2A.1 Environmental Education:

2A.1.1 Historical background:

Since 1970, there has been growing effort and activity on the educational front, devoted to environmental problems and to environmental education. The United Nations reflected the global nature of this awareness when, in 1972, it organised the first international conference on the Human Environment in Stockholm, Sweden. The conference revealed a widening interest in the environment and established the universality of environmental problems. It exposed a lack of widespread knowledge in tackling the problems. The most outstanding achievement of the conference was the establishment of the United Nations Environment Programme (UNEP). Together with UNESCO, it embarked upon an International Environment Programme in January 1975.

**International Environmental Education Workshop, Belgrade (1975):** This programme was held at the International Environmental Education Workshop in Belgrade, Yugoslavia, in October 1975. A major outcome of this workshop was the Belgrade charter, which recognized the urgent need in environmental education to develop a global understanding of perspectives on ecological, economic and moral considerations. It also provided an excellent frame of reference for the task of designing environmental education programmes from the realities of an environmental situation.

2A.1.2 Ethics of environmental education:

Environmental ethics can be defined as the code of appropriate behaviour towards environment. The word ‘ethic’ is derived from ‘ethos’ or ‘way of life’. Environmental ethics starts with developing beliefs. Culture is everything which characterises our way of living, thinking, behaving. Ethics on the other hand forms a part of culture, which determines values, principles,
and the perception of the relationship between man and nature. It contributes values and general principles that will be assimilated into the guidelines and content of educational programmes. It simplifies the environmental principles for their applications to daily life rather than trying to translate the complex environmental concepts into the formation of new perceptions, attitudes and knowledge. Hence, it has the potential to help create a social order which protects environment, integrates economy and ecology, science and spirituality, and material and ethical progress. This, however, needs to be followed by all countries. A cross-cultural dialogue should be established to promote empathy between nature and humans and also amongst various communities.

Environmental ethics as a specific discipline deals with a variety of issues ranging from rights of non-human life, issues of social justice, public policy, ethical issues of economic growth, health and human disease, etc. The current environmental crisis is basically a crisis of values and outlooks. It is, therefore, necessary to reorient these values and outlooks by drawing upon the cultural and religious traditions which have always treated life as an organic entity and placed spiritual aspirations of man at a higher pedestal than material possessions. Further, reclaiming for the future necessitates a commitment to intergenerational equity. We are the first generation to create serious environmental problems for our descendants. Ethics should address this problem and ensure that the future generations inherit a clean earth.

This presents an educational challenge because it can only be implemented if a majority of the people understand the ramifications and interlinkages among environment, economics, politics and development. It is also essential that mass media of communication avoid contributing to the deterioration of the environment, and on the contrary disseminate information of an educational nature and the need to protect and to improve the environment in order to enable man to develop in every respect. Thus the goal of environmental education should be:

To develop a world population that is aware and concerned about the environment and its associated problems and which has the knowledge, skills, abilities, attitudes, motivations and commitment to actively participate
individually and collectively towards solutions of current problems and the prevention of new ones in an inter-disciplinary and holistic manner.

This can be achieved only by treating environmental science as not a single subject, but a conglomerate of both basic and applied sciences, as well as engineering, economics, ethics and law. As a pre-requisite, we need to understand the extent of environmental education currently being provided and modify our approach to educational syllabi accordingly.

The following objectives (Jerath and Saxena, 2001) should be kept in mind while imparting environmental education:

**Awareness:** To help individuals and social groups acquire an awareness of the total environment and its allied problems.

**Knowledge:** To help individuals and social groups acquire basic understanding of the total environment, its associated problems and man's crucial presence and role in it.

**Attitude:** To help individuals and social groups acquire social values, strong feelings of concern for the environment and to motivate them for actively participating in its protection and improvement.

**Skills:** To help individuals and social groups acquire the skills for solving environmental problems.

**Evaluation ability:** To help individuals and groups evaluate environmental measures and educational programmes in terms of ecological, political, economic, social, aesthetic and educational factors.

**Participation:** To help individuals and social groups develop a sense of responsibility and urgency regarding environmental problems, to ensure appropriate action to solve these problems.

To meet these objectives, a number of guiding principles were framed for those involved in developing environmental education programmes and materials of various kinds. The guiding principles laid down that environmental education should:

- consider the environment in its totality - natural and built, technological and social (economic, political, technological, cultural - historical, moral, aesthetic);
• be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and non-formal stages;
• be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
• examine major environmental issues from local, national, regional and international points of view, so that the students receive insights into environmental conditions in other regions;
• focus on current and potential environmental situations, while taking into account the historical perspective;
• highlight the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems;
• explicitly consider environmental aspects in plans for development and growth;
• enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;
• relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental impact on the learner's own community in early years;
• help learners discover the symptoms and real causes of environmental problems;
• emphasise the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;
• utilise diverse learning environments and a broad array of educational approaches to teaching/learning about and from the environment with due stress on practical activities and first-hand experience.

The UNESCO-UNEP Congress on Environmental Education and Training (1987) summed this up to state:

"Environmental education should simultaneously attempt to create awareness, transmit information, teach knowledge, develop habits and skills, promote values, provide criteria and standards and present guidelines for problem solving and decision-making. It therefore aims at both cognitive and
affective behaviour modification. The latter necessitates both classroom and field activities. This is an action-oriented, project centred and participatory process leading to self-confidence, positive attitudes and personal commitment to environmental protection. Furthermore, the process should be implemented through an interdisciplinary approach”.

2A.1.3 Environmental education in India:

Environmental education is intended to promote among citizens the awareness and understanding of the environment, our relationship to it and the concern and responsible action necessary to ensure our survival and to improve the quality of life.

In India, at the central level, both the Ministry of Environment and Forests and the Ministry of Human Resource Development (MHRD), have been working towards supporting Environmental Education in schools. The Ministry of Environment and Forests supports two Centres of Excellence in Environmental Education - these are: Centre for Environmental Education, Ahmedabad and C.P.R. Environmental Education Centre, Madras. It has also supported training of teachers in Environmental Education and school level activities under the National Environmental Awareness Campaign. The MHRD, through the National Council of Educational Research and Training (NCERT), is working towards developing environmental curricula and textbooks and in teacher training. The Environmental Orientation to School Education scheme supports initiatives by State governments and NGOs for including environmental studies in school education. Some State governments have also initiated efforts in this direction within their own state.

There are several active NGOs concerned with Environmental Education at the school level, working at State and national levels, on a variety of initiatives including development of material, teacher training, running camps, doing school programmes, etc. Academic institutions including Teacher Training Colleges, are also looking to see how they can support Environmental Education in schools. Some colleges are in the process of introducing special papers in Environmental Education in the B.Ed. course.
Supreme Court of India has directed all the Universities through the University Grants Commission to introduce compulsory papers on Environmental Education both at the undergraduate and postgraduate levels. Panjab University did not take any time to follow this directive by introducing a compulsory paper on Environmental Studies for undergraduate students from the year 1996. The syllabus is so designed to educate the undergraduate students for better environmental planning and conservation. If our youths are abreast with environmental problems they will definitely think of ameliorative actions. The syllabus for undergraduate classes (B.A and B.Com first year) is discussed in the following section.

2A.2 Specifics of Syllabus of Environmental Education

Unit I – Ecosystems and Population

1. Ecosystems – General Introduction
2. Flow of Energy and Materials (Food Webs)
3. Laws of Nature: Carbon and Oxygen Cycles
4. Nutrient Cycles: Phosphorus and Nitrogen Cycles
5. Ecosystem and Environmental Change – General Introduction
6. Limiting Functions in Ecosystems and Environmental Change
7. Ecological Succession and Adaptations
8. Population Growth and Environment
9. Population Regulation
10. Earth’s Major Ecosystems – I (Forests)
11. Earth’s Major Ecosystems – II (Grassland)
12. Earth’s Major Ecosystems – III (Desert)

Unit II – Environmental Quality and Management

13. Environmental Quality and Management – General Introduction
14. Earth’s Water Reservoirs and Water Pollution
15. Managing our Water Resources, Water Quality and Legislative Responses
16. Waste Water Treatment and Global Water Problems
17. Composition of Atmosphere and its effects on Climate
18. Air Pollution and Acid Rain
19. Air Quality Legislation and Air Quality Control
20. Earth’s Crustal Reservoirs: Their Depletion and Conservation Strategies
21. Waste Management and Land Use Planning
22. Noise Pollution
23. Energy and Environment
24. Solar Energy

Unit III – Public Health
25. Public Health – General Discussion
26. Epidemiology
27. Water-borne Diseases
28. Air-borne Diseases
29. Vector-borne Diseases
30. Food-borne Diseases
31. Sanitation Measures to Control Infectious Diseases
32. Environmental Hazards of Insecticides and Pesticides
33. Biological Management of Insects and other Pests of Crops
34. Cancer as an Environmental Pollution Disease
35. Acquired Immune Deficiency Syndrome (AIDS)

Unit IV – Social and Legal Aspects of Environment
36. Environmental Degradation in India: Emerging Sociological Explanations
37. Social and Legal Aspects of Environment – A General Introduction
38. Environmental Awareness and Ethics in India
39. Environment in India’s Religious and Cultural Heritage (The Culture and Philosophy of Environmentalism)
40. India’s Ecological Stability in Tribal Life-Styles (Ecological Harmony in Tribal Life-Styles)
41. Peoples’ Response to Ecological Crises
42. Environmental Laws: Limitations and Potentials for Liberation–I
2A.3 Selection of Topics for Self-Learning Modules:

Self-Learning Modules on the following topics in Environmental Education were developed.
1. Air Pollution from Unit II.
2. Noise Pollution from Unit II.
3. Earth’s Water Reservoirs and Water Pollution from Unit II.
4. Laws of Nature (Carbon-Oxygen Cycle) from Unit I.
5. Control of Infectious Diseases from Unit III.

A brief description of these topics and the reasons for their selection follow:

1. **Air Pollution:** The extent of pollution in the air is being daily monitored, particularly in big cities. The production of pollutants comes as the ‘by-products of man’s action’, - which are the residues of things human beings make, use and throw away – their cans and bottles, metal and plastic material, pesticides and herbicides, automobile exhaust, and industrial discharges. Due to the discharge of these hazardous pollutants into the atmosphere, which is a worldwide phenomenon, there is an increase in the global temperature. This leads to imbalances in the nature, and ultimately causes an immeasurable damage to human and other life forms on the planet.
If we want to live in a healthy environment around us we must control the production of these pollutants by resorting to latest techniques.

2. **Noise Pollution**: Noise means excessive and unwanted sound. It is especially observed in metros and other urban areas. Heavy machinery, vehicles etc. create an unbearable din, which is generally unwanted and hence termed as noise. It interferes with quiet, comfort and health of the people, to the extent of raising blood pressure, ultimately causing damage to the heart.

   In order to combat these factors, it is very essential that certain norms should be fixed for sound levels emitted by various machines so that these health hazards are checked.

3. **Earth’s Water Reservoirs and Water Pollution**: Water is an important factor for maintenance of life. Depletion of freshwater resources is feared to be one of the major and serious impact of global warming and rising sea level. Besides, oceans and rivers have become garbage bins. In cities, where drinking water is obtained from rivers, many diseases spread and cause hazards not only to human health but also to the animal life. The different water resources are polluted with a variety of solid and liquid wastes as a result of over-population and industrialization.

   In order to provide clean and pure water, it is very essential to arrest the discharge of pollutants into various sources of water, for maintaining good quality of life.

4. **Laws of Nature (Carbon-Oxygen Cycle)**: Carbon and oxygen combine together to form carbon-dioxide (CO₂) which is a major greenhouse gas. With rapid industrialization, the amount of carbon-dioxide in the atmosphere is gradually increasing. This is slowly causing imbalance in the atmosphere, accelerating the process of destruction of the protective ozone layer. It is therefore, pertinent to study the carbon-oxygen cycle.

5. **Control of Infectious Diseases**: A wide variety of sources are responsible for the spread of a large number of infectious diseases
The most common sources of these infections are human beings and animals. Human beings in cities and villages produce tons of disposable waste in the form of human excreta, garbage, hospital and industrial wastes. To dispose off these, it is essential that sanitation conditions are improved where needed.

Finally, all it is desired is that all-out efforts be made to control the pollution of various kinds. Besides, it is also very essential to bring awareness to the masses about the consequences of degrading environment, so that they can play an effective role in containing the pollution.

2A.4 Self-Learning Modules:

The teaching-learning process achieves its objectives through a set of activities. Textbooks, workbooks, work sheets, assignment sheets, lecture, demonstration etc. are the usual and known ways of communicating information and structuring activities. Modules are a new addition to these strategies. The need for a modular approach has arisen out of the need to spell out explicit objectives clearly. A module is essentially a unit of a learning experience. Thus, operationally, it can be defined as a self-contained unit of structured learning experiences designed to facilitate students' attainment of a specified set of objectives (Hall et al, 1973) whereas Goldschmid and Goldschmid (1973) define a module as "a self-contained, independent unit of a planned series of learning activities designed to help the student accomplish certain well defined objectives".

A module typically contains a pre-test, which allows students to determine if they are ready to study the material of the unit or if they are already familiar with the content. It has a set of learning objectives, a variety of instructional activities such as reading text books and articles, viewing films or slides, examining demonstration materials, participating in experiments and projects. There is also a post-test to determine if the student has mastered the material. The teacher acts as a resource person who can be called upon for assistance when required. There is a provision of pre-test aids in diagnosing
the need for remedial study and they can be used to direct students to an appropriate remedial sequence, which may take the form of other modules.

A self-learning module is a specific type of learning resource. Modules are essentially self-contained, self-instructional packages, with learning paced by each student according to his or her individual needs and ability. It is so designed that it does not require the presence of a teacher. It is capable of standing alone and assumes the role of a teacher.

The substance of the module consists of materials and instructions needed to accomplish these objectives. An outline of the module is definable only in terms of stated objectives. A module consists of the following components:

(i) Statement of purpose,
(ii) Desirable pre-requisite skills,
(iii) Instructional objectives,
(iv) Entry behaviour test,
(v) Transaction of instructions,
(vi) Diagnostic pre-test,
(vii) Implementers for the module,
(viii) The modular programme,
(ix) Related experiences,
(x) Evaluative post-test and,
(xi) Assessment of the module.

2A.4.1 Essential characteristics of a self-learning module:

Research on instructional processes has shown that the existence of certain characteristics in the instructional material greatly improves learning.

In a self-learning module, some of the important and essential characteristics that should be present for effective learning are:

(1) **Informing the learner about the objectives:**

A self-learning module is based on certain predetermined objectives to be achieved by the learner after going through the module.

The learner should be informed of the objectives to be achieved at the very beginning so that the learner can develop a frame of reference which
helps in acquiring new knowledge, skills and attitude. Objectives make the teaching-learning directional.

(2) **List of pre-requisites:**

A learner must possess certain abilities (pre-requisites) for acquiring new knowledge, skills or attitude. The pre-requisites may consist of a body of knowledge, skills or attitudes which the learner requires to use while learning new material. Therefore, in a self-learning module a list of pre-requisites should be provided. This list of pre-requisites indicates the entry level of the learner for the self-learning module. Often a pre-requisites test (entry behaviour test) is provided to ascertain the suitability of a learner for the module.

(3) **Gaining and maintaining the attention of learner:**

Gaining and maintaining the learner’s attention is very important in self-learning, but is one of the most difficult jobs in instructional design. Research has shown that the most successful method of gaining and maintaining attention is through skill of stimulus variation. Frequent variation in instructional mode can be used for gaining and maintaining the attention of learners. Various techniques suggested by different educationists for gaining and sustaining attention are:

- use of diagrams, sketches, charts, photos, cartoons.
- use of intext question.
- use of humour.
- introduction of a variety of activities.
- use of techniques of emphasis like underlining, capitals, or use of boxes, etc.

(4) **Orientation and motivation:**

To motivate the learner, he should be informed of knowledge, skill and attitude to be learnt and how it is related to his present study and the help it will render him in his future career.

(5) **Presentation of the content in an organized manner:**

In a self-learning module new information should be presented in an organised manner. The module should provide an organising framework,
showing the learner the relationship between the new ideas presented. Several methods for presenting the information may be adopted. Some of the important methods are:

I. Sequence of information under different heads:
   (a) Psychological (i.e. simple to complex, concrete to abstract, specific to general),
   (b) Chronological (first, second, third, etc.),
   (c) Spiral (presenting simple version first, and then repeating it with more complex elaboration, example, etc.),
   (d) Logical sequencing based on reasoning methods.

II. Inductive or deductive presentation of information:
   (a) Inductive method where learning takes place by ‘discovery’.
   (b) Deductive method where the principle is presented first followed by examples.

(6) Requiring learner to respond and provide feedback:
The primary aim of a self-learning module is to help the learner to process, store and retrieve the information presented in the module. Encouraging the learner to respond and provide a feedback, enhances the processing, storing and retrieval of information. A practice exercise requires the learner to apply the knowledge freshly acquired to activate the learner’s processing, storage and retrieval mechanism. The feedback on the learner’s response provides the basis for any necessary correction and thus facilitates acquisition and retention of the desired information or skill.

(7) Providing self-pacing and redundancy:
Abedor (1978) remarked that “Pacing is the rate at which the information is presented, while redundancy is the degree of repetition of ideas in a given instructional sequence”.

Learners differ in their rate of learning. Learning always improves if the learner is allowed to proceed at his own rate. Self-pacing is automatic in the self-learning module, because it is under the control of the learner. Related to pacing, another important characteristic is redundancy. Sufficient redundancy is to be built into the self-learning module. If sufficient redundancy is not built in, the learner has to repeat all or part of the module several times to achieve
an objective. Therefore, certain key concepts are to be deliberately made redundant. Some of the ways to build redundancy in a self-learning module are:

1. Providing frequent review or summaries of information covered.
2. Providing frequent practice and feedback.

Again it should be noted that too much use of these techniques make the module uninteresting.

Thus, while developing a self-learning module, the above mentioned characteristics should be taken care of, so as to make it an effective one.

2A.5 Approach adopted in developing self-learning modules for the present study:

The different steps involved in the development of a module are shown in the accompanying flow chart on pp.23 (Fig. 2.1).

1) Need Identification:

Various instructional materials may be developed for facilitating the teaching-learning process. Here the need for the self-learning module was based on the following points:

i) To integrate theory and practice: Educators know from learning theory that learning will be enhanced if all elements to be learnt are brought together as closely as possible in time and space. Modules enable this to happen. As these modules were largely self-instructional and also the learner proceeded in small steps, it was possible to motivate each step in practical work by appropriate theoretical explanations. It was also possible to consolidate theory and practice by relating each element to the other, more convincingly and coherently than in conventional teaching.

ii) To cater to individual differences in learning: As the modules were self-paced, individual differences in the learner’s abilities, interest and degrees of application were taken care of.

iii) To develop learning autonomy: Modules require users to accept a greater responsibility for learning and correspondingly a greater maturity on their part. There is a major shift of focus from the teacher to the student and the climate of training is more learner oriented.
iv) To provide sufficient study material on environmental education: There was a lack of suitable texts on the subject at the level of a college course.

![Flow Chart of Development of Self-Learning Module]

**FIG. 2.1**: Flow Chart of Development of Self-Learning Module
v) To provide for students with different backgrounds: Student backgrounds were generally heterogeneous.

vi) To upgrade content: It was much easier to replace one module of a modular programme than the chapter of a standard textbook. As modules were highly structured with points set out in clear logical order, it was relatively easy to eliminate older material and replace it by up-to-date information.

vii) To enhance competencies of teachers: Modules play an important role in staff development in at least two respects. Firstly, they provide the teacher with well designed, carefully structured lesson materials and so served as examples of effective instructional design. Secondly, they could be specifically written for the teacher.

viii) To encourage mastery: Modules have a built-in fail-safe mechanism that encourage students to master the whole of the material and so achievement test can be set with this aim in mind. This avoids the hit-and-miss approach of the conventional course and ensure that future work is based on a sound understanding of all previous learning.

ix) To encourage a changed role for the teacher: In conventional teaching, most of the teaching comes from the "front". The students listen to lectures or follow instructions given by the teacher. This encourages "a teacher-centred" climate. In modular instruction, most of the "information" is given in the module. The teacher no longer has to be the source of all knowledge and the student does not depend on the teacher for all information. There is a "learner-centred" climate. The teacher can, therefore, change role from information giver to facilitator of learning. The teacher can pay attention to the needs of individual students as required and acted as a counsellor and guide.

(2) Selection of Topics:

For the self-learning modules, the topics selected were based on important issues of Environmental Education. These were the following: -

1. Air Pollution
2. Noise Pollution
3. Earth’s Water Reservoirs and Water Pollution
5. Control of Infectious Diseases.

The selection of the topics was based on the following considerations:
1) these topics are important and must be mastered by all first year college students studying this subject. 2) they need understanding of concepts, principles and applications which the students find difficult to understand. The details regarding these topics are discussed under section 2A.3.

(3) **Identification of Objectives:**

According to Abedor (1978) “An objective is a precise statement of learning outcome”. A behavioural objective describes what the learner will be able to do at the end of the instruction.

In a self-learning module, the module objective has three purposes:

i) To inform the learner about what they are supposed to learn.

ii) To help the designer in identifying the most important aspects of the substantive subject matter content.

iii) To help in developing tests to assess whether the learners have learnt what they were supposed to learn.

A. **The need for clearly stated objectives:**

In design of modules, clear statements of objectives are not only desirable but also essential. This is because modules are based on a mastery learning strategy. What is to be mastered must be made very clear at the outset. Objectives, therefore, are important at both the design stage and in the use of modules.

(I) **At the design stage:** Clear statement of objectives for a module is important to the designer in the following ways.

1. They establish relationships between any particular module and the course as a whole.

2. Clear objectives provide the designer with a set of criteria for the selection of content.

3. As module is based on a mastery learning strategy, there is one-to-one relationship between the objectives and the items on the post-test.
4. Objectives provide criteria for evaluating the instructional effectiveness of the module.

5. As objectives are clearly defined and expressed in behavioural terms, it became obvious to the designer of the module that certain type of activities, methods and resources would be more effective than others.

(II) During the use of the module: The teaching-learning process is greatly facilitated by the use of objectives. The following points summarise some of the advantages.

1. As the objectives are clear, both students and teachers know what is expected of them and have clearer views of their roles and responsibilities.

2. Because there are common expectations for both students and the teacher, each student can accept more responsibility for individual learning, trying out alternative methods, undertaking practice tasks with the objectives in mind and continually testing personal achievement against the pre-defined outcomes.

3. If the students can see the whole scope of a module in terms of behavioural outcomes, they can plan their learning so as to ensure that those outcomes are achieved.

4. A demonstrated condition that facilitates learning is the structuring of subject matter into specific steps. A list of objectives helps to focus the learner's attention on key issues and sequences and so facilitated learning.

5. As the objectives express the outcomes of a module in terms of observable behaviour, students can themselves assess whether they have or have not achieved the outcome. Learning outcomes can be measured by both student and teacher with a high degree of accuracy.

B. Techniques of writing objectives:

Different educationists like Gronlund (1970), Mager (1975), Popham and Baker (1970) and Briggs (1970) have put forward different techniques of writing objectives. Each technique differs slightly from the others, but broadly agrees about the emphasis on specificity.
In writing the objectives for the modules, the approach of Gronlund of writing objectives at two levels viz. General and Specific, was followed.

(4) Pre-test/Post-test Design:

After identification of objectives pre-test/post-test was designed to assess the achievement of the objectives by the learner. The pre-test/post-test was designed according to the objectives to be attained in the module.

(5) Selecting, Analysing and Sequencing the Content:

One of the major steps in instructional design is the selection, analysis and sequencing of the content. After defining the objectives the content matter is considered in the light of the objectives and the learner’s capability. The content is selected in such a way that it clearly leads to the achievement of the general objectives already defined. For this purpose there are three kinds of analysis (Gagne and Briggs 1979) that can be performed on general objectives. These were:

i) Information processing analysis – This identifies the sequence of decision and actions involved in the achievement of an objective.

ii) Task clarification – This categorises the types of learning outcome in order to identify the conditions of learning (Gagne 1970).

iii) Learning task analysis – This is to reveal the enabling objective for which the teaching sequence is to be made.

In design and development of these modules, two types of analysis viz. (i) task clarification and (ii) learning task analysis was carried out for analyzing the content.

Clustering of Objectives into Instructional Unit and Sequence of Content:

The analysis of the content as stated above revealed the sequence of pre-requisite learning and based on that the sequencing of the content was done. After doing that, the general objectives to be achieved in the module were clustered into learning units covering similar objectives in one unit.

(6) Production of the First Draft:

The first draft of a module was produced in the following format:

1. Introduction
2. Contents
In the preparation of the first draft of all the five modules, all possible efforts were made to incorporate necessary characteristics to be presented in a self-learning module to make it an effective learning tool.

Principles of Learning Applied to the Self-Learning Modules:

While developing the learning material, the following principles of learning and instruction were taken into consideration.

i) High motivation facilitates fast learning.

ii) Active participation promotes fast learning and longer retention.

iii) Individual differences result in different learning styles.

iv) Learning in small steps with feedback (immediate knowledge of result) accelerates the process of learning.

A print material though having several advantages over other types of instructional media, suffers from the weakness of being a passive one. To overcome this weakness, effort was made to make it active by the following techniques:

i) **Active learner**: To keep the learner active, while studying the module, the following techniques were used:

- Paragraph heading as question;
- Rhetoric (impressive) questions;
- Conversational format;
- Incomplete sentences to be completed by the learner;
- Intext questions;
- Practice Task;
- Asking learner to label diagram;
- Asking learner to draw diagram;
- Asking learner to supply missing data etc.

ii) **Access devices**: The purpose of access device in print material is to provide interest and effective access to the material. It helps in gaining control and in arousing and maintaining the attention of the learner. Some of the access devices adopted in the modules were:

- Content list
- Introductory passage
- Heading number system
- Verbal sign posts like
  - "At this stage".
  - "Here is an example".
  - "Look at the diagram" etc.
- Visual sign posts like – Bold letters, Capital letters, Underlining to differentiate heading and sub-heading and Boxes for important points.

(7) **Validation:**

After production of the first draft, each module was subjected to three types of evaluation—self-evaluation, expert appraisal and evaluation by students.

In the self-evaluation, the content portion of the modules had been checked regarding its factual correctness and its relevance to the objectives.

In the expert appraisal, comments and suggestions had been sought about the presentation of the material, and the requirements for an instructional material to become a self-learning module.

In evaluation by the students, suggestions based upon the difficulties faced by the students regarding the content had been incorporated to simplify the module.

(8) **Final Draft:**

The development of all the five modules can be summarised in the following way:

First of all five important topics of environmental education were selected. These were:

1. Air Pollution
Then the objectives at the design stage and also during the use of the modules were identified and written by keeping in view the expected outcome from the students. After defining the objectives the subject matter was considered in the light of the objectives and the learners' abilities. The content was selected in such a way that the general objectives could be realised. For this purpose, two types of analysis namely (i) task clarification and (ii) learning task analysis was done. This analysis disclosed the sequence of pre-requisite learning and consequently sequencing of the content was carried out. After that, the objectives to be achieved in the modules were clustered into learning units covering similar objectives in one unit. Relevant diagrams and tables were used for illustration. The first draft of all the five modules were presented in the following format:

1. Introduction
2. Contents
3. Objectives
4. Entry Behaviour Test/Pre-Test
5. Feedback to Entry Behaviour Test
6. Input
7. Practice Task
8. Feedback to Practice Task
9. Post-Test
10. Feedback to Post-Test

Next, each module was subjected to three kinds of evaluation – self-evaluation, expert appraisal and evaluation by students. Various comments and suggestions regarding the content and questions were incorporated and necessary modifications of the first draft were carried out.
Thus, after carrying out all the above steps the final drafts of all the five modules were prepared. The copies of all the five modules are given in Appendix-I.
CHAPTER – II B
REVIEW OF RELATED STUDIES

At the initial stage of the present study, the search for related literature was carried out and work in the field of teaching learning process studied. With a view to seeking some guidelines from the work of previous researchers, which could be of some help to the present investigation, the results of some of the related studies are discussed below to formulate hypotheses and get insight into variables.

2B.1 Environmental Education:

The present century can be described as the era of development as in this century the world economy has expanded manifold. Production became the key to prosperity and peace. Industrialization is truly a factor for this development, but the evil effects of industrialisation and deforestation for agricultural growth are now apparent. Oxygen, essential for breathing, has become polluted. Carbon dioxide and other gases have spread in the atmosphere, causing acid rain. Forests have been disappearing and lakes have dried. Water from rivers is not even fit to bathe in, let alone drinking. The sight of an open and clean sky has become a dream (Jerath and Saxena, 2001).

Environmental education is defined in terms of its goal of creating an environmentally literate society, and in the process fitting it into the formal education system (Leinbach, 1999). A broad framework for environmental literacy was established through a situational example and then confirmed through the literature. The framework was expanded by the use of a document entitled ‘Developing Environmental Understanding’, written by McClaren, Hammond, and Fulton in 1996. An argument was then made for incorporating environmental education into American schools.

A group of adult environmental technology students at a community college in central Canada were familiarized with the concepts of pollution prevention through a series of popular environmental education exercises (Bauer, 2000). Using a systematic approach, modeled on an existing pollution
prevention planning guide, students conducted a facility-wide pollution assessment; documented, organized, and summarized their findings; and ultimately generated a list of possible options for source reduction and the elimination of wastes on campus, or both. The group identified a number of housekeeping initiatives, as well as other process and system modifications that could immediately, and in the long-term, improve the environmental performance of learning approaches of the various exercises. This proved to be an effective means in bringing about the empowerment of the participant group. Their transformation, and that of their community (i.e., the community college), from an environmentally complacent to an environmentally conscious citizenry was initiated.

Ratanapojnard (2001) conducted a study on primary school children to: (a) develop and implement Community-Orient Biodiversity Environmental Education (COBEE) program in Buriram in northeastern Thailand; and (b) determine its effect on biodiversity-related knowledge, values, and behaviour among rural fifth and sixth grade students. Three major findings of the study were: (1) an environmental education programme could be designed and implemented to produce positive effects not only on objectives identified as the foundation of environmental education (e.g., knowledge, attitudes, and behaviour), but also on students’ other academic attitudes and development; (2) based on qualitative data, the relative success of COBEE indicated that curriculum, instruction, nature experience, and other facilitating components are critical to the effectiveness of an environmental education programme; (3) fifth and sixth-grade children in rural northeastern Thailand had an environmental value system different from peers in Connecticut.

The findings implied that: (a) to make an environmental education programme successful, sufficient supports must be provided; (b) the natural world is a heightened learning environment rich with potential teaching possibilities and diverse learning challenges; and (c) environmental education can have a significant role in general education reform efforts.

Worldwide efforts are being made to improve the quality of human life and the quality of the environment. According to Sall (1999), in order to achieve these ends, educators must prepare individuals to become
environmentally literate citizens and well-informed decision-makers in a fast changing technological world. This descriptive study used surveys to determine the status of environmental education in East Tennessee school systems as perceived by elementary and middle school teachers. Through this study, information was provided about what is being done and what needs to be done to improve environmental education in the State of Tennessee.

The research findings suggested that teachers believed that it was important to take time to integrate environmental concepts and issues into subjects at all grade levels of elementary and middle schools. In addition, this study also revealed that teachers would infuse environmental education into their curriculum if they had better access to resources/aids for teaching environmental concepts.

Thus, it is revealed from the above recent studies that the need of the hour is to educate the masses on the global level regarding environmental problems. This can be achieved by incorporating environmental education at all levels of education (Leinbach, 1999; Sall, 1999; Bauer, 2000; Ratanapojnard, 2001).

The following studies also reveal the environmental problems at the national level:

According to Bahuguna (1998) only 20 percent of the people of the world enjoy a luxurious lifestyle due to modern technological development whereas the same number of people have no proper habitat. Nutritious food is a far off dream for them. They do not even have access to safe drinking water. And these are the people about whose development there is so much hue and cry. The major problem human beings are facing today is the depletion of three renewable resources-water, land and forest.

In Himachal Pradesh alone, people are annually using 109 million cubic metres of fuel wood as against the prescribed yield of 0.7 million cubic metres. At this pace we are not only miles away from the sustainable forest management but heading for a biological erosion. The present demand for timber is 27 million cubic metres while the permissible limit is only about 12
million cubic metres. This has not only resulted in timber smuggling but is also dissuading the people from participating in social forestry programmes, Khosla (1998).

In a national seminar on protection and preservation of animals, it was reported that 60% of the stray cows die due to consumption of polythene bags. Five cows were choked to death at Jaipur due to blocked digestive tract following consumption of polythene bags. An eye-opening news item in ‘The Tribune’ (Feb. 4, 98), highlighting “287 foreign bodies inside a cow” revealed to us what deadly injury we are causing to these helpless creatures. Forty-eight kg of polythene and 287 foreign bodies were taken out by the veterinary surgeons Singh and Singh of Jammu University from two cows. The scientists of the veterinary Department of H.A.U Hisar, come across 25 such cases every year on an average, and strongly believe that there are much larger number of stray animals which die after consuming polythene simply end up in death. Dumping the polythene bags is also not an environmentally-sound approach, due to their non-degradable nature. Mechanical shredding of polythene reduces the fertility of soil, as the shreds get mixed up with the soil particles. Similarly, burning of polythene is harmful as it releases toxic gases like dioxins which have ill effects on health. Thus, it is not safe to throw, dump or even burn the polythene (Kaushik, 1998).

Johar (1998) observed that the ever increasing use of synthetic goods can lead to serious consequences, short term glitter notwithstanding. Chemicals, fertilisers, insecticides and pesticides are causing water pollution. Soil fertility is going down as a result of the excessive use of chemical fertilisers, nitrates and in some cases by excessive irrigation. Every year more than 200 million tonnes of carbon monoxide and 50 million tonnes of various hydrocarbons are being pumped into the atmosphere. Over 150 million tonnes of sulphur dioxide is also being thrown into the sky. The result is acid rain over many regions with consequences not unknown. The protective layer of the earth, which saves it from ultraviolet rays, is in danger. There is already a big hole over the Antarctica.

Pollution is a gigantic problem which requires concerted efforts and co-operation of not only all the governments of the world, but also the
technologists, industrialists, religious heads, agriculturists and housewives (Bhatia and Sharma, 1994). A number of international conferences have been held with the aid of UNO and its subsidiaries, to focus attention on the problem of pollution and formulate measures to overcome it. A united nations sponsored conference on Human Environment held at Stockholm in 1972 has formulated 109 recommendations for adoption by the governments and international organisations to fight the menace of pollution. The more important ones are:

i) Identify the source and cause of pollution.

ii) Know the carrying capacity of the environment.

iii) Bring down the emission of pollutants within the carrying capacity of the environment.

iv) Develop neutralizer for each type of pollutant.

v) Identify areas where pollution and contamination are caused by illiteracy and poverty.

vi) Chalk out both short term and long term plans for pollution control.

Ludhiana seems to be sitting on a “garbage bomb” which is ticking away to an almost certain explosion, Prashar (1998). It has now become a life threatening menace not only for its own citizens but also for other parts of Punjab. The mega city has no sewage treatment plant. Untreated domestic and industrial sewage of the city is emptied into the Buddga Nullah. The Nullah, in turn, joins the mighty Satluj every day and distributes it all over the State through irrigation canals. This polluted water is in turn used for growing food crops, vegetables and fruits and is a known carrier of diseases.

In another study, Sharma (1998) remarked that Chandigarh, too, is slowly being gripped by vehicular pollution. Chandigarh has the highest vehicles per person as compared to any other part of India. These vehicles cause not only air but also noise pollution. If an effective management measure such as introduction of a viable public transport system from Panchkula to Chandigarh and from Mohali to Chandigarh and back (particularly during office hours), is not taken in time, it too would become a polluted city.
So, in conclusion, several recent studies at the international level (Leinbach, 1999; Sall, 1999; Bauer, 2000; Ratanapojnard, 2001) and the national level (Bhatia and Sharma, 1994; Bahuguna, 1998; Khosla, 1998; Kaushik, 1998; Johar, 1998; Sharma 1998) focus on the environmental problems. This points towards the globalization of environmental education.

2B.2 Self-Learning Modules:

Mavi (1981) developed programmed learning units in Physical Geography. Programmes were tried out on small groups and in a final field-testing situation on 124 students of class IX of Sainik school. The findings were: 95% of the students were able to respond to 95% of the frames correctly. They felt that learning through programmes was easy, interesting and stimulating. Further sequence progression charts revealed the smooth flow of information through the frames.

In another study, Yang (1989) studied the validation of self-instructional food service inventory control system module. Because adjusted mean scores on the achievement pre-test between the two experimental groups were significantly different, with the mean scores for the self-instructional treatment being higher, the inventory control self-instruction method was judged at least as good as the lecture method. The students’ responses to the attitude inventory, showed that those in the self-instruction group had overall favourable attitudes towards the module. Therefore, the self-instructional method appeared to be an effective innovation. Further use and study of this method for teaching college students and practitioners seems justified.

Whereas Lee (1991) found that instructional strategies such as adjunct questions and visualization should be used with caution, because they may not always facilitate self-paced prose learning for either high school students or adults.

The effectiveness of the reading materials on the girl dropouts living in Delhi slums was studied by Khanna (1983). The major findings of the study were: The girl dropouts who were fluent readers, took on an average 75 minutes for reading the module and another 35 minutes for attempting the tests. Those who were poor readers took almost double the time. On the
effective side, it was found that after exposure to the module, the average score of the girl dropouts on the opinionnaire, increased from 7.5 to 13.5, indicating a positive shift. A majority of them expressed their desire for reading more of such material. The result of the follow-up carried out with 12 girl dropouts selected from the original sample, indicated that the module was retained by all of them. They were able to recall not only the treatment given to them but also some of its contents.

In a study on "Matching chemistry instructional methods with perceptual learning style preferences of eleventh-grade women: Effect on attitude and achievement" (Curry, 1994) investigated the relationship between the learning style perceptual preference of 11th grade young women and their attitude and achievement in Chemistry. The data indicated that a knowledge of both an individual's learning style, perceptual preference and utilisation of appropriate learning style instructional strategies by a science educator, would improve attitudes and achievement in the classroom.

Singh (1993) investigated the relationship between group empowerment and self-directed learning in selected small groups and observed the enhancement of competencies of the self-directed learners, which helped the groups become better empowered.

Berger (1990) conducted a qualitative study of the process of self-directed learning and concluded that most of the participants judged the quality of their learning projects through their own internal standards and external signs of recognition.

However, very few studies have shown that conventional teaching is as good as SLM.

A study by Umar (1999) in "Hypermedia based learning package embedded with different learning strategies", showed that no single strategy was better than the others. Also a study on "Librarian's self-directed continuing professional learning" (Valerjs, 1996) revealed that those who scored high on professional achievement were not necessarily the same individuals who were most involved in self-directed learning.

Nanavati (1981) studied the effectiveness of a Learning Package on population education. The major finding of the study was: The learning
package was more effective than the traditional method in teaching the content of population education to the pupils of class IX. In contrast, Patki (1979) conducted a comparative study of the effectiveness of multimedia learning package (MMLP) and structured learning in a polytechnic situation. The main findings were: the mean score of Group I taught through MMLP was found to be lower than the Group II taught by structured lecture method, indicating structured lecture as a superior method.

A self-learning package on the three-phase induction motor was developed by Ghalib (1987) and it was tried out on 33 students of a polytechnic. The result of the pre-test and post-test indicated a gain of 68.8 per cent, showing the effectiveness of the package. The result of the attitude scale indicated the acceptance of the package by the students. According to the opinion of the teacher, the package was satisfactory.

In another study, Sulaiman (2001) studied 'The effect of varied instructional text design strategies on the achievement of different educational objectives' and reported that there were significant differences in student achievement when the self-instructional module was used.

Jayalakshmi (1985) studied the effectiveness of the modules as instructional materials in respect of intelligence and English-reading comprehension. The main findings of the study were: (i) The instructional strategy for learning educational psychology at the B.Ed. level was quite effective; (ii) The instructional modules had potentiality for use in any institution with marginal change in personnel; (iii) The modules as a whole had provided good motivation for the study of Educational Psychology at the B.Ed. level; (iv) The different enabling activities had been effective in contributing to better achievement; (v) Facility with language was found to be a significant factor affecting the performance of this group; (vi) Learners were helped in acquiring a better knowledge about certain classroom techniques like discussion.

An evaluation of six learning modules based on industry-related Applied Mathematics problems was conducted by Smith (1989). The major conclusions of this investigation were as follows: (i) project AIM application (in mathematics) appears to give secondary schools a teaching resource that has
a high degree of pedagogical flexibility; (ii) students can successfully engage in real-world problem solving and exhibit use of reasoning, writing and mathematical abilities; (iii) it could be instrumental in bringing about the realisation that mathematics and its applications are inseparable; (iv) the learning modules were closely aligned with the NCTM (National Council of Teachers of Mathematics) standards' goal of having students instructed in application.

In his study on “Development and Evaluation of a Self-learning Module on Evaporation” (Saikia, 1992) concluded that:

i) A self-learning Module is quite effective as indicated by the pre-test/post-test scores.

ii) The module is accepted by the student as an effective resource for learning.

iii) The module is successful in facilitating learning by the low achievement group.

In contrast in a study on ‘The effectiveness of self-learning modules in Chemistry on achievement of polytechnic students in relation to their cognitive style’ Misra (1994) found that:

i) There was significant difference between Field Independent and Field Dependent students in terms of achievement in Applied Chemistry, irrespective of methods of instruction.

ii) There was no significant interaction between cognitive style and methods of instruction.

Pant (1997) studied the effect of guided instruction through self-learning modules on the achievement of students in book-keeping and accountancy and found guided instruction through SLM a superior strategy of teaching as compared to the conventional mode. In addition, self-learning modules influenced considerably the learning style of students. On the other hand, research studies on ‘Engaging adult learners in self-directed learning and its impact on learning styles’ (Haggerty, 2000) revealed that the majority of the subjects still preferred to be teacher directed.

In his study on ‘The effectiveness of self-learning modules in applied physics on achievement of students of polytechnic in relation to gender and
personality’ (Narula, 1999) found self-learning modules to be superior strategies of teaching compared to conventional methods. In addition, female students achieved higher scores than male students in applied physics. Personality did not significantly affect the achievement of students in applied physics.

Thus, several recent studies as discussed above, namely: Mavi (1981), Khanna (1983), Jayalakshmi (1985), Yang (1989), Smith (1989), Berger (1990), Saikia 1992), Singh (1993), Curry (1994), Pant (1997) and Narula (1999) showed SLM to be significantly better as compared to Traditional Teaching strategy, whereas Valerjs (1996) and Umar (1999) found SLM equivalent to Traditional Teaching. On the other hand, Patki (1979), Lee (1991) and Haggerty (2000) found Traditional Teaching strategy to be better than SLM.

2B.3 Altruism:

Clary (1986) examined the sustained altruism (i.e. willingness to help that extends over time) of 162 subjects (aged 16-40 years). Using a prospective format, it was predicted that subjects with a socialization history had exposure to nurturing parents who modelled altruism. The altruism of the normative subjects, however, was expected to increase, given certain situational conditions. As predicted, the rate of sustained altruism of normative subjects in highly cohesive groups was increased to a level comparable to that of autonomous subjects. On the contrary, the altruism of autonomous subjects was not affected by the training group experience.

Driver (1987) examined the hypothesis that people who tend to have positive moods, high self-esteem, and a positive sense of well being would feel more benevolent towards others than individuals characterized by more negative moods, low self-esteem and a poor sense of well being. Results from 68 adolescents neither confirmed nor refuted the hypothesis.

Barber (1994) with 86 university students, validated a new helpfulness attitude questionnaire and indicated that helpfulness was greater towards family members than for people in general or strangers. Moreover, social attitudes were just as favourable for close friends as for family members.
The results of a study by Batson, Todd and Bromett (1995) showed that feeling empathy for another member of a collective group in a social dilemma would create an altruistic desire to allocate resources to that person at the cost of reducing collective good. Moreover, he suggested the importance of considering concern in others’ welfare (altruism) as a distinct motive which may operate in social dilemmas.

Mills, Pedersen and Grusec (1989) examined the sex differences in reasoning and emotion about altruism in 35 males and 35 females, aged 15-60 years. The subjects were presented with a choice between self and others and asked to decide what they would do. They usually made self-sacrificing choices with no differences found between women and men in the distribution between self- and other choices. Women used more empathic reasoning with other choices and attributed their self-choice more to minimal conflict and less to concern for the others’ interests. Sex differences were also found in the subjects’ self-reported feelings about their choices.

Anderson (1993) examined qualitatively, gender differences in altruism in 27 males and females and supported the notion that women have a strong relational capacity and men have a more autonomous sense of self.

A study was conducted on 192 American college students who read a scenario depicting a person who helped someone in financial need (Quigley, Gaes and Tedschi, 1989). The study showed that any information that could suggest selfish motivation (whether the pro-social actor was aware of the information or not) was found to detract from attribution of altruism, charitableness, benevolence and friendliness. When no motive for selfishness was present, positive attribution occurred.

Winniford, Carpenter and Grider (1995) explored traits and motivations in a sample of 443 college students involved in service organisations. Sixty three percent of them had been involved in volunteer work before entering college. Altruistic motives were rated by them as most important, followed by egoistic motivation and social obligations. Factor analysis confirmed the construct validity of the instrument and accounted for 54.9% of the variance in the subjects’ initial motivation for continued involvement. Content analysis of
open-ended questions showed that altruistic motivation was cited as being important.

Kang (1999) studied the 'Motivational factors of Asian/Pacific Islanders entering a helping profession'. The data indicated that the following factors were important in influencing the students' decision to enter a helping profession: educational achievement, hard work and perseverance, giving back to one's community, enjoying helping others, viewing the helping process as important and the belief in the individual equality. On the other hand, a study by Cahill (1996) on 'The nature of police values before and after recruitment training and their subsequent experience as police officers revealed that altruism decreased, not only as a result of training, but also due to the officers' two and a half years working experience.

The effect of 'Self-actualization as benefactor on altruism', was investigated by Sharma (1992). Forty-eight female university students completed the 'Rotter's Internal - External factorial design', with level of self-actualization. The results showed that the interaction effect of self-actualization was significant for altruism, indicating that subjects scoring high on self-actualization scored the maximum on altruism scale. In another study on 'A comparison of values among counselling psychologists', Downie, (1996) averred that both scientist-practitioners and practitioners placed higher value on social interaction and altruism.

Eighty female adolescents who differed in public and private self-consciousness and in self-reported altruism were investigated by Smith and Shaffer (1986). They were afforded an opportunity to assist a person in need. As anticipated, subjects high in private self-consciousness provided more assistance to the recipient than did subjects low on this attribute. However, there was a tendency for highly private subjects to be less helpful if they were also high in public self-consciousness. Analysis revealed that self-reported altruism reliably predicted the pro-social action of those low in private self-consciousness.

A self-report altruism scale was administered to adolescents in Australia, Egypt, Korea, China and USA, to study cross cultural assessment
of altruism and its correlates by Johnson, Danko, Darvill and Bocher (1989). They found that mean scores on three altruism measures differed significantly across samples. Sex differences, when significant, indicated that males gave and received more help. Amounts of giving and receiving help and the rated importance of helping were highly correlated both within and across samples. Data supported the existence of reciprocal altruism.


2B.4 Emotional Intelligence:

Bar-on-Reuven (1997) a pioneer researcher in assessing emotional intelligence found identical patterns of strengths and weaknesses for men and women world wide among the Igbuin, Nigerians, Germans, Israelis, Americans and Tamils in Sri Lanka. Bar-on's conclusions were based on a study of the emotional intelligence of more than fifteen thousand people in a dozen countries in four continents.

Since emotional intelligence is an emerging concept very few studies have been carried in the last few years on the relationship of emotional intelligence and academic achievement. Some of these studies are as follows:

In his study on ‘Emotional Intelligence: A different kind of smart teaching for success through an emotion-based model’ Ohm (1998) confirmed a link between healthy emotional skills and personal and academic achievement. Also, Gautam (2000) and Miglani (2001) found a significant relationship between emotional intelligence and academic achievement. Gandhi (2001) too, discovered a significant relationship between emotional intelligence and self-esteem of adolescents but no difference between emotional intelligence of male and female students. Similarly Sarabjit (1999) and Sanjeev (2001) found no significant difference in the emotional intelligence of boys and girls.
On the other hand, Tapia (1998) in ‘A study of the relationships of the emotional intelligence inventory (intelligence tests)’, found that there existed a lack of relationship between emotional intelligence and academic achievement.

A few studies have been carried out on the relationship of emotional intelligence with some other variables such as adjustment, self-concept, verbal and non-verbal intelligence. Gautam (2000) found a significant relationship between self-concept and emotional intelligence. A significant relationship between verbal intelligence and emotional intelligence and also between non-verbal intelligence and emotional intelligence was discovered by Sanjeev (2001). However, Sarabjit (1999) found no significant relationship between emotional intelligence and adjustment of adolescents.

Relevant studies on Environmental Education, Self-Learning Modules, Altruism and Emotional Intelligence have been discussed above in the light of the topic of the present research “Effect of Self-Learning Modules on Achievement in Environmental Education in relation to Altruism and Emotional Intelligence”.