at the secondary level and found that computer assisted instruction produced significantly higher achievement as compared to conventional class-room instruction in particular class-rooms in two selected schools.

Grady (1986) reported that computer based instruction used for specifically selected topics for which quality software was available, and with effective support from teachers, had significant impact on students achievement in mathematics.

Thomas, A. et. al. (1987) conducted a study on the relationship between ability or aptitude with or without computer assisted instruction. The result of the study indicated that the students with higher ability function better with computer assisted instruction then those with lower ability.

Abraham, Sandma (1991) proved that the results for criterion reference mathematics test showed that all the computer assisted learning students scored higher than the control group students, when the study was conducted to measure the effect of computer assisted instruction on grade I phonics and mathematics achievement.
Singh, R. D. et al. (1991) studied the effectiveness of computer assisted instruction on conventional method of instruction in the teaching of mathematics on the students of higher secondary schools of Bhilai Nagar (Madhya Pradesh). The results of the study showed that students who used computers showed significantly high favourable attitudes towards mathematics than those who did not use the computer. The study concluded by giving the following reasons. The use of the computer for its graphics and sound, speed and ease of use capabilities as an electronic black-board, is particularly suited for mathematics teaching. It can facilitate demonstration, display of data, drawing of curves, solving of equations and many other areas of mathematics. In a conventional method of teaching the student is a passive recipient of knowledge, but in the computer assisted instruction method he is actually engaged in learning from a variety of sources, such as the teacher the computer and other students.

Goel, D. R. et al. (1993) made an attempt to design and develop computer aided instructional materials on microbes for class VIII and to study its effectiveness in terms of achievement of students. A computer criterion reference test was developed to be utilized as pre-test and post. The software was tried on 20 students of class VIII (1989-90) of the Bright School, Indore. The developed computer aided instructional material has proved quite effective, which is evident through the achievement of the students. In this context he maintained that there is expansion of hardware in India but software in not developed to that extent. A large volume of computer-assisted
instruction in the Indian class-room situation is imported. These may not be compatible to our teachers and students. So there is a need to develop need based computer assisted materials. However many software companies have come up in India too, providing computer assisted material.

2.2 Studies highlighting the role of computer as a teaching aid

Howe and Boulay (1979) have studied the role and educational utility of computer assisted learning in the light of experiments conducted in the past and had concluded that, independent of the teacher, its usefulness is rather limited.

Philips R. J. et. al. (1984) conducted a study on the future of the micro-computer as a class-room teaching aid. The purpose of this study was to provide a glimpse into the future when computing facilities will be more easily available and there will be more expertise among teachers. The study concluded that the computer has been a very versatile teaching aid and its good effects can be predicted on different spheres of education and instruction.

Hativa, N. (1986) studied the use of micro-computer as a class-room audio-visual device, and its prospects for future adoption. The results showed the micro-computer with appropriate software might serve as an effective teaching aid, such as make fast computation, simulate laboratory experiments, exhibits problem solving strategies, present
mathematical modelling and demonstrate programs to be used later by students as a part of their homework assignment.

Chomienne, M. (1988) conducted a large scale field study on the impact of the computer on primary and secondary school teaching in the province of Quebec. The research concluded that the successful use of computer in the class-room required that a specific set of conditions be met, particularly in the areas of teacher training, software availability, institutional support and adjustment of teaching.

Chan, C. (1989) studied the effectiveness of the computer as a tool and a tutee. A central theme that emerged from the study is that the teacher's opinion is the deciding factor as to whether or not the introduction of computer assisted learning in the class-room will be a success. The computer can help students to learn faster, maintain longer attention span, and become more interested in learning, but the quality of what students learn ultimately rests with the teacher.

2.3 Studies related to gender differences in attitudes towards computers

Studies conducted by Drambrot et. al. (1985) Harvey and Wilson (1985), Fife-Schaw et. al. (1986), Collins and Ollila (1986), Collis and Williams (1987), found in their studies that males tend to be more in favour of computers than females. The most favoured explanation of this focuses on the differential socialization of males and females which results in stereotypical sex-specific roles. Males
are seen as being technical minded and interested in 'how things work while females are seen being more artistic and less concerned with practical issues, as well as affecting attitudes towards technology. These differences in socialization are believed to underline the selection of school subjects, males preferring sciences while females opting for the social sciences and arts.

Fetler (1985) conducted a study of VIth and XIIth grade pupils in California and found that boys in both grades showed a more positive attitude towards computers and had superior performances compared with those of girls.

Padma, M. S. and Chakraborty (1990) studied the attitude of high school students (boys and girls) of Shillong towards computer education and also tried to find out if any differences existed between the attitudes of tribal and non-tribal students towards computer education. The results of the study showed that significant differences existed between the attitude of boys and girls towards computer education. Girl students were more aware of the technological progress and innovation of the present study than the boys. They further concluded that there was no difference between tribal and non-tribal students in their attitude towards computer education.

Gupta, K. A. et. al. (1991) made a comparative study of the attitude of boys and girls studying in grade VI to IX towards computer
education and found that girls were more interested in computer education than boys in all grades.

Martin and Heller (1992) studied the attitudes towards computer of two samples of 8-12 years old American and Soviet children. They compared the children's responses to attitude items and their drawings of computer users and found that children from both countries showed similar and positive attitudes towards computers. The study revealed significant gender differences in the drawing of computer users. Boys mostly drew males whereas girls mostly drew females as computer users, which indicates that children's image of computer users reflect their own gender.

Shashani, L. (1993) made an attempt to investigate the attitude of secondary school students towards computer education. The purpose of the study was to examine the gender difference in variable like interest in learning about computers, confidence in their ability to use computers, their concept of worth and usefulness of computers and also how parents and teachers influence attitude towards computers. From the study it was found that both boys and girls were aware of the values and benefits of computer use in daily life. Girls reported fear of using computers and feeling a sense of helplessness around computers. The result also revealed a strong relationship between students' computer attitudes and their perceptions, with that of the attitude and perception of the educators and parents towards computer education.
Robertson, S. *et. al.* (1995) made an attempt to find out the attitude of the secondary schools students and teachers towards the use of computers. The result showed that the boys expressed a more favourable attitude towards computers than the girls. The girls also tended to work less with computers than boys. While comparing the attitude of the students with that of the teachers towards computers, it was found that students have a more positive attitude than the teachers.

### 2.4 Studies related to some factors affecting teacher's use of computers

Cory, S. (1983) studied the problems affecting computer instruction in schools. A study conducted in North Derbyshire in England, found that lack of trained teachers who acquired knowledge of computers during teacher training, scarce resources which prevented having enough equipment and supplies for full utilization, and few model programs greatly affected computer instruction in school. The study concluded that at this rate it appears that students may quickly out distance teachers in their acquisition of competence.

Stevens, D. J. (1984) conducted a survey in U.K. in 1979 to find out the attitude of teachers towards computers and found that almost one third of the teachers interviewed felt that computers in education were a passing fancy, yet when the survey was conducted again in 1982, it was found that 80 per cent of teachers surveyed believed
micro-computers in education were not a fad and predicted they would have a drastic impact on education. But while the number of micro-computers had risen dramatically, the percentage of teachers actually using micro-computers in 1982 remained at or below 1 percent. The study concluded that one of the reasons for such low usage may be that the teachers lacked the experience and expertise needed.

Plomp, T. et. al. (1987) studied on the influence on computer use in three leading lower secondary schools in the Netherlands. Using case study and survey methods it was found that these schools had hardly passed the grass-roots stage of development. Major factors cited by teachers for this include the following – a lack of hardware and software, too little support from school administration, too little external support, too few computer using teachers, and a lack of in-service training facilities.

Winnas, C. et. al. (1991) conducted a survey of 70 IVth and Vth grade elementary teachers. The district under study was a large urban district located in a mid western state of U.S.A. The study revealed several interesting factors that affect teachers’ use of computers. First, very few teachers themselves owned computers or used them for personal reasons at home or school. Second, most teachers felt that neither they nor the students should be held accountable for the teaching or learning of computer objectives and they felt that being held accountable for both teaching the adopted computer objectives and giving pass/fail grades to students on report-
cards were not very important. Third, teachers were perplexed as to how to manage students who were not able to take their turn on computer. Most teachers felt that they were allotted too little time to teach computer.

2.5 Studies related to teachers’ attitude towards computer education

Schewe (1976), Lucus (1978) and Roby (1979) found in their research that for the successful implementation of computer in education settings, students’ acceptance is one of the main factors which is assumed to be affected to a great deal by the teachers’ attitude towards the system.

Koohang, A. A. (1987) found in his study that the teachers’ attitude towards computer education, whether positive or negative, largely depend on the opportunity to work with the computer. In different types of schools the teacher get different types of opportunity to work with the computer, hence accordingly the teachers’ attitudes also vary. This he found in his study when he compared the teachers’ attitude of two types of schools – government and private. The private schools laid more emphasis on computer education, whereas in the government schools computers are used merely as a tutor.

Igaberia and Chakraborty (1990) studied teachers’ computer anxiety and attitude towards micro-computer and found that male teachers have more positive attitude towards the use of computers in education in comparison to female teachers’.
Shah, Beena (1994) studied that attitudes of secondary school teachers towards computer education in relation to sex, organization and experience. The result showed that teachers’ had positive attitudes towards computer education. Female teacher favoured computer education more than their male counterparts. However, the length of teaching experience did not show any effect on the teacher’s attitude towards computer education.

2.6 Studies related to school children’s attitude towards computer education course in school and availability of home computers

Harvey and Wilson (1985) conducted a study between two groups of secondary school pupils in U.K. and found that one of the most marked differences between those with access to home computer and those lacking, was in programming ability. The survey found that the former group on an average scored about eight more points on the scale than the children lacking access to home computers. Another important difference concerned beliefs –

Children with access to a home computer viewed themselves as “part of the computer age” in comparison to children without access. In addition, when reasons for starting to program and continuing to program were examined, marked differences appeared between these two groups. Children lacking access to a home computer said they started programming because they were introduced to it at school and continued programming because they were required to
do so at school. Children with home computers gave more constructive reasons, such as 'out of interest', or 'to create new games'. Since the two groups did not differ in their reported use of the school computers, this points to the possible importance of home computers.

Fife-Schaw et al. (1985) found in their study that even though the main use of home computers by children was playing games but there is a developmental sequence from game playing to more sophisticated uses of computers, in their study they found that a substantial proportion of children also used their home computers for non game playing purposes.

Martin, R. (1991) studied on the attitude towards computer and availability of home computer found that children who have home computers have the most favourable attitudes than who do not have home computers in school computer course.

2.7 Justification of the present study

Computer as a subject of study has its unique importance in school curriculum. As such it is also an important area of educational research. A proper understanding of the state of computer education in the schools can go a long way in making computer education more effective for the students. The findings also have implications for policy perspectives. Moreover, this study is also justified because of the fact that no study has been done on computer education in the state of Assam.