CHAPTER II
REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

Any student who wants to enter in the field of Research, the first step which the researcher had to follow is to read thoroughly the different research material related to his topic of research. There are two basic reasons behind it.

1. To derive the rationale of present research.

2. To know the current status of the present research.

A good Research Review is a pleasure to produce and a joy to read. It gives you something concrete to do early in the study and build your confidence. The purpose of this review is to obtain detailed information about the methods, research designs, statistical tools used and the conclusions drawn in similar studies. Use of computers in the field of Education, at various levels is not new in this age of information technology but it is mentioned in the fifth survey of education,

"It is interested to note that though Computer Assisted Instruction is a Virgin field, it can lure only three researchers, looking at the trends all over the world it is expected that Indian researchers would go into computer education more enthusiastically". (Buch .M. B, 1988-92, P, 426)

For the present research, the researcher has gathered the reports of related researches. Different journals and other periodicals contain reviews and abstract of researches. A considerable amount of time has been spent in gathering related information; sorting out and studying the most relevant information.
On the contrary we can observe a different position regarding CAI in the western world. While searching on the Internet the researcher had gone through many, research reports on CAI and she got the following information.

### 2.2 SOURCES OF INFORMATION

The related researches were grouped as primary and secondary sources.

1. **Primary Sources** :- These sources provide direct description of the study by person who has actually observed the occurrence and carried it out.

   Secondary Sources : These sources include publications written by adults, who are not direct observer or particulars in the event described. The common secondary sources include educational encyclopedias, research Reviews, Articles and Reports of Surveys etc.

   "Fortunately, a great deal of research has been conducted during the 1970s, 1980s and early 1990s on the effects of computer use on student Achievement, attitudes, and other variables. This research covers a wide range of topics, from computerized learning activities to computer programming, but the main focus of this report is the most commonly used and most frequently researched kind of educational computer use - (CAI) Computer Assisted Instruction". (School Improvement Research series 1991, P, 1 to 17, Kathleen Cotton)

   In this report she has mentioned at least 35 Researches on CAI, but in all these 35 researches only two researches were related to social studies and rest all were related to other subjects.
In this chapter the researches related to effectiveness of Computer Assisted Instruction Programme are presented. At the end of this chapter the researcher has pointed out the necessity of the present study in the light of previous researches.

2.3 PRIMARY SOURCES

Researches at Ph.D. Level

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Source</th>
<th>Title</th>
<th>Name of Researcher</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>University of Pune</td>
<td>&quot;To enlist and analyze the concept in Geography covering the syllabi for standards VII, VIII and IX of the Secondary Schools in Maharashtra State and Develop the Methodology of teaching concept in Geography effectively.</td>
<td>Prof. Dr. Ponkshe D.B.</td>
<td>1983</td>
</tr>
<tr>
<td>2.</td>
<td>University of Pune</td>
<td>Developing a Self Study Package in Computer Education for slow learners</td>
<td>Prof. Dr. Mundhe Rajashri</td>
<td>2003</td>
</tr>
</tbody>
</table>

Table No 1
### Researches at M. Phil Level

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Source</th>
<th>Title</th>
<th>Name of Researcher</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>University of Pune.</td>
<td>An investigation of the age of attainments of conservation concept of liquid in Children of Pune City</td>
<td>Prof. Dr. Tawade Snehala</td>
<td>1983</td>
</tr>
<tr>
<td>2.</td>
<td>University of Pune.</td>
<td>A comparative of effects of Reception and Selection Oriented Models of concept attainment, on the achievement of eighth class students of age 12+ of different levels of intelligence with respect to concepts in mathematics.</td>
<td>Prof. Dr. Sohani Chitra</td>
<td>1985</td>
</tr>
</tbody>
</table>

### Table No. 2

### Researches at M.Ed. Level

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Source</th>
<th>Title</th>
<th>Name of Researcher</th>
<th>Year</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>S.N.D.T. Pune</td>
<td>Preparation of CAI Program on a Unit of Science for Std. IX Biology &amp; a study of its effectiveness.</td>
<td>Pathak Swapna</td>
<td>1992</td>
<td>14 Students from IX</td>
</tr>
<tr>
<td>2.</td>
<td>S.N.D.T. Pune</td>
<td>Preparation of CAI Program on one Unit of Science for the students Std. 8th and a study of it's effectiveness.</td>
<td>Patel Fahemida</td>
<td>2002</td>
<td>50 Student from 8th Std.</td>
</tr>
<tr>
<td>Sr. No.</td>
<td>Source</td>
<td>Title</td>
<td>Name of Researcher</td>
<td>Year</td>
<td>Sample</td>
</tr>
<tr>
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</tr>
<tr>
<td>3.</td>
<td>S.N.D.T. Pune</td>
<td>A comparative study of the effectiveness of CAI &amp; conventional classroom teaching of one unit in Science for Std. 8&lt;sup&gt;th&lt;/sup&gt;.</td>
<td>Kunjeer Gayatridgevi</td>
<td>2002</td>
<td>120 Students from Std. 8&lt;sup&gt;th&lt;/sup&gt;</td>
</tr>
<tr>
<td>4.</td>
<td>S.N.D.T. Pune</td>
<td>A comparative study of the effectiveness of CAI &amp; conventional classroom teaching of one unit in science for Std. 8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Tambekar Prachi</td>
<td>2002</td>
<td>120 Students</td>
</tr>
<tr>
<td>5.</td>
<td>S.N.D.T., Pune</td>
<td>To prepare CAI Program and study it's effectiveness by comparing it with conventional method.</td>
<td>Mirinda Priya</td>
<td>2003</td>
<td>60 Students from 8&lt;sup&gt;th&lt;/sup&gt; Std.</td>
</tr>
<tr>
<td>6.</td>
<td>S.N.D.T. Pune</td>
<td>To prepare self Learning Program for one unit in 9&lt;sup&gt;th&lt;/sup&gt; Std. Geography textbook &amp; study the effectiveness of that program.</td>
<td>Shaikh Dilshad</td>
<td>2004</td>
<td>60 Students from 9 Std.</td>
</tr>
<tr>
<td>7.</td>
<td>S.N.D.T., Pune</td>
<td>Preparation of Computer Assisted Instruction Program on a unit in science for Std. VIII and a study of its effectiveness</td>
<td>Palashikar Medha</td>
<td>2004</td>
<td>37 Students from 8&lt;sup&gt;th&lt;/sup&gt; Std.</td>
</tr>
<tr>
<td>No.</td>
<td>Researcher</td>
<td>Location</td>
<td>Project Details</td>
<td>Year</td>
<td>Participants</td>
</tr>
<tr>
<td>-----</td>
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<tr>
<td>8.</td>
<td>S.N.D.T.,</td>
<td>Pune</td>
<td>A comparative Study of the effectiveness of CAI program and traditional class room teaching in Geography of Std. 8&lt;sup&gt;th&lt;/sup&gt;.</td>
<td>2004</td>
<td>60 Students from 8&lt;sup&gt;th&lt;/sup&gt; Std.</td>
</tr>
<tr>
<td>9.</td>
<td>S.N.D.T.</td>
<td>Pune</td>
<td>To prepare CAI Program on the unit on Std. 9&lt;sup&gt;th&lt;/sup&gt; Geography textbook and study the effectiveness of CAI by comparing it with conventional teaching.</td>
<td>2006</td>
<td>80 students from Std. 9&lt;sup&gt;th&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Table No 3
## 2.4 SECONDARY SOURCES

### Researches at Ph.D. Level

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Source</th>
<th>Title</th>
<th>Name of Researcher</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Mysore University</td>
<td>Computer Aided Instruction to traditional teachings</td>
<td>Shailaja H.G.</td>
<td>1986</td>
</tr>
<tr>
<td>4</td>
<td>Vth Survey of Education Vol –I</td>
<td>The study to see the effectiveness of CAI in teaching mathematics.</td>
<td>Sing R.D.</td>
<td>1991</td>
</tr>
<tr>
<td>5</td>
<td>Bharati Dasan University</td>
<td>Effectiveness of CAI with special reference to under achievers</td>
<td>Rose A.S.V.</td>
<td>1992</td>
</tr>
<tr>
<td>7</td>
<td>Bharathiar University</td>
<td>Effectiveness of CAI in relation to students use of self regulated learning strategies</td>
<td>Kadhiraavan S.</td>
<td>1999</td>
</tr>
</tbody>
</table>

**Table No.4**

### Researches at M.Phil Level
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Source</th>
<th>Title</th>
<th>Name of Researcher</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Delhi University</td>
<td>Effectiveness &amp; Computers in teaching mathematics in school</td>
<td>Nagar Nirmal</td>
<td>1988</td>
</tr>
<tr>
<td>2.</td>
<td>Vth survey of educational research Vol-1</td>
<td>A Critical Review of work done on the use of computer as an instructional tool for teaching chemistry</td>
<td>Bhattacharya Madhumita</td>
<td>1989</td>
</tr>
</tbody>
</table>

Table No. 5

PRIMARY SOURCE

2.5 RESEARCHES AT PH.D. LEVEL –

2.5.1 Prof. Dr. Ponkshe D.B. (1983)

“To enlist and analyze the concept in Geography covering the syllabi for standards VII, VIII and IX of the Secondary Schools in Maharashtra State and Develop the Methodology of teaching concept in Geography effectively.

Objectives :

1. To identify and enlist the concepts in Geography covering the syllabi of Std VII, VIII and IX of the secondary schools in Maharashtra state.
2. To analyze the concept and to compare the concept oriented method of teaching concept in Geography with the traditional method.

Sample : 13 Schools from Dhule District

Tool : Questionnaire, Interview.

2.5.2 Prof. Dr. Smt. Mundhe Rajashree (2003)

“Developing a Self Study Package in Computer Education for slow learners”

Objectives :
1. To develop self instructional package consisting of Video programmes and printed material in the form of Modules in Marathi.
2. To Test the effectiveness of the developed package by trying out on slow learners.

Sample : 100 Students (Slow Learners) from 4 different schools

Tool : ‘t’ test, ANOVA

Finding : Use of self study package developed by the researcher for teaching 6 programmes of computer education to slow learners was found effective.

This research helps the researcher in finalizing the topic i.e. comparison between two different methods of teaching. In his research Dr. Ponkshe has analyzed the different concepts from the VII Std Geography textbook. It has become more easy for the researcher to select the concepts for the preparation of CAI programme.
2.6  RESEARCHES AT M.PHIL. LEVEL: -

2.6.1  Prof. Dr. Tawade S. P. (1983)


2.6.2  Prof. Dr. Sohoni Chitra (1985)

“A comparative study of effects of Reception and selection oriented models of concept attainment, on the achievement of Eighth Class Students of age 12+ of Different Levels of intelligence, with respect to concepts in Mathematics”.

The above mentioned 2 Dissertations submitted to University of Pune for the fulfillment of M. Phil Course are not directly related to the present topic of research but these Dissertations helped the researcher in many ways.

1. For understanding the Piaget’s concept about cognitive development of the child Piaget equates intelligence with the development of logical operations and logical structure.

2. “All the studies suggest that the age and general mental ability are the two important Variables to be considered in the process of concept attainment. This can be understood in the light of the fact that concept attainment is a cognitive process and largely depends upon the changeover from sensory motor intelligence to reflective intelligence” (Sohani Chitra 1985)
According to Bloom “Intelligence measures account for 25% of the variance on the achievement (Dr. Bloom, 1976, P. 52)

Taking into account the findings of above studies the researcher had decided to consider the effect of intelligence levels on the understanding of CAI programme.

2.7 RESEARCHES AT M. ED. LEVEL:

2.7.1. Pathak Swapna (1992)

"Preparation of CAI Programme on a unit of science for Std. 9th Biology and a study of its effectiveness."

Objectives:
To implement programme on 9th Std. students and to study the effectiveness of above programme of CAI on achievement of students.

Sample: 14 students form Std. IX were selected.

Tool: Achievement Test.

Major Findings:
1. The CAI when used as a method of Instruction is more effective than traditional method.
2. The CAI programme can be used as a self study & Revision.

2.7.2. Patel Fahemida (2002)

"Preparation of Computer Assisted Instructional Programme on one unit of Science for the Students of Std. VIII and a study of its effectiveness."

Objectives:
To implement program on VIII Std. students to study the effectiveness of above program of CAI on achievement of students.
Sample : 50 students form Std. VIII were selected.

Findings : 1. Result showed that the CAI program was effective in bringing about the learning of the unit.
2. The posttest scores on achievement test were significantly higher than pretest scores.

2.7.3. Kunjeer Gayatridevi (2002)
“A comparative study of the effectiveness of CAI and conventional classroom teaching of one unit in science for Std. VIII.”

Objectives :
1. To compare the effectiveness of CAI and conventional classroom teaching in terms of achievement.
2. To analyze the reactions of the students towards CAI.

Sample : 120 students form Std. VIII

Findings : The difference between pretest and posttest marks of the group exposed to CAI was significantly greater than the group taught by conventional methods. Students preferred learning through -
- CAI than by conventional method.
- They found CAI to be more effective.

2.7.4. Tamebkar Prachi (2002)
“A comparative study of the effectiveness of CAI and conventional classroom teaching of one unit in science for Std. VIII.”

Objectives :
1. To compare the effectiveness of CAI and conventional classroom teaching.
2. To analyze the reactions of the students towards CAI.

Sample : 120 students.
Findings: 1. Both CAI and conventional classroom teaching were equally effective.
2. Some students preferred learning through CAI than conventional method.
3. Students who had computers at home were not very much enthusiastic when exposed to CAI.

2.7.5 Mirinda Priya (2003)
"A comparative study of the effectiveness of computer Assisted Instruction Programme and traditional classroom teaching in Geography of Std. VIII."

Objectives:
1) To prepare CAI program on selected topics from 8th Std. Geography textbook.
2) To study the effectiveness of CAI program.

Sample: 60 students form 8th Std.
Findings: The CAI Program was effective

2.7.6 Nissar Sadia (2004)
"A comparative study of the effectiveness of Computer Assisted Instruction Programme and traditional classroom teaching in Geography of Std. VIII."

Objectives:
1) To prepare CAI Program on selected unit from 8th Std. Geography textbook.
2) To study the effectiveness of CAI

Sample: 60 students form 8th Std.
Tools: 't' test Rubric
Findings: The CAI Program was effective
2.7.7. **Palshikar Medha (2004)**

"Preparation of Computer Assisted Instructional Programme on a unit in science for Std. VIII and a study of its effectiveness."

**Objectives:**
1) To prepare a CAI presentation on the selected unit.
2) To study the effectiveness of the presentation in terms of achievement test.
3) To study the reactions of students towards the CAI presentations.

**Sample:** 37 students both Male & Female

**Tool:** Achievement Test.

**Rubric**
- 't' test

**Major Findings:** PowerPoint presentation prepared by the researcher leads to effective learning.

2.7.8. **Shaikh Dilshad (2004)**

“To prepare self learning program for one unit in 9th Std. Geography textbook and study the effectiveness of that program.”

**Objectives:**
1) To prepare a self learning program for one unit of Geography (9th) textbook.
2) To study the effectiveness of the self learning program.

**Sample:** 60 students form 9th Std.

**Findings:** The self learning material was effective.
2.7.9. Kate Samata (2004)

“An analytical study of the Geography textbook of Std VII”.

**Method** : Survey

**Sample** : 120 Students, 10 Teachers, 5 Teacher educators.

**Tool** : Questionnaire

2.7.10 Yadav Kishori (2006)

“To prepare CAI program on the unit of Std. 9th Geography textbook and study the effectiveness of CAI by comparing it with conventional teaching”.

**Objectives** :
1. To prepare CAI program on selected units.
2. To study the effectiveness of CAI program.
3. To compare it with conventional method.

**Sample** : 80 students.

**Tools** : Achievement Test

't' test

**Findings** : The CAI program was effective.

2.7.11 The M.Ed. Dissertation about Multi Media package and problem of environment education by Mrs. Sheetal Tambe, submitted to S.N.D.T. University also helped the researcher in many ways. Especially in developing the CAI Programme and in writing of the chapters.

In the findings of the research no 2.7.9, one finding was most important regarding the present study and that gave the answer why the researcher has selected the topic hydrosphere for experiment. The findings are as follows:
“The diagrams regarding ocean currents and planetary winds were difficult to understand for the students than that of the diagrams of rotation & revolution & seasons.” These findings motivate the researcher to select the topic Hydrosphere for the study.

2.8 COMMENTS ON RELATED RESEARCHES (FROM PRIMARY SOURCE)

When the researcher has finally selected the topic for Ph.D. she has visited the Library of S.N.D.T. University. The B.Ed. college of S.N.D.T. University have done lot of work on the subject i.e. Computer Assisted Instruction Program.

Many M.Ed. Dissertation are available in the library for study. The researcher has thoroughly studied all the dissertation related to the research topic and she found some similarities and differences in the dissertations and the researcher's topic for the study.

- In all the M.Ed. dissertations majority are on the subject science.
- The students of M.Ed have selected 8th or 9th Std. for their purpose of study.
- Only three (2.7.5, 2.7.6, 2.7.10) dissertation are available on the subject Geography.
- No body has selected Std. VII for the purpose of study.
- In only five dissertations, 2.7.3, 2.7.4, 2.7.5, 2.7.6, 2.7.10 the researcher has found the comparison of CAI programme to that of with the traditional method, rest all are concerned only with studying the effectiveness of CAI Programme.
The researcher is going to study not only the effectiveness of CAI programme with comparing it by traditional method of teaching but also will study the effect of levels of intelligence and sex on the understanding of CAI program. So the researcher is doing an in-depth study of effectiveness of CAI program.

Keeping all these points aside all these dissertations gave a line or a direction of thinking to the researcher.

The deep study of all these M. Ed. dissertation helped the researcher in many ways e.g.

- For searching the different websites on the Internet.
- For developing the Computer Assisted Instruction Program.
- The researcher has got the information about the golden rules of power point presentation which helped her in making the slide show very effective and impressive.
- The researcher also got the information about the books on the topic of CAI Program.
- For framing the objectives and hypothesis also the study of these dissertation was proved very useful.

**SECONDARY SOURCE**

2.9 RESEARCHES AT PH.D. LEVEL :-


"An experimental study of the relative effectiveness of there methods of instructions i.e. exposition method Programmed
Learning method and Multi Media Method in Science Education,” (Buch M.B., P.633)
Objective:

1. To find out the relative effectiveness of the three methods of Instruction exposition method Programmed Learning method and Multimedia method.

2. To develop Multi media text on the Programmed Content.

Method of Study:

In order to study the relative effectiveness experimentally and the interaction between 3 methods of teaching and two levels of intelligence, a 3 x 2 factorial design was employed.

Sample: 180 Students

Findings: The multimedia method was more effective than either the P.L.M. & Exposition method.

There was no interaction between the three methods of interaction and the two levels of intelligence.

2.9.2. Ravindranath M.J. (1982 )

"Development of Multimedia Instructional Strategy for teaching science at Secondary level" (Buch M.B.,P. 634)

Objectives:

1. To develop a duly validated multimedia instructional strategy for teaching of biology at Std. VIII.

2. To study the 'relationship' between student's achievement and intelligence.

Method: Experimental

Sample: Ninety students studying in Std. VIII.

Tool: Pretest – Post test design.
Main Findings: There was positive and significant correlation between intelligence and achievement through the strategy.

2.9.3. Shailaja H.G. Dr. Lalitha M.S. (1986)

“Computer Aided Instruction to Traditional Teaching's”

Objectives:
To study experimentally the relative effectiveness of CAI VS Traditional teaching in achieving knowledge and understanding objectives in biology after adjusting intelligence factor among student of STD X.

Sample: Two Schools My Sore City were selected.

Findings: CAI Program proved to be more effective than real teaching with respect to improving knowledge but not so in developing understanding. The control group was effective in developing an understanding, and less effective in imparting the knowledge..

2.9.4 Sing R.D. (1991) took up the study to see the effectiveness of CAI in teaching Mathematics (Buch M.B., P. 1391). He found that students who used computer scored significantly higher than those taught through the conventional method.

2.9.5 Rose A.S.V. (1992)

“Effectiveness of CAI with special reference to under achievers”. (Buch M.B., P. 1388)
- Prepared a software system for teaching underachievers.
- The results were positive however the CAI with T.S.S. proved to be more beneficial to the underachievers.

“Effectiveness of computer Assisted Instruction in relation to students use of self regulated learning strategies” (Indian E.A., P.29)

Objectives:

1. To find out whether there is any difference among the three instructional strategies viz., Lecture method (L.M.), Computer Assisted Instruction (CAI) as individualized strategy and computer assisted instruction with peer interaction (CAIPI) in terms of their effectiveness in improving the performance in physics among the higher secondary students with different levels of cognition, viz knowledge understanding and application.

2. To develop syllabus based computer software packages for the selected units in physics at higher secondary level.

Method : Experimental

Sample : One hundred and five students of Std (XI) Studying in three different schools.


Findings : Among the instructional strategies viz. LM, CAI, CAIPI, CAIPI was the most effective one in terms of realizing the instructional objectives in physics at higher secondary stage.

“Computer Assisted Instruction. Attitudes of Teachers and correlates” (Perspective in Education, P, 235-242)

Objective:
To assess the knowledge in computer attitude to complex Assisted Instruction and teacher competency of science teachers.
To assess the effect of training on there variable.

Method: The sample consisted of 50 High School Science Teachers of the Thiruvananthapuram revenue district, Kerala, Randomly selected with the help of purposive sampling of these only 35 teachers formed the experimental group while the control group consisted of 26 primary school teachers who were undergoing B.Ed. Course selected randomly with the help of purposive sampling.

Tools: Questionnaire.

Findings: There was significant difference between the groups in their attitude towards computer education.
As a result of training in computer Assisted Instruction (CAI) the attitude of the experimental group became more favorable towards computer education.


“Effectiveness of teaching chemistry for 1 year B.E. Students through computer assisted instruction” (Indian E.A., P.31)
Objectives:

To study the effectiveness of teaching Chemistry through computer assisted Instruction over the traditional Teaching method.

Method : Experimental
Sample : Sixty students from college of Engineering.
Tool : Pretest posttest parallel group design, mean S. D. ‘t’ test.

Main findings: 1. There is significant difference between the mean gain score of the control group taught through traditional teaching method and experimental group administered by CAI in all units put together.

2. There is significant difference between the mean scores of post test of control group taught by T.T.M. and experimental group administered by CAI in all units put together.

2.10 RESEARCHES AT M. PHIL LEVEL –

2.10.1 Nagar Nirmal (1988)

"Effectiveness of computers in teaching Mathematics in Schools”11 (Buch.M.B,1988,P.1375)

Objectives :

1. To examine the usefulness of CAI teaching mathematics.

2. To examine the areas / aspect of Mathematics which can be more effectively taught by CAI
Major findings: Computer assisted teaching of mathematics benefited both the teachers and students.

2.10.2 Bhattacharya Madhumita (1989)

"A Critical Review of Work done on the use of computer as an instructional tool for teaching chemistry."\(^{12}\) (Buch M.B., 1988, P.1391).

Objectives: To aim at developing tools for evaluating the effectiveness of available software in chemistry.

Major Findings: Computer Assisted Instruction Programme could be applied most effectively to an individual or to a small group.

2.10.3 "Jayamati P. developed a computer Assisted Instruction package in physics for class XI Students. The experimental group received CAI and after the experiment it was found that the experimental group performed better on post test."\(^{13}\) (Buch M.B., 1988, P.1388)

2.11 COMMENTS ON RELATED RESEARCHES FROM SECONDARY SOURCES -

The surveys of educational research, various journals were reviewed for the researches on effectiveness of CAI. In all there were 12 researches in the secondary sources found related to CAI Program. Among those researches (8) were at Ph.D level and (3) were at M. Phil Level.

Majority of these researches were related to subjects like science and mathematics One is related to under achievers, and one is related to the attitude of teacher educators towards. CAI Programme.
This was the most important point why researcher had selected this topic for the purpose of research. Regarding CAI very less work has been carried out in the subject Geography.

As being the student of Geography and also teaching Geography in B. Ed College for last 16 years the researcher felt that Geography is the subject which can make use of this CAI Program very effectively.

There is lot of information available on Internet about the different concepts in Geography. Not only information but beautiful photographs pictures, animated diagrams are available on Internet. The researcher thought that it has become the responsibility of teachers to explore and handover this wealth of knowledge to students and to give them wonderful experiences in their routine life.

This would motivate the students for further learning. It would create interest in the subject matter and will also help the teacher in class control.

With all this background and feedback the researcher decided to go for preparation of CAI program for the students of STD VII and in the subject Geography in the proposed research.

All these researches helped the researcher in deciding the topic, the research design and the sample.

2.12 **CONCEPTUAL REFERENCES**

**Origin of computer Assisted Instruction :**

"Computer assisted instruction (CAI) dates back to the early 1960's. Introduction of micro-computers in 1980's generated a new enthusiasm to use it for instructional purposes. The first major pioneering attempt in CAI was made in the U.S.A. in 1961. The second landmark in CAI was in the year 1966 when computerized tutorials in arithmetic and reading
for elementary school children were developed by Patrick Suppes of Stanford University.

Tondon used (1966) a computer to teach fifth graders, the elements of binary system, computer vocabulary and the know-how of computer operations. Now the Micro Computers are being used on a regular basis widely at all levels of education from primary to University.

Computer Assisted Instruction (CAI) has become an Integral part of the learning process in the advanced and developed countries of the world"\(^\text{14}\) (Agarwal J.C. 1995 P. 361).

"Computer Assisted Instruction i.e. (CAI) is a natural outgrowth of the application of programmed instruction. The aim of CAI is to provide individualized instruction to meet special needs of each Learner. It needs some efficient and flexible device that can store a gigantic amount of organized information and use selected portion to meet the needs of individual Learner. A computer is such a device which can cater to the needs of individual learner. Computer can store a vast amount of information suiting to the needs of individual learner"\(^\text{15}\) (Chauhan S.S. 1978, P. 195)

In his book "Teaching Technology for College Teachers" Prof. Vedanayagam E.G. says that "The most striking innovation in the field of educational technology is use of computers. The main objective of Computer Assisted Instruction is to provide the needed flexibility for individualizing the educational process. It meets the specific needs of the student in a way in which it is almost impossible to do so in a face to face student teacher relationship"\(^\text{16}\) (Vedanayagam E.G.,1988,P,102/103).

"Computer Assisted Instruction is one example where programmed instruction has been combined with powerful media and technology to
produce expensive and impressive learning system."¹⁷ (Prof. Vedanayagam E.G. 1988 P. 102-103)

"New ways of assisting the students to learn are explored continuously. When we apply instructional approach and try out new materials it is generally observed that students react differently to materials which stimulates learning in one student, may be found by another student difficult to understand and the third may find it too simple. Educators have already recognized that wherever practicable there should be individualized Instruction. However a teacher with one or more classrooms of students will find it very difficult to give adequate attention to daily needs and progress of individual student."¹⁸(Vedanayagam E.G.,1988,P.102-103)

“Due to population explosion and increase in school enrolments since independence, the question of how to handle learning activities and problems of students by few teachers is vital. It is quite possible in future "many to one" dilemma will be a major research area."¹⁹(Vedanayagam E.G. 1988,P.102-103)

“There are many educationists and psychologists who have been trying to find out ways in which electronic information processing may help the teacher in individual instruction. One of the important and prominent approaches is to use computer as a teaching machine. This approach is referred to as Computer Assisted Instruction abbreviated as CAI. It is an exciting new area of Behavioral scientists”²⁰ (Mallareddy, S. Ravishankar, 1984, P-223)

“To Motivate Students and to help them learn and grow, individuals should have freedom in the class-room and the opportunity to select experiences & materials”²¹ (Rogers, P-124)
“The use of various features in the computer such as colour, motion and sound also facilitates gaining and holding student attention, an important factor in learning” (Gagne, Wagner and Rojas 1981, P-49)

“Becker reported improved motivation and high levels of students understanding with the help of computer assisted instruction.” (Becker, 1986, P.10)

“In a study to investigate the effect of group size on attitudes towards microcomputers, found that the majority of students enjoyed solving maths problem using the computer for a variety of reasons, including attributes of the computer hardware and software as well as characteristics of the task itself. Most students preferred working with a partner rather than by themselves” (Cosder, Semmel, Gerber 1987 P-31).

“Electronic technologies such as television, radio, audio and video tapes, and computers have the capability to, “revolutionize the quality, Productivity and availability of education. Computer can keep track of student’s performance and do other non teaching Chores to free teacher’s time” (Norris, 1979 P-106)

‘When CAI is used as a supplement to, rather than a replacement for traditional teaching, levels of summative criterion achievement are constantly higher than for either instruction method in isolation” (Edwards 1975 P-42)

Kuilk Synthesized research findings of CAI evaluations. “He reported that computer based instruction of college age students resulted in the improvement of examination scores by approximately 0.25 standards deviation. Secondary education students using CAI improved by 0.34
standard deviation. The difference according to Kulik (1981, P 85) may be that at lower levels of instruction, learners need the stimulation and guidance provided by a highly reactive instructional medium. Moreover, Kulik and Cohen (1981, P 85) found that CAI reduced the amount of time needed for instruction.”

“Stowtschek and Stowschek in their review of research relating to teacher use of microcomputers highlighted the following:

1. 50% Savings in time for all students and
2. The teacher had more time for instructional activities.”

Stowtschek and Stowschek (1984, P 140)

In an article “Engineering Technologies in Education, it was stated that.

“The world is changing fast due to technological developments. Application of technologies is seen pervasively. The wider change-taking place in the society is providing a context for instructional development. Over years there is a shift from oral to written, formal to non formal, teacher to student centered and rigid to flexible forms of instruction.”

Goel D. R. 2000, P 55)

“The focus is on facilitative teaching. Targeting on facilitative teaching there have been focused efforts to develop educational radio and T.V. in different models – feedback and interactive video and teleconferencing E-mail, Tele-text, radio pager etc., along with development of related skills both intellectual and psychomotor and also attitudinal changes.”

Goel D. R. 2000, P 55)

“The recent developments in technotronics Emerging Technologies in Education by D. R. Goel, R. S. Mani, S. C. Panigrahi. Have opened up
new vistas for education e.g. use of computers in teaching – learning and evaluation.” In the same article it is stated that “The predictions made over the last two decades by the impact of the new technologies vary from the expected to unforeseen.” (Goel D. R. 2000, P 55)

2.13. ABSTRACTS FROM ERIC DATABASE

1. Eric No. : ED 214707

Rapaport, P, Savard WG (1980)
“Computer –Assisted Instruction Research on School Effectiveness Project.”

Abstract : The question raised was "Does Computer Assisted Instruction (CAI) when combined with traditional instruction, lead to higher achievement than traditional instruction alone". The research findings made it clear that CAI is an effective supplement to traditional instruction.

2. Eric No. : ED 282513

Rupe, Vickie S. (1986)
“A study of Computer-Assisted Instruction: It's uses, effects, advantages.”

Abstract : The purpose of this study is present information that will help educators to gain a better understanding of Micro Computer Capabilities and limitations. Through examination of studies and articles six topics related to computer assisted instruction (CAI) are addressed 1) age groups, ability levels, and subjects with which CAI can be
used. 2) effectiveness of CAI in producing achievement gains. 3) other effects of CAI on student development. 4) effect of CAI on attitudes of students and teacher concerning computers. 5) advantages of CAI over other methods of instruction and 6) Limitation of CAI. It is concluded that CAI can become a valuable learning Tool. That can be used at any age and ability levels for improving self concepts, and motivation for learning.

3. Eric No. : ED 382563

Berry, Shirley Ann. (1994)
“Teacher's opinion of Computer – Assisted Instruction (CAI).”

Abstract : A survey was conducted of 30 teachers who use CAI in the Chicago (Illinois) Public School. According to the findings, teachers felt that CAI should begin as early as kindergarten and that CAI prepares students for the world of work. Some teachers disagree with statements that CAI was better than traditional teaching. The majority of teachers felt that CAI enhanced student achievement and enabled children to pace their own learning. The paper concludes that teachers are mixed on their acceptance of CAI as it relates to their own needs and as an enhancement to their student's achievement.
• CONCLUDING COMMENT –

After reading the opinions of different educators of national and international level, the researcher had became aware about the importance of using the modern sophisticated technique, CAI programme in the field of education. All the educationists gave stress on using this CAI programme, because of its flexible nature, individualized learning system, and user friendliness. According to them, the use of CAI programme will definitely increase the quality of education, it will save the time of both the teachers and students. It will motivate the students for further learning. These opinions of the experts instigate the researcher to use the CAI programme for the purpose of research.

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REFERENCES


2. Cotten Kathaleen, *“School Improvement Research Series”*, Page 1 to 17.


4. Ibid, Page No. 1391.


13. Ibid. Page No. 1388.


17. Ibid, Page No. 102, 103.

18. Ibid, Page No. 102, 103.

19. Ibid, Page No. 102, 103.


30. Ibid, Page No. 55.

31. Ibid, Page No. 55.