



POLYTECHNIC UNIVERSITY OF THE PHILIPPINES
BIÑAN CAMPUS
City of Biñan, Laguna



School Year 2021-2022

PEOPLE and EARTH'S ECOSYSTEM: MODULE 1

COURSE CODE : **GEED 20113**
COURSE TITLE : **People and Earth's Ecosystem**
LESSON NO./TITLE : **(1) Introduction to People and Earth's Ecosystem**
NAME OF STUDENT :
SECTION/ GROUP No. :
DATE SUBMITTED :

MODULE OBJECTIVES:

After the end of the lesson, the student should be able to:

1. Define environmental science.
2. Understand the basic concepts of environmental science.
3. Know the relationship between men and environment.

LESSON/TOPIC DISCUSSION

LESSON 1 TOPICS:

- A. Definition of Environmental Science
- B. Human Dimensions of Environmental Science
- C. Conservation Efforts and Environmental Ethics

TOPIC LEARNING OUTCOMES

1. Understand the basic concepts of environmental science.
2. Know the relationship between men and environment.
3. Know the conservation efforts and environmental ethics.

ACTIVITY 1: Watching a Video

Watch the video in the given link below about the nature, human, and its environment.

<https://www.youtube.com/watch?v=JyL58vlbvgw>

Summarize the film and give you insights.



ACTIVITY 2: Guidance & Discussion

Environment

- The environment is **everything around us**.
- It is composed of both **the living and non-living things** with which we interact.
- Environment is also the totality of air, water, and land together with the existing organisms on earth as well as the non-living materials.
- Moreover, it incorporates the physical, chemical, and biological factors which are relevant for the growth and survival of living organisms in populations, and communities.

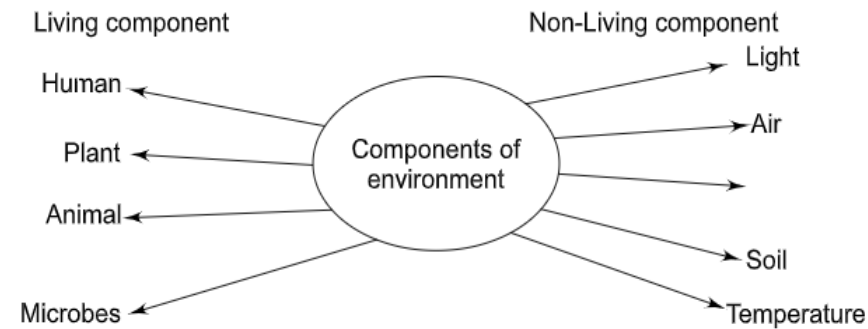


Figure 1. Components of environment includes living and non-living organisms.

Environmental Science

- Environmental science is the **interdisciplinary study** of human with other organisms and the non-living physical environment.
- It embraces several scientific disciplines which are concerned with the physical, chemical, and biological surroundings in which organisms live. This includes, physics, chemistry, biology, biochemistry, microbiology, geology, climatology, oceanography, etc.
- It also requires the knowledge in laws, sociology, economics, etc.
- Basically, it is about having the knowledge in the natural world.
- Environmental Science also incorporates the changes wrought by human activities and how these affects our one and only living planet.

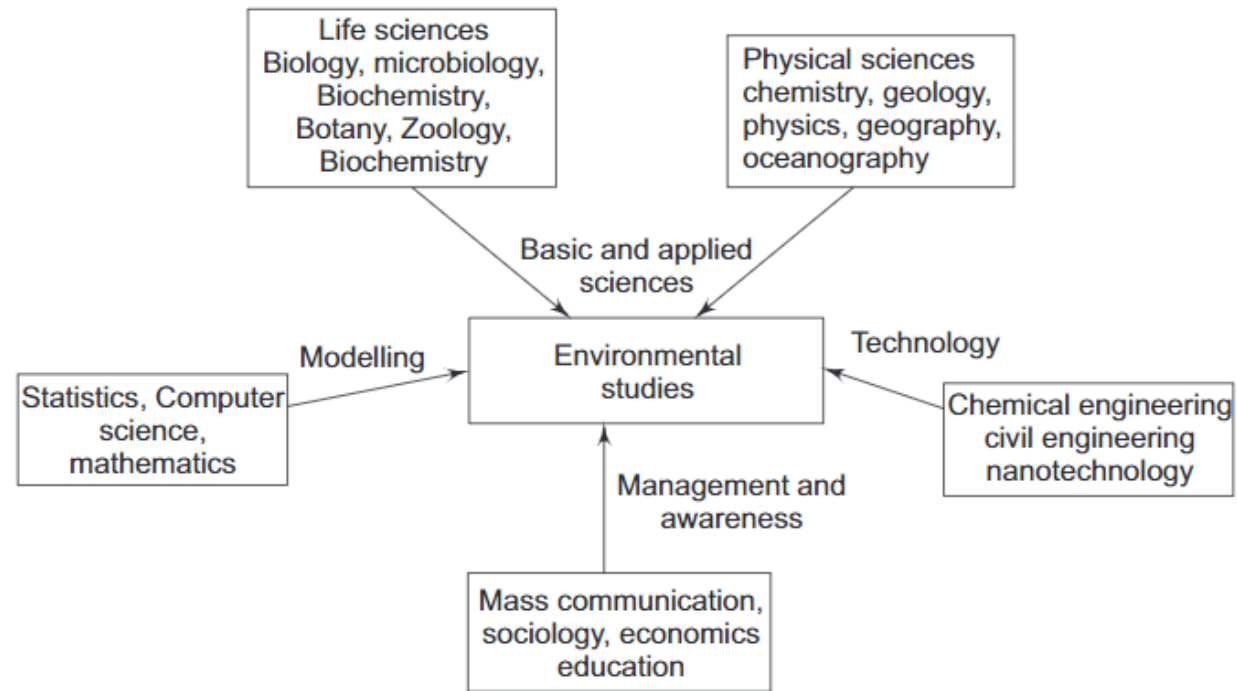


Figure 2. Multidisciplinary natures of environmental studies.

Environment vs. Nature

- **Environment** is everything that is around us. It can be living (biotic) or non-living (abiotic) things and includes physical, chemical and other natural forces. Living things live in their environment. They constantly interact with it and adapt themselves to conditions in their environment.
- The words **nature** and **natural** on the other hand, are used for all the things that are normally not made by humans. Things like weather, organisms, landforms, celestial bodies and much more are part of nature.

Human Dimensions of the Environment

- Deals with people's relationships and interactions with the biophysical world.
- Incorporates knowledge from both the social and biophysical sciences to examine system interactions.
- Role of culture, risk, values, attitudes, knowledge, beliefs, perceptions, public opinion, and behaviors related to natural resources and the environment.
- Human engagement with natural resources and the environment through monitoring, recreation, tourism, leisure, education, communication, and in daily life.
- Governance and other institutional factors related to resource use, allocation, and decision-making.
- Human-human conflicts over natural resources and environments, as well as conflicts between humans and the biophysical world (e.g human-wildlife interactions)

Conservation Efforts in Environment

- **Conservation of environment** indicates the sustainable use as well as management of natural resources which include wildlife, water, air, and earth deposits.
- Earth protection.

Basic and Common Efforts in the Conservation of Environment

1. Three (3) R's: (1) Reduce (2) Reuse (3) Recycle
2. Use less energy and embrace alternative energy resources.
3. Planting Trees
4. Help to protect the quality of soil through composting.
5. Stop smoking and smoke belching.
6. Conserve water.
7. Avoid using plastics.

Environmental Ethics

- the discipline in philosophy that studies the moral relationship of human beings to, and the value and moral status of, the environment and its non-human contents.
- Environmental Integrity and Stewardship is the call for everyone to mitigate the worsening problems of environmental crisis. This includes the following core environmental principles.

CORE ENVIRONMENTAL PRINCIPLES:

1. Interdependence & Interconnectedness – Everything on earth is connected; a disruption of one will disrupt the whole
2. Balance of Nature – Nature has its own laws & processes to maintain itself
3. Diversity & Stability – All life forms are important in the ecosystem; the more diverse the ecosystem, the more stable it is.
4. Change – Everything changes on earth and humans may accelerate change in nature.
The 2nd Law of Thermodynamics (Law of Entropy) which states that “energy always proceeds to a state of disorder” is the underlying principle behind this change.
5. Biogeochemical Cycle – Materials in the environment are not lost, but are just transformed
The 1st law of Thermodynamics (Law of Conservation of Matter) which states that “ Matter/Energy can neither be created nor destroyed, they can only be transformed from one type to another” is the underlying principle behind this material cycle.
6. Finiteness of Resources – Most resources are non-renewable, thus must be conserved
7. Stewardship & Cooperation – Humans are part of nature; they are not masters but stewards of mother earth. There is a need for collaborative efforts of all stakeholders for the conservation of resources.
8. Sustainable Development SD – The United Nations define SD as “ Meeting the needs of the present generation without sacrificing the needs of the future Generation”

Scientific Method

Science is a systematized body of knowledge based on facts. A system like Ecosystem consists of interacting interdependent components forming a unified whole. The aim of science is to give the best and valid description of the natural world. Observations are facts and are the raw materials of science. Thus, there must be a valid way of knowing science, and that is through the Scientific Inquiry using Scientific Method. Scientific Method is a step-by-step process of solving a problem and arriving on a valid conclusion and this involves the following steps (Figure 2):

- (1) Defining a problem
- (2) Gathering data related to the problem
- (3) Formulation of hypothesis or scientific guess
- (4) Testing of hypothesis by experimentation
- (5) Making a generalization or conclusion
- (6) Reporting of the results

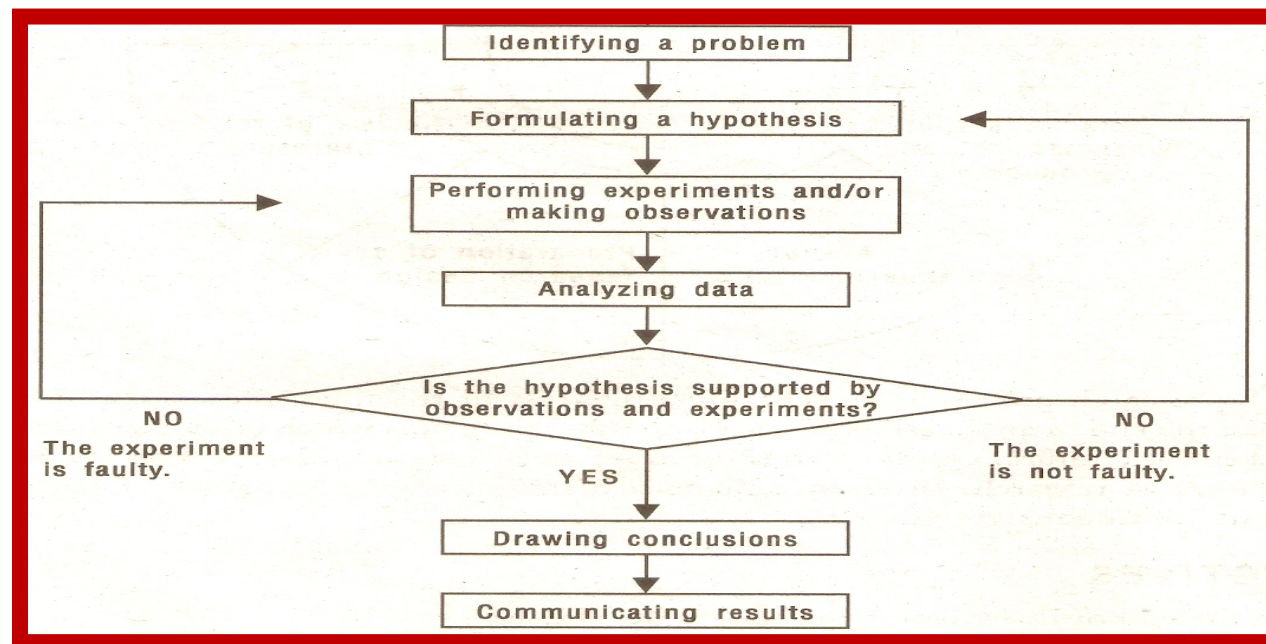


Figure 3. Flow-chart of Scientific Method

The STEPS above will be used in the making your Exercise No.1.

ACTIVITY 3: Study on Environmental Issues

In this exercise, the students will learn to apply Scientific Method in studying environmental issues.
The **objectives** of the exercise are:

1. Become more aware of the existing environmental issues.
2. Apply the scientific method in studying environmental issues.
3. Understand the cause and effects of this problem.
4. Present measures to mitigate the environmental problem.
5. Develop skill in knowing the changes in matter in the environment.

Procedure:

1. Take two pictures of environmental problems in your home & in your community.
Be sure you include yourself in the background of the picture.
2. Paste the pictures here on your data sheet & label / or give a short caption below the pictures.
3. Apply the STEPS of Scientific Method in (c) Environmental Problem as follows:
 - a. Problem: Give the environmental problem in the picture.
 - b. Data gathering: Enumerate at least 3 observations you can see in the picture
 - c. Hypothesis: Formulate your hypothesis on the probable causes of the problem. Give at least 3 cause & effects of the problem.
 - d. Testing the hypothesis: Give 5 solutions to mitigate the problem. As a student, specify some of your roles to help solve the problem.
 - e. Make a generalization or conclusion & reflection of your study.
 - f. Report your work in class. The students will be grouped and reporting will be by group with the leader as the main speaker.

Assessment:

Evaluation of the of the reports of your classmates using the Rubrics below:

GEED 20113 Rubrics (Section _____)				Date Submitted:						
Name of Leader (1):				Group Number:						
Names of Members (2-7):				Members						
				1	2	3	4	5	6	7
CRITERIA	Novice (0-1 pt)	Accomplished (2-3)	Excellent (4-5)							
RELEVANCE	The topic is briefly defined and remotely related to the theme.	The topic is defined but not clearly understood and is still relevant to the theme.	The topic is identified, clearly understood and is highly relevant to the theme.							
CONTENT	Displays an incomplete understanding of the important concepts and generalizations and has some notable misconceptions.	Displays a complete and accurate understanding of the important concepts or generalizations.	Demonstrates a thorough understanding of the important concepts or generalizations and includes new insights							
TECHNICAL VALIDITY & ORGANIZATION	Ideas may not be focused or developed; the main purpose is not clear.	The main idea is evident, but the organizational structure may need to be strengthened; ideas may not always flow smoothly.	Ideas are clearly organized, developed, and supported to achieve a clear purpose.							
INNOVATIVENESS	Visuals go well with the report, but there are too few and the report seems "text-heavy".	Satisfactory use of visuals and manner of presentation, although at times, some are distracting.	The group uses outstanding and appropriate medium and material for the visual aids.							
PREPAREDNESS	The paper is simply read by the presenter. The discussion is difficult to hear or understand and the flow of information is confusing.	The presentation is appealing, but may contain unclear information. Some appeal to audience and distractors kept to a minimum.	The presentation is appealing and easy to follow. It draws in the audience and keeps their attention. Lecturer is completely prepared.							
TIME MANAGEMENT	Always late or absent.	Sometimes late in meetings	Started & ended the report on time							
TOTAL: /30										

Learning Resources:

1. E-Textbook -
 - Riisgard, Hans Ulrick. 2018. General Ecology. Hans Ulrik Riisgård & bookboon.com.
<https://bookboon.com/premium/books/general-ecology>
2. eBook
 - Miller, G. Tyler and Scott E. Spoolman. Essentials of Ecology, 5e. © 2009. Brooks/Cole, Cengage Learning. <https://sangu.ge/images/EssentialsofEcology.pdf>
3. Scanned Reference Books
 - Cuevas,V. Z.Sierra, C.Cervancia and MT Zafaralla.2005. Laboratory Guide in Ecology
Inst.Biol.Sciences, College of Arts & Sciences, Univ.of the Philippines- Los Banos,
Laguna. (scanned 2020).
 - Guzman, R and RM Guzman-Genuino. 2018. Environmental Science: Towards a Sustainable
Earth. QC, Phil. Vibal Group Inc. (scanned 2020).
4. Online Resources
 - <https://www.youtube.com/watch?v=JyL58vlbvgw>
 - https://www.youtube.com/watch?v=UOsSa_FkeDY
 - <https://www.biointeractive.org/classroom-resources>