CHAPTER – 5
SUMMARY

5.1 Introduction

5.1.1 What is Environment?

Environment refers to anything that is immediately surrounding an object and exerting a direct influence on it. Environment regulates the life of the organisms including human beings. Its chief components are soil, water, air, organisms and solar energy.

The term environment can be used both at a large scale and at a small scale. At a large scale, it is the environment of the habitat in which an organism lives. Here it is reflected in the form of regional or global climatic conditions. At a small scale, it is immediate environment of the organism, which may be very different from the habitat. Hence it is reflected in the form of local climatic conditions or microclimate.

Environment not only includes air, water and land but also other physical surroundings like buildings, open spaces, land etc. and the living organisms like plants, animals and human beings with whom one interacts. Environment has a strong influence on the living organisms and in turn the living organisms affect and alter the environment. In fact, they interact, influence each other and maintain a balance in nature**.**

5.1.2 Concept of Environment Degradation

Mankind has been overusing and depleting natural resources. The over-intensive use of land has been found to exhaust the capability of the ecosystem to support the growing demands of more and more people, all requiring more intensive use of resources. Industrial growth, urbanization, population growth and the enormous increase in the use of consumer goods, have all put further stresses on the environment. They create great quantities of solid waste. Pollution of air, water and soil have begun to seriously deteriorate the environment. (Bharucha, 2005).

Environmental degradation leads to many harmful effects. Human health might be at the receiving end as a result of the environmental degradation. Toxic chemicals and harmful radiations have the potential of causing serious problems of human health. Deforestation, global warming, overpopulation and pollution are few of the major causes for loss of biodiversity. The presence of chlorofluorocarbons, hydro chlorofluorocarbons in the atmosphere is causing the ozone layer to deplete. As it will deplete, it will emit harmful radiations back to the earth.

Environmental degradation is one of the largest threats that are being looked at in the world today. The United Nations International Strategy for Disaster Reduction characterizes environmental degradation as the lessening of the limit of the earth to meet social and environmental destinations, and needs. Environmental degradation can happen in a number of ways. At the point when environments are wrecked or common assets are exhausted, the environment is considered to be corrupted and harmed. There are a number of different techniques that are being used to prevent this, including environmental resource protection and general protection efforts.

5.1.3 Worldwide Efforts Towards Environment Sustainability

In 1969, the first, iconic photos of the Earth from outer space touched the hearts of humanity with its simplicity and beauty. Seeing for the first time this "big blue marble" in an immense galaxy brought home to many that we live on One Earth — a fragile, interdependent ecosystem. And our responsibility to protect the health and well-being of that ecosystem began to dawn on the collective consciousness of the world. (Jaiswal, 2012)

With the ending of the tumultuous decade of the 1960s, its highest ideals and visions began to be translated into practical form. Among these was the environmental vision — now, quite literally, a global phenomenon. As universal concern about the healthy and sustainable use of the planet and its resources continued to grow and many major conferences and proceedings took place at international level. Many agendas were set, agreements signed and many blueprints were prepared to save earth worldwide in these conferences and seminars.

The UN, in 1972, convened the United Nations Conference on the Human Environment, in Stockholm. Commission on Environment and Development was established in 1987. It developed the theme of sustainable development "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Meeting in Rio de Janeiro, in 1992, the "Earth Summit", adopted a blueprint for the protection of our planet and its sustainable development. In 2015 United Nations Climate Change Conference, was held in Paris, France.

This is evident from these conferences and meetings held worldwide to protect environment that world has understood the urgent need to plan and implement strategies to save the environment and working towards it. In India, government had been making policies and schemes to control pollution and protect biodiversity even before independence.

5.1.4 Efforts by Government of India Towards Environment Sustainability

The government of India is working towards the controlling pollution and doing many efforts in this direction. The central pollution control board has been improved to survey pollution for prevention and control of pollution, submission of an environmental statement by the polluting units, adoption of clean technologies in small scale industries, mapping and analysis of environmental data, development of standards of industries, pollution control and monitoring, economic instruments like enhancement of cess rates on water consumption, pollution control equipments, pollution abatement equipment, biodiversity conservation. Plan also ensured public participation, launching a new scheme as „Paryavaram Vahini", Environmental education, training and information. Government has enunciated policy statements on abatement of pollution and on conservation; attention was given to make pollution control laws during eighth plan period on implementing India's international obligations like Rio-agreements. (Ministry of Environment and Forests, 1993)

The recent **Clean India Campaign** in the leadership of Prime Minister Narendra Modi is also influencing the youths of India to a much extent.

Government of India is also doing many efforts in the direction of educating people about environment. Ministry of Environment, Forest and Climate Change (MoEFCC) had launched a scheme to promote environment education and awareness in India.

In India, to protect environment many legislative measures and policy instruments are undertaken. But administration and implementation is the main problem faced in India. Though poverty and underdevelopment are main impediments to environment protection measures in India, the rigidity in existing structures is another impediment. The gaps in policy implementation indicate the weakness in enforcement of policies. Ministry of environment and forest (MoEF) is still perceived as a new comer within the government administration. Despite of MoEFs claims that India has introduced plethora of environmental laws and mechanism, but they were noticed working unsatisfactorily. J.B.D Souza, a former municipal commissioner of Bombay remarked that there is a profusion of laws that do not serve their purpose and eventually create new problems. In India problems are found for every solution. To control pollution, it requires substantial expenditure to adopt appropriate technology, due to lack of technical and administrative and sufficient economic resources resulting in inadequate enforcement. The absence of the public participation is a great impediment (Priyadarshini and Devi, 2010)

As the earth's natural resources are dwindling, it is evident that something needs to be done. People often feel that managing all this is something that the Government should do. But if they go on endangering this environment, there is no way in which the Government can perform all these clean-up functions. It is the prevention of environment degradation in which public must take part that must become a part of all their lives. Just as for any disease, prevention is better than cure. To prevent ill-effects on environment by our actions is economically more viable than cleaning up the environment once it is damaged. (Bharucha, 2005)

5.1.5 Need of Environment Education

There are increasing needs for public participation due to the recent change in sources of environmental problems. Today, the sources of pollution have shifted from production to consumption processes. The Human Development Report of 1998 (UNDP) affirms this trend and states that growth in consumption and unbalanced consumption patterns are placing unprecedented pressure on the environment. In this light, the acceptance of pro-environmental behavior by general public, that is, to adopt sustainable life style, is an urgent issue in protecting environment. The participation of citizen can complement existent legal and economic instruments, which are facing shortage of institutional, managerial and financial capabilities for enforcement. The increase of participation of citizen means that legal frameworks would be more respected and economic mechanisms would be more accepted thus increase their effectiveness (Iizuka, 2000).

Public participation can be enhanced by creating awareness among people about environment and making them and knowledgeable about the current environment issues and teaching them good values towards environment.

Interestingly the new wave for infusing Environment Education (EE) into curricular processes in schools and colleges in India has been triggered by the Supreme Court in response to MC Mehta's Public Interest Litigation. However, responses to this though positive, have been slow. It is as if Government wishes to appease the Court by putting out statements that it has responded to the Supreme Court's orders by instructing organizations such as the NCERT and SCERTs to introduce EE in schools and the UGC in colleges. While some information on environment has begun to appear in textbooks, it is still poorly dealt with. Most of the 'gaps' in information are related to ecosystem studies and the species diversity and richness of our country. Biodiversity, especially in relation to the mega diversity status of India and the urgent need to conserve it, is conspicuous by its absence in school curricula and textbooks. At the college level the courses have not been altered to bring about a concern for environment conservation. Issues such as the loss of biodiversity and extinction of species are rarely included

in the curriculum at undergraduate or postgraduate levels. A major gap is concepts related to sustainable development. Most importantly formal curricular processes have not been aimed at creating pro-conservation behavior. (Bharati Vidyapeeth Institute of Environment Education and Research.,2004)

In India, there are only 123 colleges which offer bachelor's degree programme and 288 colleges which offer master's degree programs on environment sciences. Further, only 20 colleges offer courses like Diploma, 24 colleges, P. G. Diploma and 27 colleges offer M. Phil. Also only 59 colleges offer Ph. D. and just 20 colleges offer some certificate courses. (Target Study, 2016).

Thus, we can see that ratio of colleges offering environment courses are very few as compared to other courses. Moreover, all these are separate courses and degrees offered but the environment education is not taught as core course and as a compulsory subject with all other courses.

A study at Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER), Pune, both in rural and urban schools showed that information on environmental conservation rapidly percolates into the students' families and disseminates into local community thinking. Thus perhaps the most important tool for enhancing conservation awareness has remained essentially untapped in India. It has the potential to reach a large segment of India's population through an existing well-organized sector, which is essentially aimed at education and is responsible for the evolution of attitudes and behavioral changes in the country. College students are the opinion makers of tomorrow's society. They are also receptive to new ideas and are able to act for conservation if their concern is kindled. (BVIEER, 2004)

Today, all the development concepts begin with the concern of environmental issues and the need for sustainable alternative to current practices. Every country is trying to make necessary changes in the infrastructures as a step towards sustainable development. Environment

education is being talked about more and more in general but it remains a neglected course in favor of more traditional subject and specialization oriented requirements for higher education. Thus, the students remain ignorant of ecology, its impact of human beings and its impact of human beings and its vulnerability to human interference.

The myriad environmental problems facing our world today make the need for comprehensive and motivating environmental education even clearer. We believe that environment education is best developed and implemented in the educational institutions. But it is yet to become the integral part of curriculum at all levels of the education.

Environment education at college level is very critical because complex environmental changes require a well trained environmental workforce and educational citizens who have the knowledge and skills actively participate in conserving the environment and natural resources. Environmental education is also necessary for ensuring the health and welfare of the nation by protecting human health, providing quality education, creating employment opportunities, promoting sustainable development and protecting our natural heritage.

Various agencies and organizations are working to enhance formal environmental education programs that target students, teachers, and faculty, as well as non formal programs that target adults, communities, senior citizens, and other specific audiences outside the formal education system. These programs vary in scope and effectiveness, but all have contributed to the goals of environmental education. At the same time, it has been found that the field of environmental education faces many issues and challenges, such as limited resources to sustain programs over the long-term; gaps in program development and access to quality materials; and inadequate support for in-service and pre-service teacher training. In addition, because environmental education is not viewed as a national priority, universal guidelines do not exist to assure quality program development and implementation, and it is not often well integrated into state and local education reform efforts. (U.S. Environmental Protection Agency, 1996).

5.1.6 Need to Study Environmental Knowledge and Values

There are several principles that each of us can adopt to bring about environment conservation. This primarily comes from caring for our Mother Earth in all respects. A love and respect for Nature is the greatest sentiment that helps bring about a feeling for looking at how we use natural resources in a new and sensitive way. Think of the beauty of a wilderness, a natural forest in all its magnificence, the expanse of a green grassland, the clean water of a lake that supports so much life, the crystal clear water of a hill stream, or the magnificent power of the oceans, and we cannot help but support the conservation of nature's wealth. If we respect this, we cannot commit acts that will deplete our life supporting systems. (Bharucha,2005)

This love and respect for the nature and natural resources can be cultivated in people by making them knowledgeable and inculcating values for the environment. The best way to happen this is the educating them about environment. This will lead to their higher environmental knowledge and values which will further lead to their environment friendly actions and hence pro environmental behaviors.

Thus there is an urgent need of environmental studies. The researches on environmental knowledge and values at different levels will help in understating how people perceive environmental sustainability and how much efforts are required in this direction. As discussed in this chapter to study environmental knowledge and values at college level is of prime concern. How much students are knowledgeable and value their environment and what factors are responsible for their level of knowledge and values can help in understanding the how our efforts towards environment should be directed.

Environmental knowledge is the total understanding of people about their relationship to the earth and the universe. This knowledge includes the spiritual, physical, emotional, and mental aspects of a person and related components of the earth and universe to these aspects.

Environmental knowledge is facts or information about the environment. It is about the way we all should live. It is information about the environment that will lead to a concern for your own environment. When you develop this concern, you will begin to act at your own level to protect the environment we all live in.

Environmental values are inherent in feelings that bring about a sensitivity for preserving nature as a whole. This is a more spiritual, Eastern traditional value. There are several writings and sayings in Indian thought that support the concept of the oneness of all creation, of respecting and valuing all the different components of Nature. Our environmental values must translate to pro conservation actions in all our day to day activities. Most of our actions have adverse environmental impacts unless we consciously avoid them. The sentiment that attempts to reverse these trends is enshrined in our environmental values. (Indian Agricultural Statistical Research Institute,2012)

The value system has been altered with time. Similarly, with the large tracts of forest that existed in the past, cutting a few trees was not a significant criminal act. Today this constitutes a major concern. We need a strong new environmental value system in which felling trees is considered unwise behavior. With the small human numbers in the past, throwing away a little household degradable garbage could not have been considered wrong. But with enormous numbers of people throwing away large quantities of non-degradable waste, it is indeed extremely damaging to the environment and our value system must prevent this through a strong environmental value education system. Appreciating the negative effects of our actions on the environment must become a part of our day to day thinking. Our current value system extols economic and technical progress as being what we need in our developing country.

Environmental values have linkages to varied environmental concerns. While we value resources that we use as food, water and other products, there are also environmental services that we must appreciate. These include Nature’s mechanisms in cleaning up air by removing carbon dioxide and

adding oxygen by plant life, recycling water through the water cycle of nature, maintaining climate regimes, etc. But there is other aesthetic, ethical values that are equally important aspects of our environment that we do not appreciate consciously.

The most fundamental environmental sentiment is to value Nature herself. Appreciating the magnificence and treasuring life itself leads to positive feelings that are a manifestation of pro environmental consciousness. The one-ness of our lives with the rest of nature and a feeling that we are only a miniscule part of nature's complex web of life becomes apparent, when we begin to appreciate the wonders of nature's diversity.

Environmental values can simply be described as how sensitive the individual is to the environmental and environmental issues. When we talk about environmental values we know that there is no better measure of environmental responsibility than direct observation of young people, over a significant period, who are minimizing their environmental impact, reducing consumption and reusing and recycling materials.

Therefore, we can say that there is an urgent need of understanding the concepts of environment and developing environmental knowledge and values in people especially among youth as they are going to be the future policy makers and those who have to live in this environment for years.

5.2 Objectives Of The Study

Based on the above discussion, following objectives were framed for the study:

1) To study the level of environmental knowledge of the undergraduate students of The Maharaja Sayajirao University of Baroda.

2) To study the level of environmental values of the undergraduate students of The Maharaja Sayajirao University of Baroda.

3) To study the difference in environmental knowledge of undergraduate students of The Maharaja Sayajirao University of Baroda in relation to the

following variables:

i. Faculty

ii. Class

iii. Gender

iv. Family type

v. Family size

vi. Monthly Family income

vii. Place of residence

viii. Mother's education

ix. Father's education

x. School board of Education

xi. Medium of instruction in School

xii. Participation in environment related activities

xiii. Environmental education in school

xiv. Mass Media Exposure

xv. Civic Responsibility

4) To study the difference in environmental values of undergraduate students of The Maharaja Sayajirao University of Baroda in relation to the following variables

i. Faculty

ii. Class

iii. Gender

iv. Family type

v. Family size

vi. Monthly Family income

vii. Place of residence

viii. Mother's education

ix. Father's education

x. School board of Education

xi. Medium of instruction in School

xii. Participation in environment related activities

xiii. Environmental education in school

xiv. Mass Media Exposure

xv. Civic Responsibility

5) To study the relationship between environmental knowledge and values of undergraduate students of The Maharaja Sayajirao University of Baroda.

5.3 Null Hypothesis Of The Study

There will be no significant difference in the environmental knowledge of undergraduate students of The Maharaja Sayajirao University of Baroda in relation to the following variables:

i. Faculty

ii. Class

iii. Gender

iv. Family type

v. Family size

vi. Monthly Family income

vii. Place of residence

viii. Mother's education

ix. Father's education

x. School board of Education

xi. Medium of instruction in School

xii. Participation in environment related activities

xiii. Environmental education in school

xiv. Mass Media Exposure

xv. Civic Responsibility

2. There will be no significant difference in the environmental values of undergraduate students of The Maharaja Sayajirao University of Baroda in relation to the following variables:

i. Faculty

ii. Class

iii. Gender

iv. Family type

v. Family size

vi. Monthly Family income

vii. Place of residence

viii. Mother's education

ix. Father's education

x. School board of Education

xi. Medium of instruction in School

xii. Participation in environment related activities

xiii. Environmental education in school

xiv. Mass Media Exposure

xv. Civic Responsibility

3. There will be no relation between environmental knowledge and values of undergraduate students of The Maharaja Sayajirao University of Baroda.

5.4 Assumptions Of The Study

1) Environment education can play important role in making undergraduate students environment conservation conscious.

2) The environmental knowledge and values are necessary for promotion of environmental conservation.

3) Knowledge is prerequisite for the formation of value

5.5 Delimitations Of The Study

1) The study will be delimited to the undergraduate students of The Maharaja Sayajirao University of Baroda.

2) The study will be delimited to the study of environmental knowledge and values.

5.6 Methodology

The present investigation was undertaken to study the environmental knowledge and values of undergraduate students of The Maharaja Sayajirao University of Baroda. The present chapter describes the steps followed in methodology to conduct the study. They are as follows:

5.6.1 Pilot Study

5.6.2 Population of the Study

5.6.3 Sample Selection of the Study

5.6.4 Research Tools for Data Collection

5.6.5 Validity of Research Tool

5.6.6 Reliability of the Research Tool

5.6.7 Pretesting of the Research Tool

5.6.8 Data Collection

5.6.9 Tabulation of Data

5.6.10 Scoring and Categorization of the Data

5.6.11 Statistical Analysis of the Data

5.6.1 Preliminary Study

A Preliminary study was carried out on topic "Study of the environmental values of undergraduate students of The Maharaja Sayajirao University of Baroda." A sample of 120 undergraduate students was selected from faculties of Family and Community Sciences and Social work, Arts and Commerce, Science and Technology. A structured questionnaire was constructed which included related to the profile of the undergraduate students, multiple choice questions related to environmental knowledge, statements describing the values of the students in terms of their thinking, liking, beliefs, opinions, practices etc. and survey was carried out. Environment knowledge was taken as independent variable.

It was found that majority of the students were having moderate level of environmental values and knowledge. Significant difference was found in environmental values of students in relation to their Faculty, gender, family income and knowledge related to environment. A positive and moderately high correlation coefficient between environmental knowledge and environmental values

The pilot study revealed that the study designed along with its independent variables can be replicated on a larger sample which can reveal the environmental knowledge and values of the undergraduate students of The Maharaja Sayajirao University of Baroda, Vadodara in relation to the selected variables.

5.6.2 Population of The Study

The population of the study comprised of the undergraduate students of the Maharaja Sayajirao University of Baroda, Vadodara.

5.6.3 Sample Selection for The Study

- P**urposive convenient sampling method** was used by the researcher sample. All the faculties from The Maharaja Sayajirao University were listed down. Faculties which have undergraduate courses were separated from the list.

- The faculties selected were clubbed in five groups.
- This can be seen in the table below:

Categorization of faculties:

Group no.	Name of faculty group	Faculties Merged
1.	Arts and commerce	Faculty of arts, faculty of fine arts, faculty of performing arts, faculty of commerce, Faculty of education and psychology
2.	Science	Faculty of science
3.	Technology	Faculty of technology and engineering
4.	Medicine	Faculty of medicine
5.	Family and Community Sciences	Faculty of family and community sciences, Faculty of social work.

- Two hundred students were taken from each group of faculty making it 1000 and questionnaire were distributed.
- After separating the completely filled questionnaire, it was decided to take sample of 180 from each category of faculty. For this, 180 students were selected from each category of faculty with the help of random tables.
- Out of the one thousand undergraduate students, only nine hundred students who responded correctly to the research tool and selected by use of random tables were selected as data producing sample.

5.6.4 Research Tools For Data Collection

A structured questionnaire was prepared as a tool for data collection. The questionnaire of the study consisted of following three sections:

Section I: Profile of the respondents

Section II: Environmental knowledge of respondents

Section III**:** Environmental values of respondents

Section I : This section included items related to the profile of the undergraduate students such as their gender, age, education in school, academic stream, parents education, family status, environmental education as subject in school, participation in environment related activities, mass media exposure and civic responsibility.

Section II: This section included fifty four multiple choice questions to measure the knowledge of undergraduate students related to environment. The questions were framed according to the syllabus of environmental studies for higher education as per University Grand Commission.

Section III: This section consisted of forty three statements describing student's thinking, liking, beliefs, opinions, practices regarding environment as indicators of the environmental values. A three point scale was used for this purpose. Out of forty three statements, thirty were positive statements and thirteen were negative statements.

5.6.5 Validity of The Research Tool

The experts from various departments checked the tool for its content validity according to the objectives and aspects of the study, clarity of language and appropriateness of the response system. The suggestions given by the experts were incorporated before the tool was finalized. However, no major suggestions were received on the tool.

5.6.6 Reliability of the Research Tool

After validation, the next step was to check the reliability of the research tool. Test – retest method was used to measure the reliability of the tools. The co-efficient of correlation was calculated between two sets of scores. The tool was administered to the 20 undergraduate students from different faculties of The Maharaja Sayajirao University of Baroda, Vadodara. Five students each from faculty of Family and community sciences, Science, Arts and Technology were taken for the test. After a gap of fifteen days the tool was re administered to the same group of students.

A high correlation (0.82) was found between the two sets of scores revealing high reliability of the tools.

5.6.7 Pretesting of the Research Tool

After checking reliability, pretesting of the research tool was done. The tool was pre tested on ten undergraduate students of The Maharaja Sayajirao University of Baroda, Vadodara. The students selected for pre- testing of the tool took 20 minutes to respond to it. The purpose of the pre testing was to know the difficulty faced by the students in filling the questionnaire, time required for filling up the questionnaire and to check the clarity of the language. The students did not report any difficulty in responding to the questionnaire.

5.6.8 Data Collection

Data was collected from first year, second year and third year students of all the selected faculties. Both male and female students were selected and survey was carried out. The students were taken from classrooms, hostels, library, canteens and common gathering places.

5.6.9 Tabulation of Data:

The data thus collected was given codes and tables were prepared on excel. The data entry was done by the researcher herself. And after this the data was given for analysis to the expert of SPSS.

5.6.10 Scoring and Categorization of The Data

The research data on environmental knowledge and values of the undergraduate students were scored and categorized as follows:

5.6.10.1 Categorization of the faculties selected for the study:

Variable	Description	Categories
Faculty	Faculty of arts, faculty of fine arts, faculty of performing arts, faculty of journalism and communication, faculty of commerce, Faculty of education and psychology	Arts and commerce
	Faculty of science	Science
	Faculty of technology and engineering	Technology
	Faculty of medicine	Medicine
	Faculty of family and community sciences, Institute of Fashion Technology, Institute of hotel management and catering technology, Faculty of social work.	Family and Community sciences

As discussed in the sampling procedure, the faculties were categorized in above manner.

5.6.10.2 Categorization of class:

Variable	Description	Categories
Class	First year	First year
	Second year	Second year
	Third and fourth year	Final year

The students from first, second and third year were taken from all the selected faculties. The faculty of technology had fourth year students also, so for the uniformity, the third and fourth year were merged as final year category as per the advice of the experts.

5.6.10.3 Categorization of gender:

Variable	Description	Categories
Gender	-	Male
		Female

5.6.10.4 Categorization of medium of instruction:

The medium of instruction in school was categorized in two categories English and vernacular. The Gujarati medium was merged with Hindi and other medium as there were less students in these categories.

Variable	Description	Categories
Medium of instruction in school	Gujarati medium , Hindi medium Any other	Vernacular
	English medium	English

5.6.10.5 Categorization of board of school education:

Gujarati board and other state boards were merged in one category as very few students were from the other state boards.

Variable	Description	Categories
Board of school education	Gujarat board and any other state board	State board
	CBSE board	CBSE board

5.6.10.6 Categorization of mother's education:

The mother's education was categorized into three categories low, medium and high level of education.

Variable	Description	Categories
Mother's Education	Up to Primary School	Low
	Up to Higher Secondary Education and Diploma	Medium
	Graduation and Above	High

5.6.10.7 Categorization of father's education:

The father's education was categorized into three categories low, medium and high level of education.

Variable	Description	Categories
Father's education	Up to Primary School	Low
	Up to Higher Secondary Education and Diploma	Medium
	Graduation and Above	High

5.6.10.8 Categorization of family type:

The family type was grouped into two categories:

Variable	Description	Categories
Family type	-	Nuclear Joint

5.6.10.9 Categorization of place of residence:

The place of residence was grouped into two categories, urban and rural. The rural, semi urban and hostlers from rural area were grouped into one category as there were less respondents in semi urban students and students from rural area living in hostel.

Variable	Description	Categories
Place of residence	Urban area	Urban
	Rural area, Semi- urban area, From rural area and living in hostel	Rural

5.6.10.10 Categorization of monthly family income:

Based on the frequency distribution of the monthly family income of the respondents, following three categories were formed:

Variable	Description	Categories
Monthly family income	Less than 20000	Low
	20,000 - 40,000	Medium
	More than 40,000	High

5.6.10.11 Categorization of family size:

The following categories were formed on the basis of the frequency distribution of the family size.

Variable	Description	Categories
Family size	Upto 4 members	Small
	4 to 7 members	Medium
	Above 7 members	Large

5.6.10.12 Scoring and Categorization of environmental education as subject in school:

Students were asked whether they had studied environmental education in their school or not? The responses of the variable were scored as follows:

Response	Score
Yes	1
No	0

The categories for the variable were formed as follows:

Variable	Description	Categories
Environment as a subject in school	-	Studied environment education in school
		Did not study environment education in school

5.6.10.13 Scoring and Categorization of participation in environment related activities in school:

Students were asked whether they participated in environment related activities in school. The scoring of responses was done as shown in the table below:

Response	Score
Yes	1
No	0

The categories formed were formed were as follws:

Variable	Description	Categories
Participation In Environment Related Activities	-	Participated in environment related activities
		Did not participate in environment related activities

There were 22 activities related to environment were listed down. Respondents were asked to tick the activities in which they participated. According to that minimum and maximum scores are shown in table below:

Aspect	No. of items	Minimum score	Maximum score
Level of participation in Environmental Activities in school	**22**	**0**	**22**

Based on these scores, three categories of equal interval were formed as follows:

Variable	Range of score	Categories
Level of participation in Environmental Activities in school	16-22	High participation
	9-15	Medium participation
	0-8	Low participation

There were very few responses in high participation category, so the final categories formed were:

Variable	Range of score	Categories
Level of participation in Environmental Activities in school	9-22 score	More Participation
	0-8 score	Less Participation

Based on the intensity indices, the following categories were formed:

Variable	Range of II	Categories
Level of participation in Environmental Activities in school	0.51 - 1	More participation
	0 -0.5	Less Participation

5.6.10.14 Scoring and Categorization of mass media exposure:

The scoring given to the responses of mass media exposure were as given below:

Response	Score
Daily	3
Often	2
Sometimes	1
Never	0

So based on the scoring, the minimum maximum value of score will be:

Aspect	No. of items	Minimum score	Maximum score
Mass media exposure	**5**	**0**	**15**

Based on the minimum and maximum scores, three categories of mass media exposure were formed:

Variable	Range of score	Categories
Mass media exposure	**11-15**	High Exposure
	6-10	Medium Exposure
	0-5	Low exposure

There were very few responses in low mass media exposure, so the final categories formed were as follows:

Variable	Range of score	Categories
Mass media exposure	11-15 score	More Exposure
	0-10 score	Less Exposure

5.6.10.15 Scoring and Categorization of civic responsibility:

The statements on civic responsibility were scored as given below:

Nature of statement	Agree	Undecided	disagree
Positive	2	1	0
Negative	0	1	2

Based on scoring, the minimum and maximum values of score were calculated as follows:

Aspect	No. of items	Minimum score	Maximum score
Civic responsibility	**40**	**0**	**80**

After this, three categories of civic responsibility were formed based on minimum and maximum score.

Variable	Range of score	Categories
Civic responsibility	**54- 80**	Highly Responsible
	27-53	Moderately Responsible
	0-26	Less Responsible

After analyzing frequency distribution, as there were very few respondents were found in low category of civic responsibility, so finally the following categories were formed:

Variable	Range of score	Categories
Civic responsibility	54-80 score	Highly Responsible
	0-53 score	Moderately Responsible

Based on the intensity indices, following categories were formed:

Variable	Range of II	Categories
Civic responsibility	1.37- 2	Highly Responsible
	0.67-1.37	Moderately Responsible
	0 - 0.67	Less responsible

5.6.10.16Scoring and Categorization of environmental knowledge:

Scoring to the environmental knowledge tool was given as below:

Response	Score
Correct answer	**1**
No answer/ incorrect answer	**0**

Based on this scoring pattern, the maximum and minimum scores of environmental knowledge were:

Aspect	No. of items	Minimum score	Maximum score
Environmental knowledge	**54**	**0**	**54**

Three categories of knowledge were formed based on these scores:

Variable	Range of score	Categories
Environmental knowledge	37-54 score	High knowledge
	19-36 score	Moderate knowledge
	0-18 score	Low knowledge

To categorize the item wise level of environmental knowledge of the respondents, following categories were formed under each section of the environmental knowledge based on the intensity indices scores:

Variable	Range of II	Categories
Environmental knowledge	0.51 – 1	High knowledge
	0 -0.5	Low knowledge

5.6.1017 Scoring and Categorization of environmental values:

Environmental value statements were scored as follows:

Nature of statement	Agree	undecided	disagree
Positive	**2**	**1**	**0**
Negative	**0**	**1**	**2**

The minimum and maximum scores on environmental values were as follows:

Aspect	No. of items	Minimum score	Maximum score
Environmental values	**43**	**0**	**86**

Three categories of environmental knowledge were formed as follows:

Variable	Range of score	Categories
Environmental values	**57-86**	High values
	29-57	Moderate values
	0-28	Low values

After analyzing the frequency distribution, it was found that only four students fall under low values category, so the final categories formed were as follows:

Variable	Range of score	Categories
Environmental values	57-86 score	High values
	0-57 score	Moderate values

The statements of the environment values were categorized in following two categories based on respondent's

3) thinking, likeliness, belief, love for nature, discussion about nature, feelings and

4) practices, preferences, support for environment.

Based on the intensity indices scores further, following categories were formed:

Variable	Range of II	Categories
Environmental values	1.01- 2	High values
	0 - 1	Low values

5.6.11 Statistical Analysis

The statistical measures used for analysis of data for three different groups were as follows:

Table 2: Statistical Analysis of The Data

Sr. No.	Purpose	Statistical method used
1.	Profile of respondents	Frequency, percentage and Intensity indices
2.	Variable wise environmental knowledge and environmental values	Percentage
3.	Variable wise differences in environmental knowledge and values	Cross tables, mean, t- test, F-test (ANOVA), post hoc statistics
4.	Item wise environmental knowledge and environmental values	Intensity Indices
4.	Relation between environmental knowledge and values.	Correlation coefficient

Statistical package of social sciences (SPSS 22.0) software was used to analyze data.

5.7 Major Findings

The present study was undertaken to study the environmental knowledge and values of the undergraduate students of the Maharaja Sayajirao University of Baroda, Vadodara. This chapter presents the findings based on the data collected by using quantitative methods of data collection. The findings are reported under the following sections:

5.7.1 Profile of the respondents.

5.7.2 Overall Environmental Knowledge and Environmental Values of the respondents.

5.7.3 Variable wise Environmental Knowledge and Environmental Values of the respondents.

5.7.4 Item wise findings of environmental knowledge and values

5.7.5 Correlation between environmental knowledge and environmental values.

5.7.1 Profile of the Respondents:

- There were equal numbers of respondents from all the categories of faculties i.e. 20 percent from each group of faculty (Science, Technology, Arts and Commerce, Family and Community Sciences and Medicine).
- Equal numbers of students were from first year, second year and third year that is 33.3 percent from each year of study.
- There were more number of female respondents (59%) than male respondents (41%).
- Majority of the respondents studied in vernacular medium of instruction in school (63.3 %) which included Gujarati, Hindi and other languages followed by those studied in English medium (36.4 %) schools.
- Majority of the respondents (83.3 %) studied in state board schools (Gujarat board and other state boards) followed by very low percentage of the respondents from CBSE board schools (16.7 %).
- More than one third of the respondent's mothers had medium level of education (40 %) i.e. up to higher secondary and diploma followed by nearly equal number of the respondent's mothers had high level of education (39 %) i.e. graduation and above and only one fifth had low level of education i.e. upto primary school.
- Similarly, nearly half of the respondent's fathers had high level of education (49 %) followed by more than one third had medium level of education (43 %) and only eight percent had low level of education.

- Majority of the respondent's belonged to nuclear family (70%) followed by less than one third of students living in joint family.

- Majority of the respondents were living in urban area (69 %) followed by about one third of the respondents living in rural areas.

- Near one third of the respondent's monthly family income was low (33.9 %) followed by nearly equal number of respondents having high family income (33.3 %) and medium monthly family (32.8 %).

- About half of the respondents were part of small family (48.3 %) followed by medium family (40.6 %) and only 11.1 percent were from large family.

- A large majority of the respondents studied environment education in school (88 percent) and only 12 percent did not studied environment education in school.

- Majority of the respondents participated less in environmental activities (73.2 percent) and only about one fourth of respondents (26.8%) participated more in environment related activities at school level.

- More than half of respondents were having low mass media exposure (57.8 percent) and less than half of the respondents (42.2%) were having high mass media exposure.

- A large majority of the respondents were highly civic responsible (82 percent) and only 18 percent were moderately responsible.

5.7.2 Overall Environmental Knowledge and Environmental Values of the Respondents.

- Study reveals that higher percentage of the respondents showed moderate level of environmental knowledge (40.6%), followed by about one third of the respondents having high level of environmental knowledge (36.3%) and nearly one fourth of the respondents having low level of environmental knowledge.

- Majority of the respondents had high level environmental values (71%) and only about one third of the respondents held moderate level of environmental values.

5.7.3 Variable Wise Environmental Knowledge and Environmental Values of the Respondents.

5.7.3.1 Faculty:

- Majority of the respondents from the faculty of medicine showed high level of environmental knowledge (65%) followed by more than half of the respondents from faculty of science (53.3%) and little more than one third of respondents from the faculty of technology (35%).

- Higher percentage of the respondents from all the faculties showed high level of environmental values. However, highest percentage of the respondents from the faculty of technology showed high level of environmental values (89.4%) followed by the respondents from the faculty of medicine (77.7%), the faculty of science (75.5%) and the faculty of arts and commerce (60%). Surprisingly, lowest percentage of the respondents from the faculty of family and community sciences showed high level of environmental values (52.2%).

- ANOVA result indicated a significant difference in the environmental knowledge and values of the respondents in relation to their faculty.

5.7.3.2 Year of study

- Results indicated that about one third of the respondents from each, first year, second year and final year had high level of environmental knowledge.

- Highest percentage of the respondents from third year showed high level of environmental values (77%) followed by nearly equal percentage of the respondents from first year (68.3%) and second year (67.7%).

- ANOVA result indicated that there was no significant difference in the environmental knowledge of the respondents in relation to their year of study but there was a significant difference in the environmental values of the respondents in relation to their year of study.

5.7.3.3 Gender

- Higher percentage of the male respondents showed high level of environmental knowledge (40.5%) compared to the female respondents (33.5%). Higher percentage of the female respondents showed moderate level of environmental knowledge than male respondents.
- Majority of the male (71.2%) and female (70.9%) respondents showed high level of environmental values and less than one third of the male and female respondents showed moderate level of environmental values.
- T- test results showed that there was no significant difference in the level of environmental knowledge and values of the male and female respondents..

5.7.3.4 Type of family

- Higher percentage of the respondents from nuclear families (39.5%) showed high level of environmental knowledge as compared to respondents from joint families (29%).
- Three fourth of the respondents belonging to nuclear families showed high level of environmental values (75.2%) followed by more than half of the respondents belonging to joint families (61.4%).
- T- test results showed a significant difference in the environmental knowledge and values of the respondents in relation to their family type.

5.7.3.5 Family size

- Higher percentage of the respondents from small families showed high level of environmental knowledge (42.1%) followed by the respondents from medium size families (34%).
- It was found that near three fourth of the respondents from small family size showed high level of environmental values (74%) followed by respondents from medium size family (71.2%).
- ANOVA result indicated that there was a significant difference in environmental knowledge of the respondents in relation to their family size but there was no significant difference in environmental values of respondents in relation to their family size.

5.7.3.6 Monthly family income.

- Higher percentage of the respondents from medium income group (44.1%) showed high level of environmental knowledge followed by respondents from high income group (39.3%).
- It was found that almost equal percentage of the respondents from high (72.7%), medium (71.5%) and low (68.9%) family income group showed high and moderate level of environmental values
- ANOVA result indicated that there was a significant difference in environmental knowledge and values of respondents in relation to their income group. Looking to the mean values, respondents from the medium and high income group showed higher environment knowledge and values compared to the respondents from low income group.

5.7.3.7 Place of residence

- Equal percentages of the respondents from urban (35.3%) and rural place of residence (38.6%) showed high, moderate and low level of environmental knowledge.
- Nearly than three fourth of the respondents from urban (70.2%) and rural (72.9%) place of residence showed high level of environmental values.
- T- test results showed that there was no significant difference in the environmental knowledge and values of the respondents in relation to their place of residence.

5.7.3.8 Mother's Education.

- Higher percentage of the respondents whose mothers had high level of education showed high level of environmental knowledge (46.5%).
- It was found that nearly three fourth of the respondents whose mother's had high level of education showed high level of environmental values (74.9%).
- ANOVA result indicated that there was a significant difference in environmental knowledge and values of the respondents in relation to their mother's education.

5.7.3.9 Father's education.

- Higher percentage of the respondents whose fathers had high level of education showed high level of environmental knowledge (46.9%).
- Less than three fourth of the respondents whose fathers had high (72.2) and medium (71.9%) level of education showed high level of environmental values.
- ANOVA result indicated that there was a significant difference in the environmental knowledge and values of the respondents in relation to their father's education.

5.7.3.10 Board of education in school

- More than half of the respondents from central board school showed high level of environmental knowledge (54.7%) whereas, higher percentage of the respondents who studied in the state board schools showed moderate (42.3%) level of environmental knowledge.
- The highest percentage of the respondents from Central board i.e. 80 percent showed high level of environmental values followed by nearly seventy percent of the respondents from state board schools
- Results showed a significant difference in the environmental knowledge and values of the respondents in relation to their board of education in school

5.7.3.11 Medium of instruction in school

- That higher percentage of the respondents who studied in English medium at school level showed high level of environmental knowledge (43.3%) as compared to the respondents from vernacular medium (323%).
- Majority of the respondents from English medium showed high level of environmental values (75.6%) followed by the respondents from the vernacular medium (68.4%).
- There was a significant difference in the environmental knowledge and values of the respondents in relation to medium of instruction in school.

5.7.3.12 Level of participation in environment related activities in school

- Higher percentage of the respondents who participated more (41.5%) and less (37.9%) in environment related activities showed moderate level of environmental knowledge.

- Less than three fourth of the respondents who had more participation in environmental related activities showed high level of environmental values (71.8%) followed by respondents who had less participation in environment related activities (68.8%).

- T- test results showed no significant difference in the environmental knowledge of the respondents in relation to level of participation in environment related activities but results showed a significant difference in the environmental values of the respondents in relation to their participation in environment related activities. Therefore this can be said that participation in environment related activities made a difference in the building up of the environmental values in the respondents.

5.7.3.13 Environment as a subject at school level

- Higher percentage of the respondents who studied (40.2%) and who did not studied environment as a subject (42.9%) in school showed moderate level of environmental knowledge.

- Nearly three fourth of the respondents who had studied environment as a subject in school showed high level of environmental values (72.1%) followed by the respondents who did not study environment subject in school (63.4%).

- T- test results showed no significant difference in the environmental knowledge of the respondents in relation to having environment as a subject in school but results showed a significant difference in the environmental values of the respondents in relation to their having environment as a subject in school. Therefore it can be said that studying environment at school level made a difference in the building up of the environmental values in the respondents.

5.7.3.14 Mass media exposure

- It was found that nearly equal percentage of the respondents from both the categories of mass media exposure i.e. more and less exposure showed high, moderate and low level of environmental knowledge.

- Equal percentages of the respondents from both the categories of mass media exposure showed high and moderate level of environmental values.

- T- test results showed no significant difference in the environmental knowledge and values of the respondents in relation to their level of mass media exposure.

5.7.3.15 Civic Responsibility

- Nearly equal percentage of the respondents from high and moderate level of civic responsibility showed high, moderate and low level of environmental knowledge.

- Equal number of the respondents from both the categories of civic responsibility showed high and moderate level of environmental values.

- T- test results showed no significant difference in the environmental knowledge and values of the respondents in relation to level of civic responsibility.

5.7.4 Correlation Between Environmental Knowledge and Environmental Values.

The correlation coefficient was calculated between the environmental knowledge and environmental values of the respondents. Results showed that there was found a positive and high correlation coefficient between environmental knowledge and environmental values, which mean that high environmental knowledge, will result in high environmental values.

5.7.5 Item Wise Findings of The Environmental Knowledge and Environmental Values

5.7.5.1 Environmental Knowledge

- It was found that statements of environmental knowledge which were based on application of knowledge showed highest overall intensity indices (0.61) followed by overall intensity indices of statements which were based on General facts related to environment or conceptual knowledge (**0.55)** and then by Specific facts related to environment/ factual knowledge (**0.51)**. **T**his means that respondent were having highest knowledge about the environment friendly practices which they are supposed to follow like growing trees, using polythene bags etc. followed by general facts related to environment like knowledge about limited natural resources, problems cause due to pollution and global warming and then by specific facts like percentage of oxygen on earth, biodiversity and extinction of wildlife animals etc.

5.7.5.2 Environmental Values

- It can be seen from the table that overall respondents showed high values for the statements which were showing their thinking, belief, likeliness, opinion, concern regarding environment (II= 1.42) as compared to the statements which were showing practices and preference for saving the environment (**1.31)**.