Computer assisted instructions provide direct learning experience to the user. It is a learning device which is interactive. The learner can choose his own pace and pause for testing in computer assisted instructions. Computer assisted instructions is one of the advanced programmed learning devices. Programmed learning is a method of individualized instruction in which the student receives information related to his own needs in progressive sequence but in small units. Learner remains active and proceeds at his own rate. Learner knows immediately whether he is right or wrong. CAI represents a highly individualized and systematic instructional strategy for class room instructions as well as for self learning. Computer assisted instruction (CAI) is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. It uses a combination of text, graphics, sound and video in learning process. The computer has many purposes in the classroom and it can be utilized to help a student in all areas of the curriculum. The rapid co-evolution of technology and learning is offering new ways to represent knowledge, new educational practices and new global communities of learners. Yet the contribution of these changes to formal education is largely unexplored, along with possibilities for deepening our understanding of what and how to learn. The convergence of personal technologies offers new opportunities for informal, conversational and situated learning.

(c.f. Bawa, S.K. 2014)

The day may not be very far off when most Indian classrooms have a computer. Everyday teaching through computers can then become possible. However, educators, administrators, researchers and parents all have doubts about its real learning value. While no one denies the need for making every student computer literate, there are misgivings about the effectiveness of computers for teaching. It becomes essential to see some evidence that computers in classrooms are more than expensive time wasting toys, that use of computers for teaching enhances learning in demonstrable ways.

As the world forges ahead into the twenty first century, along with the developments in all spheres, it is faced with many prominent problems and issues. Dwindling of fossil fuels, forests, biodiversity and aquifers are the consequences of environmental pollution. No doubt, science has led to inventions and discoveries which have improved the human race, but it has also led to deterioration of the environment. Environment plays a vital role in human life. A human is a by product of heredity and environment. These two variables are integrated in such a way that we cannot isolate them from each other.
A living being = Heredity x Environment

Heredity is the transmission of characters from parents to offspring. The word heredity is derived from the Latin word "hereditas" which means heir ship or inheritance. Heredity is genetic factor that determines the individual's characteristics responsible for the resemblance between parents and offspring. The sum total of inherited characteristics in the organism may be stated as heredity. The environment is the external condition or the surrounding especially in which people live and work. Heredity is predetermined and cannot be modified but environment can be modified. 


The word "Environment" is derived from the French word environner which means to encircle or surround. Environment can be defined as the circumstances or conditions that surround an organism or group of organisms, or the complex of social or cultural conditions that affect an individual or community.

(c.f. Kumar,T.P.2009)

Environmental education seems to be the only solution to this ever spreading problem. Environmental education is helping social groups and individuals to acquire an awareness of environment. As an attitude is a pre-requisite for fostering, valuing approach and responsible action which is the ultimate goal of environmental education. Moreover, the environmental knowledge and awareness would be of no meaning without cultivation of right attitudes towards environment especially environmental pollution.

Need of environmental education cannot be ignored, we must understand this to improve the quality of life. It is not only a question of air and water pollution but it also includes elimination of polluters, diseases, hunger, poverty, population explosion, health and hygiene, environmental concerns, destruction of forests, wildlife, erosion of soil and accumulation of waste. So, there is an urgent need for propagation of positive attitude towards prevention of environmental pollution. As students are the nation builders, environmental education among them plays an important role in shaping and molding the future nation with a healthy and pollution free environment. Environmental education through CAI plays an important role in creating a positive attitude towards prevention of environmental pollution among the students.
STATEMENT OF THE PROBLEM

EFFECT OF COMPUTER ASSISTED INSTRUCTIONS ON ENVIRONMENTAL AWARENESS AND ATTITUDE TOWARDS ENVIRONMENTAL POLLUTION IN SECONDARY SCHOOL STUDENTS

OPERATIONAL DEFINITIONS

Computer Assisted instructions (CAI)
Computer assisted instructions refer to a method of instruction in which computer is used to instruct the students and where the computer contains the instruction which is designed to teach, guide and test the students until the desired level of proficiency is attained. In the present study computer assisted instructions refer to MS Power Point slides based on linear programming technique for module making based on Egrule approach on environmental education and attitude towards environmental pollution.

Conventional Teaching
Conventional Teaching is the most common method of teaching used by the teachers for carrying out the teaching learning process in the classroom situations. In this method, the teacher talks more or less continuously to deliver the facts and ideas worth remembering but the class does not converse with the teacher. This implies that it is one of the autocratic teaching strategies. In this study, the instructional material was prepared for the conventional teaching also. It was prepared in the form of lesson plans for teaching Environmental education by the researcher.

Environmental awareness
Environmental awareness is defined as the sum total of responses that people make to various thematic aspects of constructive environmental education as understanding, preservation and conservation of environment.

Attitude towards Environmental pollution
Attitude towards environmental pollution means a readiness to respond to or against various types of environmental pollution as air pollution, water pollution, soil pollution and noise pollution in particular manner as with concern or hate, fear or resentment to a particular degree of intensity.

Secondary school students
In the present study 9th class students studying in schools affiliated to P.S.E.B represent the secondary school students.

**OBJECTIVES OF THE STUDY**

The study was conducted taking into consideration the following objectives:

**Objectives related to environmental awareness**

1. To study the effect of computer assisted instructions and conventional method of teaching on environmental awareness of secondary school students.
2. To study the effect of computer assisted instructions and conventional method of teaching on environmental awareness of secondary school students with respect to their residential area.
3. To study the effect of computer assisted instructions and conventional method of teaching on environmental awareness of secondary school students with respect to their type of school.
4. To study the effect of computer assisted instructions and conventional method of teaching on environmental awareness of secondary school students with respect to their gender.

**Objectives related to attitude towards environmental pollution**

5. To study the effect of computer assisted instructions and conventional method of teaching on attitude towards environmental pollution of secondary school students.
6. To study the effect of computer assisted instructions and conventional method of teaching on attitude towards environmental pollution of secondary school students with respect to their residential area.
7. To study the effect of computer assisted instructions and conventional method of teaching on attitude towards environmental pollution of secondary school students with respect to their type of school.
8. To study the effect of computer assisted instructions and conventional method of teaching on attitude towards environmental pollution of secondary school students with respect to their gender.

**HYPOTHESES**

**Related to environmental awareness**

1. There exists a significant difference in the effect of computer assisted instructions and conventional method of teaching on environmental awareness of secondary school students.
2. Environmental awareness of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their residential area.

3. Environmental awareness of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their type of school.

4. Environmental awareness of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their gender.

**Related to attitude towards environmental pollution**

5. There exists a significant difference in the effect of computer assisted instructions and conventional method of teaching on attitude towards environmental pollution of secondary school students.

6. Attitude towards environmental pollution of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their residential area.

7. Attitude towards environmental pollution of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their type of school.

8. Attitude towards environmental pollution of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their gender.

**DELIMITATIONS OF THE STUDY**

1. The present study was confined to boys and girls of 9th class as secondary school students.

2. The present study was confined to the government and non government-private schools affiliated to PSEB only.

3. The present study was confined to residential areas as rural and urban.

4. The present study was confined to environmental awareness and attitude towards environmental pollution as dependent variables.

5. The present study was confined to computer assisted instructions and conventional methods of teaching as independent variable.
6. The present study was confined to secondary school students of Amritsar district.

**SIGNIFICANCE OF THE STUDY**

No doubt, computer literacy has spread far and wide but still there is dearth of computer assisted instructions in the field of education. The corporate world has to a large extend used computers for its benefits but the educational field is still lagging behind. Environmental studies has become a compulsory subject in schools so it becomes necessary to find out the environmental attitude and environmental awareness of students, who play a significant role in developing the nation. They form the future task force and the impact of the ideology of future generations can lead to a positive change. In this respect students can play a dominant role in bringing about healthy change in the society by appraising them of the importance of keeping environment free from all sorts of pollution. The biggest danger of industrialization is proving to be environmental pollution, which has led to suffocation and pollution all around. The increased pollution level has resulted into rise in temperature during summers and fall in temperature during winters due to green house effect. The whole biosphere is at the target of pollution. The misuse and abuse of science has dealt a deadly blow to the entire setup of nature. It is feared that if the present rate of air, water, soil, solid waste, radioactive & noise pollution continues, it will lead to the gradual extinction of mankind as it is posing deadly danger to the man's health safety and brighter future. This dreadful problem calls for a total overview of the very mind set of the people by making them aware of the importance of having healthy and pollution free environment.

Each year, on 5th June, World Environment Day provides an opportunity for communities and governments around the world to reflect on the essential role that environment plays in our daily lives and our plans for the future. This event is one of the principle vehicle through which the United Nations stimulates worldwide awareness of the environment and enhances political attention and action.

Global warming has emerged as one of the most important environmental issues ever to confront humanity. This concern arises from the fact that our everyday activities may be leading to changes in the earth’s atmosphere that have the potential to significantly alter the planet’s heat and radiation balance. It could lead to a warmer climate in the next century and thereafter, pertending a potpourri of possible effects mostly adverse.

With the advancement of science and technology, efforts are being made to invent all conceivable comforts and luxuries of life. But in this hope of providing all amenities of life
to the forthcoming generations. They have become forgetful of the way they are aggravating the health problems. We cannot forget the traffic noise of vehicles and horns besides the smoke that they let out, which are the main sources of sound and air pollution.

(c.f. Shagufta, C.J. 2010)

This dreadful problem calls for a total overview of the very mind set of the people by making them aware of the importance of having healthy and pollution free environment.

In the modern world, besides many disastrous effects on environment, technology has provided with computers, a boon for mankind. To eradicate the negative effects of progress on environment, computer can prove a useful tool. In the field of education, there is utmost need for researches on new technologies like computer assisted instructions so as to enable educational institutes to acquaint our future task force with the world class educational technologies. Computer literacy has spread far and wide but still there is dearth of computer assisted instructions in the field of education. The corporate world has to large extend used computers for its benefits but the educational field is still lagging behind.

(c.f. Chhabra, S. and Dhamija, N. , 2013)

In this changing scenario from the traditional teaching methodology to computerized instructions, students need to adapt to these techniques. So it is of utmost importance to conduct researches on global issues like environment using computer assisted instructions. With the advent of new knowledge and flexible thoughts about advancing techniques and innovations in the field of environment, students can bring a positive change.

Being a teacher educator of science background and having a positive attitude towards healthy environment the researcher has been prompted to take up the present research to study the effect of CAI on environmental awareness and attitude towards environmental pollution.

DESIGN OF THE STUDY:

The present study comes under the domain of experimental research. The study was a pre-test post-test equivalent group design. The experimental and controlled groups were matched on the basis of their 8th standard final results. The study tended to assess the effect of Computer Assisted Instructions on environmental awareness and attitude towards Environmental pollution among secondary school students.
TOOLS USED:

In order to collect the required data for the study, the following tools were used:

- CAI (Computer Assisted Instructions) on environmental education developed by the investigator. (Instructional tool)
- Conventional Lesson Plans on environmental education developed by the investigator. (Instructional tool)
- Environmental Awareness Test constructed and standardised by the investigator
- Taj Environmental Attitude Scale-Dr. Haseen Taj(2001)
- Result of 8th Standard for achievement scores.

STATISTICAL TECHNIQUES:

In the present study statistical techniques as Mean, Standard Deviation, Standard Error of Difference Between Means, Mean Squares, t-test, ANOVA, error rate, programme density, were used to analyse and interpret the collected data. SPSS was used to analyse the results.

DEVELOPMENT AND STANDARDISATION OF TOOLS

STEPS IN DEVELOPING THE CAI PROGRAMME

There are three basic steps in developing the programme:-

A. Preparation
B. Writing of the programme
C. Evaluation

A. Preparation

The Preparation involves four factors:-

a. **Selection of the topic to be programmed**-based on interest and thorough knowledge of Environment

b. **Planning the content**: four units of Class IX of Environmental Education named Understanding Ecosystem, Depletion of Resources, Waste Generation & Management and Environmental Values and Ethics were included.

c. **Defining behavioral objectives**

Unit wise objectives were written as follows:-
• To study the environment.
• To study the living things in ecosystem, how the ecosystem works.
• To study the depletion of environment and resources.
• To study ways and means to protect our environment, waste generation and management, environmental values and ethics.

Specific objectives were written as follows:-
• The pupils will be able to identify the types of ecosystem.
• The pupils will be able to differentiate between forest and desert ecosystems.
• The pupils will be able to describe the adaptations of desert ecosystem.
• The pupils will be able to explain Nekton and Benthos.
• The pupils will be able to discriminate between autotrophs and heterotrophs.
• The pupils will be able to outline the term carnivores.
• The pupils will be able to distinguish the examples of carnivores and herbivores.
• The pupils will be able to identify the decomposers.
• The pupils will be able to describe food web.
• The pupils will be able to explain various environmental cycles as water, carbon, nitrogen.
• The pupils will be able to explain the importance of trees and how they can help in making environment free of pollution.
• The pupils will be able to describe destruction of ecosystem.
• The pupils will be able to explain pollution.
• The pupils will be able to explain silviculture.
• The pupils will be able to expand C.N.G.
• The pupils will be able to differentiate between crop rotation and mixed cropping.
• The pupils will be able to enlist and identify renewable and non renewable sources of energy.
• The pupils will be able to explain various types of non conventional sources of energy as solar energy, geothermal energy and wind energy.
• The pupils will be able to identify oil as non renewable source of energy.
• The pupils will be able to describe urbanization and industrialization as cause of deterioration of environment, cause of floods.
• The pupils will be able to explain organic farming and biogas.
• The pupils will be able to name the most important gas for green house effect.
• The pupils will be able to define water harvesting.
The pupils will be able to explain vermicomposting.
The pupils will be able to explain mixed cropping.

d. Constructing and standardising the criterion test on environmental awareness

Following procedure was used:

Formulation of objectives: Specific objectives were clearly stated by the investigator in behavioral terms.

Review of already available tests: An in depth review of the already available tests in the field of environment was done.

Intensive study of the subject matter: The investigator thoroughly studied the syllabus and content material of IX\textsuperscript{th} Class Environmental Education to obtain clarity of the concepts.

Preparation of blue print: Blue print is an outline of the achievement test in terms of objectives and content. Blue print was prepared.

Preparation of question bank: A question bank of 100 questions was prepared from 4 units named Understanding Ecosystem, Depletion of Resources, Waste generation and management, Environmental values and ethics.

Scrutinization: Questions were then scrutinized by subject experts and language experts. After the suggestions of experts 50 items were taken.

Try out on a Small Sample: 50 questions were then tried out on a small group of 8 students of IX\textsuperscript{th} Class. On the basis of the feedback of students, the questions which posed confusion or were time consuming or had difficult language were removed. 40 questions were retained after try out on a small group.

Final try out on a sample of 100 students: The selected 40 questions were then tried out on a sample of 100 students. On the basis of difficulty level and discriminative value. 25 questions were selected for the final format of the achievement test.

Conduct Item Analysis: Item analysis was conducted by following steps.

- Preparation of Item Grid: A flowchart showing the entry of each student on each question was plotted. It is known as Item Grid.
• **Finding out the Difficulty level**: Each Item was thoroughly scanned to find out the difficulty level. The difficulty value of each of the 40 items was computed by the formula

\[
\text{Difficulty Value of the item} = \frac{\text{No. of students responding correctly to the item}}{\text{Total No. of Students}}
\]

• **Discriminative Value**: Answer scores of students were arranged in descending order. Upper 27% of Total N (100) at the higher end and 27% of total N (100) at the lower end was taken. Middle bulk of 46% was left. The extreme ends provide high discriminatory powers. The discriminative value was calculated by the formula

\[
\text{Disc. Val.} = \frac{\text{Correct responses of higher group (RH)}}{27} - \frac{\text{Correct responses of lower group (RL)}}{27}
\]

• Reliability was calculated by split half method it comes out to be 0.78

• Validity was calculated to be 0.85

**B. Writing of Frames**:

Each behavioral objective is now carefully broken into frames. These frames constitute the whole body of the programme. A frame can be said to be unit of presentation of instructional sequence. Before the actual writing of the frames, the programmer carefully orders the behavioral objectives and then, the programmer starts breaking off the subject matter and complete the task keeping always of view the set of programming principle. 80 frames were made in the beginning.

Each frame is provided with its correct response so that the student finds that the correct answer. Student obtained confirmation, but if it is incorrect, he received correction. It is essential and distinguishing characteristic of programmed instruction that correct response is always written along with the frames.

(a) **Designing of frames**:

For writing frames the following two operations were used:

• Priming for introductory frames

• Prompting with cues or hints for teaching frames

(b) **Sequencing of frames**:

After designing of the frames, the systematic approach to sequence frames was applied. Matrix approach and Egrul approach was used. There are three common approaches in designing of frame sequencing.
Matrix Approach: This is an old education device for making sure that everything is covered. In programming the concept can be placed on one axis and the behavior to be brought through the frames on the other axis. This gives a fairly clear picture of the structure as well as behavior covered through the programme.

Ruleg Approach: Element in this approach—Ru’s rule (hence the RU) or the principles or generalization or definition or any general statement and the eg or examples (from eg) in the broad principles are introduced first and then examples are given to illustrate these principles. Ruleg system is an attempt to formalize the production of frames and their sequencing according to some systematic rule.

Egrul Approach: This approach prefers to start from examples and the students can work from previous experience. This approach may be called inductive in form. This structure of a frame, consist of the following three parts:-

Stimulus:- The information is presented.
Response:- The learner constructs or selects a response.
Feedback:- The knowledge of result is given in the form of a report to the learner on the status of response that he has made.

(c) EDITING

After completing the first draft of the programme, the programme was edited.

The main objectives of the editing of the programme are:-

1. To improve the logical sequence of the frame.
2. To sharpen and to smoothen the programme.
3. To improve the technical accuracy.

The programme was given to the language expert. Subject expert also made certain modification concerning the subject matter. The CAI programme was now ready for data collection and further modification on the basis of try-out or evaluation.

C. EVALUATION

Evaluation of the programme is the final stage in the development of a programme. Evaluation of the programme in this sense refers to testing of the programmed material. Testing of a programme is kind of trial situation for the frames and sequence brought out by the programme.

There are three types of testing:-

1) Individual testing on individual of class ix
2) Small Group testing on a group of 5-10 students
3) Field testing on a group of 100 students
After small group testing 75 frames were left. The change in the language, grammar and sentence formation were made in these 75 frames.

Errors are relatively greater on the frames number 9,10,13,17,24,28,35,37,59,66. Difficult frames were simplified. 8 frames were removed and new 8 were inserted in place of them. The final programme consisted of 75 frames.

Evaluation of the programme has been done.

The data obtained on a large group (N=100) has been subjected to analysis by finding error rate, programme density and sequence progression. Validity hypothesis has also been tested.

**Error rate:**

Error means an incorrect response made by a student on a frame. Error rate is the probability of making a wrong response.

\[
\text{Error rate} = \frac{\text{Number of error made by all students} \times 100}{\text{Number of response} \times \text{Number of students}}
\]

**Programme Density:** It is calculated by finding the number of different responses required of the student in a section of the programme and dividing by the total number of responses on that section. Here we make tallies of the programmed responses and not the student responses. There are two types of programme density.

**Independent Density:** The density of a single tape forming a section of the programme is known as independent density. Therefore, on each tape taken as a independent (section). The number of different responses required of a student is divided by the total number of responses on that independent tape (section).

**Cumulative Density:** It is the density of the whole programme considered as a single tape. If all the tapes are combined to form a large single tape, the density calculated over this large tape will be the cumulative density of the programme as a whole.

**Sequence Progression:** A study of sequence has been made by entering the errors made by each student on each frame on flow chart.
Validity Hypothesis: In order to test the sequence the following validity hypothesis was tested. "If 95% of the pupil made correct responses on 95% of the total responses on all the frames of the programme, the sequence is deemed valid".

Criterion test basis: If 70% pupils obtain more than average on criterion test then the programme is considered to be correct.

SAMPLE:
Random stratified sampling technique was used for the study. Two samples were selected at two different stages of experimentation. These were:

a. Sample for the development of teaching learning material.
b. Sample for final experimentation.

First of all, already developed CAI instructional material for as well as Conventional Lesson Plans on environmental education were given to experts and then for the individual try out to a student of class ix. After the individual try out, the developed material for each method was given to 8 students of class IX for small group try out. After the modifications suggested by them, the developed material was field tested on 100 students of class IX. In the present investigation final sample for experimentation was 640 students of Class IX of rural and urban areas of different government and private secondary schools. Out of the total sample, 320 were treated as Controlled Group to be taught by conventional method, 320 were treated as Experimental group taught by Computer Assisted Instructions.
FLOWCHART SHOWING

BIFURCATION OF THE SAMPLE

Students (640)
Approximately

Controlled GP (320)

Rural (160)

(80)

M F M F
40 40 40 40

Experimental GP (320)

Urban (160)

(80)

G NG

G NG

G NG

G NG

Urban (160)

(80)

M F M F
40 40 40 40

(80)

M F M F
40 40 40 40

(80)

M F M F
40 40 40 40

G NG

G NG

G NG

G NG

NG : NON GOVT. (PRIVATE)
G : GOVT.
ENVIRONMENTAL EDUCATION (CAI) & (CONVENTIONAL)

ENV. AWAR

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CG : CONTROLLED GROUP
EXP. G : EXPERIMENTAL GROUP
RA : RESIDENTIAL AREA
GE : GENDER
S : SCHOOL
R : RURAL
U : URBAN
M : MALE (BOY)
F : FEMALE (GIRL)
G : GOVERNMENT
NG : NON GOVERNMENT (PRIVATE)
DATA COLLECTION:
The data was collected from 640 students of class IX of both rural and urban, govt. and non-govt. secondary schools affiliated to P.S.E.B. of Amritsar district. Environmental Awareness Test and Taj Environmental Attitude Scale was administered at pre-test and post-test stage on both controlled and experimental group.

EXPERIMENTATION:
After preparing and standardizing the C.A.I., the investigator made the necessary arrangements with the principals of the schools selected for the experiment. Environmental Awareness Test and Taj Environmental Attitude Scale to evaluate the environmental awareness and attitude towards environmental pollution was administered as a pre test measure. The students were assigned to two groups -experimental and controlled group on the basis of 8th standard achievement scores to make equivalent groups. The experimental group was taught through CAI (Computer assisted instructions) and the controlled group was taught through conventional method. After the discussion and completion of content with both the groups by using both these techniques, Environmental Awareness Test and Taj Environmental Attitude Scale to measure attitude towards environmental pollution in secondary school students were administered as post-test measure. The experiment was conducted in two phases.

In the first phase i.e. before being exposed to the teaching material, both the groups were pre-tested with Environmental Awareness Test and Taj Environmental Attitude Scale as criterion referenced test on environmental education. After this, the students were provided orientation and instructions about the treatment to be allotted to them. The purpose of such an orientation was to get over the anxiety and curiosity of the students which could hinder the final outcome of the results. The students of the experimental group were given a trial of the CAI material so that they might be able to know what they had to do while going through the instructional material. Likewise, the students of the control group were made familiar about the objectives so that they might become familiar in the teaching setup.

The second phase of the experiment was concerned with the real execution of the experiment. During this phase, the group designated as experimental group was exposed to computer assisted instructions and the group designated as control group was taught through conventional lesson plans. After treatment i.e. at the end of content both the groups were tested with criterion referenced test to measure their environmental awareness and attitude
towards environmental pollution. Then the scores of criterion referenced test were compared in order to assess the effectiveness of two methods of teaching.

ANALYSIS OF RESULTS
In order to verify the above stated hypotheses mean and standard deviation of scores of students on environmental awareness achievement test and environmental pollution attitude scale with respect to their residential area (urban and rural) and gender (boys and girls) and type of school (government and non government) were obtained at pre test and post test level for control group and experimental group. Mean gain scores were calculated by finding the difference between post test and pre test scores of both experimental group and controlled group. Students were categorized as high, moderate and low based on their scores on environmental awareness test and attitude towards environmental pollution scale as scores ranged between these categories. Unitwise and Areawise scores were calculated. Further ANOVA was applied and significance of F verified and ‘t’ value was calculated and the significance of difference between the mean gain score was compared at 0.01 level.

FINDINGS
Keeping in view the results and their interpretations presented in chapter IV following findings were drawn.

- The first hypothesis, that, there exists a significant difference in the effect of computer assisted instructions and conventional method of teaching on environmental awareness of secondary school students was accepted. It was found that students taught through computer assisted instructions gained more in their environmental awareness as compared to those who were taught through conventional method.

- The second hypothesis, that, environmental awareness of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their residential area was accepted. It was found that both urban and rural students gained near about the same environmental awareness in the same methodology group with negligible difference in favor of urban students.

- The third hypothesis, that, environmental awareness of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their type of school was rejected. It was found that students of government and non-government schools differ significantly in their level of
environmental awareness when taught by same methodology, which was in favor of non government schools.

- The fourth hypothesis, that environmental awareness of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their gender was rejected. It was found that boys and girls differ significantly in their level of environmental awareness when taught by same methodology, which was in favor of girls.

- The fifth hypothesis, that there exists a significant difference in the effect of computer assisted instructions and conventional method of teaching on attitude towards environmental pollution of secondary school students was accepted. It was found that students taught through computer assisted instructions developed more favorable attitude towards environmental pollution as compared to those taught through conventional method of teaching.

- The sixth hypothesis, that attitude towards environmental pollution of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their residential area was accepted. It was found that both urban and rural students developed near about the same attitude towards environmental pollution when taught by same methodology with negligible difference in favor of urban students.

- The seventh hypothesis, that the attitude towards environmental pollution of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their type of school was rejected. It was found that students of government and non government schools differ significantly in their attitude towards environmental pollution when taught by same methodology, which was in favor of non government schools.

- The eighth hypothesis, that attitude towards environmental pollution of secondary school students taught by computer assisted instructions and conventional method of teaching does not differ with respect to their gender was rejected. It was found that boys and girls differ significantly in their attitude towards environmental pollution when taught by same methodology, which was in favor of girls.

CONCLUSION
It can be concluded on the basis of analysis and interpretation of the results of the present study that:

- CAI has significant effect on generating environmental awareness among secondary school students.
- Level of environmental awareness is independent of residential area for any method of instruction.
- Level of environmental awareness is dependent on type of school for any method of instruction.
- Level of environmental awareness is dependent on gender for any method of instruction.
- CAI has significant effect on attitude towards environmental pollution of secondary school students.
- Attitude towards environmental pollution is independent of residential area for any method of instruction.
- Attitude towards environmental pollution is dependent on type of school for any method of instruction.
- Attitude towards environmental pollution is dependent on gender for any method of instruction.

EDUCATIONAL IMPLICATIONS OF THE STUDY

1. Computer assisted instructions should be used effectively to benefit students regarding environmental awareness and attitude towards environmental pollution.
2. Computer assisted instructions should be used to enhance quality of education at all levels of education. Computer assisted instructions make the work more enjoyable, efficient and creative. CAI can be more useful and effective for the learners. It will help students to proceed at their own speed and according to their capacity.
3. Computer assisted instructions must be an integral part of the curriculum. Technical support by trained technical personnel should be available for maximum utilisation of computer assisted instructions in the classrooms. Curriculum in the schools should be
framed in such a way which focus on the environmental issues, recent technology especially computer assisted instructions should be used to spread environmental awareness among students and develop positive attitude towards environment.

4. Development of computer assisted instructions is not an expensive affair because once the package is developed, it can be used for many years with the required changes, schools should make one time investment in the development of the package.

5. Parents and teachers should create such environment that may help the students not only to develop environmental awareness but also to bring positive attitude to control environmental pollution.

6. Schools should give more stress on environmental education so that children could be able to develop healthy attitude towards environmental pollution. Government schools should work more for providing better opportunities to all the students regarding development of environmental awareness and healthy attitude towards environmental pollution.

7. Various activities along with the competitions among students should be organized that will generate environmental awareness and positive environmental attitude. Environmental Pollution Control Board should take some constructive steps along with the school that may help the pupils to develop positive attitude to check and control environmental pollution. Articles on environmental awareness should be published in school magazine regularly.

SUGGESTIONS FOR FURTHER RESEARCH
The present research has brought into light a good number of new areas to be studied by future researchers. The areas and variables which are not covered by this study may be put to test to enlighten the factors associated with CAI, the researcher may work on the following areas:

1. Computer assisted instructions on other subjects like languages, social sciences can be developed and standardised and its effectiveness in comparison to various methods of teaching, CAIPI i.e. Computer Assisted Instruction and Personalised Instructions can be studied.

2. In the present study, sample comprising secondary school students of Amritsar may be extended to state level.
3. Using different types of computer assisted instructions, its effect on other variables like study habits, time effectiveness, intelligence and creativity, opinion about developed CAI can be studied.

4. The study may be conducted at various levels of teacher education i.e. elementary and secondary school teachers.

5. A study may be conducted on various types of degree and professional colleges within city or in other cities.