No part of a study is more important than any other part, since a defect in any part will automatically affect the whole study. However, if one part needs to be singled out as all important, it is the section which states the conclusion. This is the section that presents what the study has to contribute to the advancement of the education as a science. The focus of the study was to ascertain the relative Effectiveness of an Environmental Education Programme Utilizing ICT in Influencing Environmental Sensitivity, Awareness, Ethics and Attitudes among Secondary School Students. The analysis, interpretation and discussion of results have been provided in the preceding chapter. The main findings and conclusions emerged out of the study based on the analysis and interpretation of the data in the light of the objectives, hypothesis and qualitative assessment, forms the major part of this chapter. The educational implications which are the contributions of the study are also included as a part along with the suggestions for further research in the field of Environmental Education. The main findings of the study are presented as follows:

5.1 MAIN FINDINGS OF THE STUDY

5.1.1 AN OVERVIEW OF THE VARIABLES i.e. LEVEL OF ENVIRONMENTAL SENSITIVITY, ENVIRONMENTAL AWARENESS, ENVIRONMENTAL ETHICS AND ENVIRONMENTAL ATTITUDES OF CONTROL GROUP AND EXPERIMENTAL GROUP DEPENDING ON OBTAINED MEAN PRE-TEST SCORES

1. The mean pre-test scores on Environmental Sensitivity of control group and experimental group were 290.66 and 291.66 respectively. Therefore, it was concluded on the basis of obtained mean pre-test scores that before intervention the control group and experimental group had above average level of Environmental Sensitivity.
2. The mean pre-test scores of control and experimental group on Environmental Awareness were 31.08 and 31.52 respectively. It was depicted that the students of control and experimental group had average level of Environmental Awareness before the intervention.

3. The mean pre-test scores of control and experimental group on Environmental Ethics were 115.2 and 114.6 respectively. This indicated that before the intervention the students of control and experimental group possessed above average level of Environmental Ethics.

4. The mean pre-test scores of control and experimental group on Environmental Attitudes were 194.56 and 194.08 respectively. It means that before intervention students of control and experimental group had positive and favourable Environmental Attitudes.

5.1.2 COMPARISON OF THE MEAN PRE-TEST SCORES OF CONTROL AND EXPERIMENTAL GROUP WITH RESPECT TO ENVIRONMENTAL SENSITIVITY, ENVIRONMENTAL AWARENESS, ENVIRONMENTAL ETHICS AND ENVIRONMENTAL ATTITUDES

1. The mean pre-test scores of control group and experimental group on Environmental Sensitivity were 290.66 and 291.66 respectively. Mean pre-test score (290.66) of control group was almost equivalent to that of the mean pre-test score (291.66) of experimental group on Environmental Sensitivity. The computed ‘t’ value for Environmental Sensitivity was 0.602, which was found to be lower than the table value 1.98 at 0.05 level of significance. It indicated that there exists no significant difference between mean pre-test scores of control and experimental group. The two groups did not differ significantly in their Environmental Sensitivity. So, this revealed that before subjecting to the experimental treatment, the two groups were almost equivalent with reference to their Environmental Sensitivity level.
2. The mean pre-test scores of control group and experimental group on Environmental Awareness were 31.08 and 31.52 respectively. Mean pre-test score (31.08) of control group was comparable to that of the mean pre-test score (31.52) of experimental group on Environmental Awareness. The computed 't' value for Environmental Awareness was 0.699, which was found to be lower than the table value 1.98 at 0.05 level of significance. It indicated that there exists no significant difference between mean pre-test scores of control and experimental group. The two groups did not differ significantly in their Environmental Awareness level. So, this revealed that before subjecting to the experimental treatment, the two groups were almost equivalent with reference to their Environmental Awareness level.

3. The mean pre-test scores of control group and experimental group for Environmental Ethics were 115.52 and 114.96 respectively. Mean pre-test score (115.52) of control group was almost similar to that of the mean pre-test score (114.96) of experimental group on Environmental Ethics. The computed 't' value for Environmental Ethics was 0.704, which was found to be lower than the table value 1.98 at 0.05 level of significance. It indicated that there exists no significant difference between mean pre-test scores of control and experimental group. The two groups did not differ significantly in their level of Environmental Ethics. So, this revealed that before subjecting to the experimental treatment, the two groups were almost equivalent with reference to their Environmental Ethics.

4. The mean pre-test scores of control group and experimental group on Environmental Attitudes were 194.56 and 194.08 respectively. Mean pre-test score (194.56) of control group was almost equivalent to that of the mean pre-test score (194.08) of experimental group on Environmental Attitudes. The computed 't' value for Environmental Attitude was 0.471, which was found to be lower than the table value
1.98 at 0.05 level of significance. It indicated that there exists no significant difference between mean pre-test scores of control and experimental group. The two groups did not differ significantly in their attitudes towards environment. So, this revealed that before subjecting to the experimental treatment, the two groups were almost equivalent with reference to their Environmental Attitude.

5.1.3 EFFECTIVENESS OF EXPERIMENTAL TREATMENT
(COMPARISON OF THE MEAN POST-TEST SCORES OF CONTROL AND EXPERIMENTAL GROUP)

1. The mean post-test scores of control group and experimental group on Environmental Sensitivity were 295.42 and 300.64 respectively. For the experimental group, the mean post-test score (300.64) on Environmental Sensitivity was higher than mean post-test score (295.42) of control group on Environmental Sensitivity. The computed ‘t’ value for Environmental Sensitivity was 3.436, which was found to be higher than the table value 2.63 at 0.01 level of significance. It indicated that there exists significant difference between control group and experimental group. So, this revealed that students taught through an Environmental Education Programme Utilizing ICT gained significantly in Environmental Sensitivity.

2. The mean post-test scores of control group and experimental group on Environmental Awareness were 32.68 and 35.08 respectively. For the experimental group, the mean post-test score (35.08) on Environmental Awareness was greater than mean post-test score (32.68) of control group on Environmental Awareness. The computed ‘t’ value for Environmental Awareness was 3.529, which was found to be higher than the table value 2.63 at 0.01 level of significance. It indicated that there exists significant difference between control group and experimental group. So, this revealed that students taught through an Environmental Education Programme Utilizing ICT gained significantly in Environmental Awareness.
3. The mean post-test scores of control group and experimental group on Environmental Ethics were 118.04 and 120.8 respectively. For the experimental group, the mean post-test score (120.8) on Environmental Ethics was higher than mean post-test score (118.04) of control group on Environmental Ethics. The computed ‘t’ value for Environmental Ethics was 3.415, which was found to be higher than the table value 2.63 at 0.01 level of significance. It indicated that there exists significant difference between control group and experimental group. So, this revealed that students taught through an Environmental Education Programme Utilizing ICT gained significantly in Environmental Ethics.

4. The mean post-test scores of control group and experimental group on Environmental Attitude were 196.52 and 199.76 respectively. For the experimental group, the mean post-test score (199.76) on Environmental Attitude was greater than mean post-test score (196.52) of control group on Environmental Attitude. The computed ‘t’ value for Environmental Attitude was 3.017, which is found to be higher than the table value 2.63 at 0.01 level of significance. It indicated that there exists significant difference between control group and experimental group. So, this revealed that students taught through an Environmental Education Programme Utilizing ICT gained significantly in Environmental Attitudes.

5.1.4 THE COMPARATIVE EFFECTIVENESS OF ENVIRONMENTAL EDUCATION PROGRAMME UTILIZING ICT AND TRADITIONAL METHOD OF TEACHING IN INFLUENCING ENVIRONMENTAL SENSITIVITY, ENVIRONMENTAL AWARENESS, ENVIRONMENTAL ETHICS, ENVIRONMENTAL ATTITUDES AMONG SECONDARY SCHOOL STUDENTS

1. The mean gain scores of control group and experimental group on Environmental Sensitivity were 4.76 and 8.98 respectively. For the experimental group, the mean gain score (8.98) on Environmental
Sensitivity was greater than mean gain score (4.76) of control group on Environmental Sensitivity. The computed ‘t’ value for Environmental Sensitivity was **5.095**, which was found to be higher than the table value 2.63 at 0.01 level of significance. It indicated that there exists significant difference between control group and experimental group. So, it was concluded that students taught through the Environmental Education Programme Utilizing **ICT** gained more in level of Environmental Sensitivity than those taught through the traditional method of teaching.

2. The mean gain scores of control group and experimental group on Environmental Awareness were **1.6** and **3.56** respectively. For the experimental group, the mean gain score (3.56) on Environmental Awareness was higher than mean gain score (1.6) of control group on Environmental Awareness. The computed ‘t’ value for Environmental Awareness was **3.771**, which was found to be higher than the table value 2.63 at 0.01 level of significance. It indicated that there exists significant difference between control group and experimental group. So, it was concluded that students taught through the Environmental Education Programme Utilizing **ICT** developed higher Environmental Awareness than those taught through the traditional method of teaching.

3. The mean gain scores of control group and experimental group on Environmental Ethics were **2.52** and **5.84** respectively. For the experimental group, the mean gain score (5.84) on Environmental Ethics was greater than mean gain score (2.52) of control group on Environmental Ethics. The computed ‘t’ value for Environmental Ethics was **7.050**, which was found to be higher than the table value 2.63 at 0.01 level of significance. It indicated that there exists significant difference between control group and experimental group. So, it was concluded that students taught through the Environmental Education
Programme Utilizing ICT gained more Environmental Ethics level than those taught through the traditional method of teaching.

4. The mean gain scores of control group and experimental group on Environmental Attitude were 1.96 and 5.68 respectively. For the experimental group, the mean gain score (5.68) on Environmental Attitude was higher than mean gain score (1.96) of control group on Environmental Attitude. The computed ‘t’ value for Environmental Attitude was 4.906, which was found to be higher than the table value 2.63 at 0.01 level of significance. It indicated that there exists significant difference between control group and experimental group. So, it was concluded that students taught through the Environmental Education Programme Utilizing ICT developed relatively positive Environmental Attitudes than those taught through the traditional method of teaching.

5.2 CONCLUSIONS BASED ON THE FINDINGS OF THE STUDY

The major conclusions based on the statistical analysis of the data, obtained from the comparison of Environmental Education Programme Utilizing ICT and the Traditional Method of Teaching in influencing Environmental Sensitivity, Awareness, Ethics and Attitudes among Secondary School Students are drawn as under:

The Environmental Education Programme Utilizing ICT was found to be effective to teach the concepts of Environmental Education to the secondary school students. Environmental Education Programme Utilizing ICT was found to be relatively more effective than the traditional method of teaching i.e. lecture method in enhancing Environmental Sensitivity, Awareness, Ethics and Attitudes among Secondary School Students.

The study provides sufficient evidence to decide the validity of the hypothesis set for it. An attempt has been made to examine the validity of the hypothesis.
The hypothesis formulated by the investigator states that “Environmental Education Programme Utilizing Information and Communication Technology (ICT) will be more effective than Traditional Method of Teaching in influencing Environmental Sensitivity, Awareness, Ethics and Attitudes among Secondary School Students”. The analysis of pre-test and post-test scores of secondary school students in the experimental and control group with respect to Environmental Sensitivity, Environmental Awareness, Environmental Ethics and Environmental Attitudes show that there is a significant difference between the mean of post-test scores of the two groups. **The finding of the study substantiates the hypothesis, and this hypothesis stands accepted.**

### 5.3 EDUCATIONAL IMPLICATIONS OF THE STUDY

The world in which we live is changing rapidly and the field of education is experiencing these changes in particular as it applies to technological advancements. The growth in use of ICT within the education sector has accelerated in recent years, and looks set for continued expansion in the future. Teachers primarily require access to learning resources, which can support concept development by learners in a variety of ways to meet individual learning needs. The development of ICT for learning offers new ways in which learning can take place in schools. Enabling teachers to have access to ICT and multimedia learning resources, which supports constructive concept development, allows the teacher to focus more on being a facilitator of learning while working with students. The representation of information by using the visualization capabilities of ICT can be immediate and powerful. While this is not in doubt, it is the ability to choose how we view, and interact, with the content of ICT that provides new and existing possibilities to use of ICT in education. There are many instances where students studying particular processes may find themselves faced with a scenario that seems highly complex when conveyed in purely text form. In such situations, the representational qualities of ICT help in placing a
theoretical concept into context. *ICT* can be used to give examples of the phenomena or issues referred in the text. For example, while students are reading notes about a particular issue, a video showing a short clip of the phenomena emphasizing the key points can be inserted at a key moment; video can supplement textual information. The use of video with the help of *ICT* is appropriate to convey information about concepts of environment that can be either dangerous or too costly to consider, or recreate, in real life.

Environmental education enables the child to become sensitive and aware of the environmental hazards such as pollution, deforestation, conservation of environment, environmental health problems etc. To realize the relationship between various concepts, children must visualize as they read. But, it is too difficult to visualize what has been read when it is not within the experience of the children. For this reason, it is the teacher’s responsibility to provide visual aids of all kinds. The teacher can develop lessons with the help of *ICT* for his students easily. In short, to realize the need for maximizing the environmental sensitivity, awareness, ethics and attitudes among the students *ICT* can play a major role. *ICT* can bring the whole phenomena occurring in the world to the classroom.

An attempt has been made here to offer some specific, relevant, important and major implications in a concise form on the basis of the investigation in hand. The following are the implications of the present study for the educational world.

Environmental awareness is the need of the hour. Inculcating sensitivity, awareness, ethics and positive attitudes about the environment among children is the responsibility of the teachers and to carry out this noble task, education is the perfect instrument. If positive attitudes related to environment are induced in children, these attitudes will be transmitted to later generations also by them. Therefore, every curriculum should emphasize the importance of environment protection and management. The students even at the secondary level do not have enough awareness regarding
environmental issues and aspects. The activities for enhancing environmental sensitivity, awareness and cultivation of environmental ethics and attitudes are limited in our educational institutions. Therefore, it is very essential that necessary changes are made in the curriculum on all the levels of education, so that environmental sensitivity and awareness can be enhanced and thus, environmental ethics and attitudes can also be developed among the students. Environmental education programme utilizing *ICT* is found to be very effective in grasping the concepts easily and meaningfully. Students can achieve well when they learn with the help of environmental education programme utilizing *ICT*. Students who learn with the help of environmental education programme utilizing *ICT* can retain what they have learnt for a longer time than those who have learnt through conventional way.

It is the student who occupies the central place in teaching-learning process in the present educational scenario. The strategies used in experimental method also give central place to the students and hence, individual attention is paid to every student. So, student remains attentive and active throughout the teaching process. Students can achieve well when they learn with the help of environmental education programme utilizing *ICT*. Environmental education programme utilizing *ICT* will help the students to make the learning more concrete and meaningful. The environmental awareness, sensitivity, ethics and attitudes of the students are enhanced when they learned with the help of environmental education programme utilizing *ICT*. This method helps to develop thinking abilities in the students which further make them capable of solving problems which come in their way, thus they become self confident. In this method, teacher only creates the learning environment and the student comes out with new concepts with its thorough understanding. Students also develop the ability to apply those concepts in new situations. These are the main objectives which are to be achieved at secondary school level and hence,
Environmental education programme utilizing *ICT* is very much effective than the conventional method of teaching for providing environmental education from the point of view of students. The present study has implication on the students in another way also. Environmental education programme utilizing *ICT* motivates the students to present their views regarding environment concepts and they also show concern about the environmental problems. So, the environmental education should be imparted to the students through the use of *ICT*.

The present environmental education programme utilizing *ICT* is found to be very effective in learning the concepts easily and meaningfully. The present study enables the teachers to understand the environmental issues and aspects that are prevalent at present. The study throws light on the fact that the teachers should get opportunities to attend workshops and refresher courses etc. to equip them to prepare environmental education programme utilizing *ICT* and present the concepts to the students with the help of this programme. The study reminds the teachers that after the completion of the topics under the environmental aspects by lecture method, most of the students have only low awareness. Hence, there is a great need for including all the major environmental areas in the secondary school curriculum and also the need for use of innovative instructional strategies for curriculum transaction. The present study will inspire all the teachers to sensitize the students and make them aware of all the environmental issues and aspects.

Teacher training institutions are the place where would-be teachers nurture themselves. Here, future teachers are trained using different methodologies of teaching. By going through the results of this investigation, we find that environmental education programme utilizing *ICT* is effective in teaching environmental education. So, it is required that a rigorous training should be given to pre-service and in-service teachers to learn, to select and blend the different strategies used for preparing *ICT*
based programmes for transaction of the content of environmental education. Many topics of the environmental education can be covered very effectively at school level by using environmental education programme utilizing *ICT*. Side, by side pre-service teachers should be given an exposure regarding the use and importance of these programmes in environmental education. The educational institutions should also organize refresher courses for the in-service school teachers to train them in using these strategies in the classroom and become better prospective teachers.

The present study helps the principals of the secondary schools to understand the overall environmental awareness of secondary school students. The study insists the heads of the institution arrange environmental education programmes based on *ICT* and modern techniques. The principals should arrange seminars, discussions etc. in the school. More books, journals etc. of environmental education should be made available in the school library. Teachers should be encouraged to participate in seminars, workshops and refresher courses. Sufficient financial aid should be allotted to organize nature club and sufficient audio visual aids, internet facility should be made available in the schools.

The natural environment and natural resources should be protected and conserved. The government should enforce it through laws and insist the Education Department to instruct the school students to protect and conserve our natural environment. The secondary schools should organize nature club and all the students should be members of this club. In this club necessary training should be given to teachers and students about development of teaching learning material on the concepts of environment using modern technological aids like OHP, computers etc. Government should take initiative to allot grace marks to the students who are members of these clubs. This will be an incentive for the students to become members of these clubs. The government should also take initiative to allot funds to the
schools for organizing nature clubs and for developing innovative teaching strategies for imparting environmental education. Teachers should be encouraged to use innovative practices in teaching environmental education utilizing *ICT*. They can be motivated and encouraged by the government by giving certificates and awards to those who are doing innovative practices in developing new strategies of teaching. In the present changing scenario, knowledge is growing very fast and it becomes a need to critically evaluate the environmental education curriculum at short intervals at all the levels, so that students can meet the challenges of the future. Effective steps should be taken for revising the present secondary school curriculum with more environmental issues and aspects included in it. Environmental education programme utilizing *ICT* for teaching environmental education helps to achieve this objective. Teaching through this programme helps the students to develop environmental sensitivity, awareness, ethics and positive attitudes towards environment, develop divergent thinking and make the students able to solve the problems independently. So, in the curriculum, subject matter of that type should be added where teacher can use the *ICT* based programme to keep pace with the changing society. Teachers should get orientation in teaching through environmental education programme utilizing *ICT* and students should be oriented to the *ICT* based concepts, based on the newly as well as technically introduced curriculum on environmental education at all levels of the education.

### 5.4 SUGGESTIONS FOR FURTHER RESEARCH

Without research there can never be any progress for prosperity in nation. The present study has brought into focus several important aspects concerning the efficacy of Environmental Education Programme Utilizing *ICT*. When the investigator completed the study, it was felt that a series of allied studies might be conducted in accordance with the present one. Some of the areas in which further studies can be carried out are presented in the
following section:

1. Similar type of experimental researches can be carried out to compare the effectiveness of ICT programme and traditional method of teaching in other subjects also.

2. It will be useful to conduct the similar research over a large sample including students of different types of schools situated in urban as well as in rural locality.

3. A similar study can also be conducted to examine the effectiveness of Environmental Education Programme Utilizing ICT on the sensitivity, awareness, ethics and attitudes of primary and higher secondary students belonging to different academic streams.

4. Preparation and validation of educational programmes utilizing ICT in different subjects can be undertaken.

5. A study may be undertaken to find the opinion of the pupils towards ICT based instructions.

6. A study can also be undertaken to examine the attitudes of parents and teachers toward Environmental Education Programme Utilizing ICT.

7. A survey can be conducted to identify the role of various environmental organizations in developing and fostering Environmental Awareness, Sensitivity, Ethics and Attitudes and in giving Environmental Education at formal, informal and non formal levels of education.

8. Attitude of educational practitioners, administrators, curriculum framers, teachers and environmentalists towards the inclusion of more environmental issues and aspects in school and college curriculum may also be studied.

9. A study can be conducted for preparation of modern instructional strategies to develop environment concerns among students of various
classes. Further investigation should be undertaken to find out new instructional strategies for environmental education.

10. A study can also be undertaken to analyze the effect of Environmental Education Programme utilizing ICT on the sensitivity, awareness, ethics and attitudes of students of different Socio-economic strata from all over the country.