

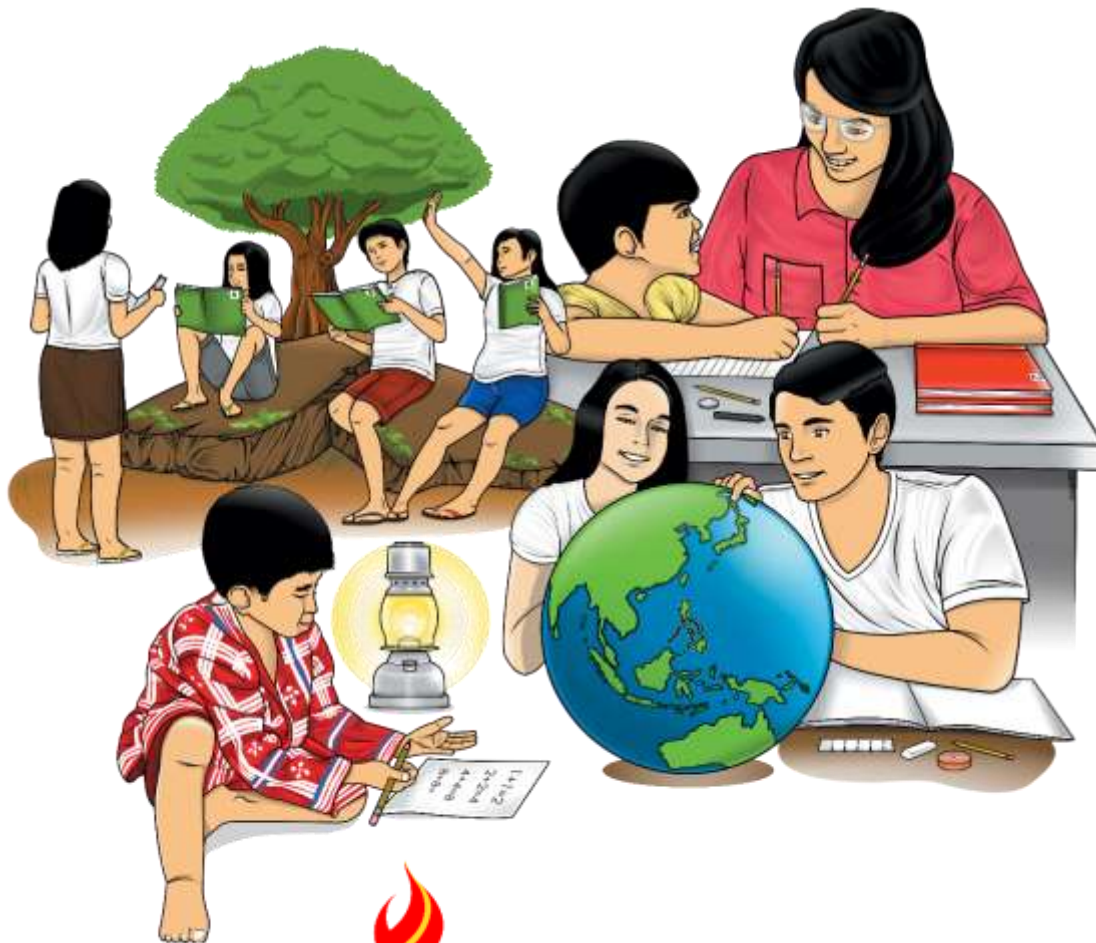
7/8

AQUACULTURE

EXPLORATORY COURSE

Quarter 2 – Module 12:

PROTECTING MARINE ENVIRONMENT (PME)



TLE – Grade 7/8
Alternative Delivery Mode
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EXPLORATORY COURSE

GRADE 7 and GRADE 8

Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, notes to the teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thankyou.

Lesson

6

Protecting the Marine Environment (PME)



What I Need to Know

This module was designed to help you know some measures and ways in ***protecting the marine environment***. The scope of this module permits it to be used in many different learning situations.

After going through this module, you are expected to:

1. Identify different marine garbage categories
2. Perform garbage segregation



What I Know

Activity 1.1 ***“I WILL”***

Direction: Below are statements that may or may not be a proper way of protecting the marine environment. Write the word **“I WILL”** if the statement describes the proper way of protecting the marine environment and write **“NOT”** if it does not describe the proper way of protecting the marine environment. Write your answer in the space provided before the number.

- _____ 1. Start being conscious of your energy use at home and work.
- _____ 2. Bring your own reusable bag when shopping and practice recycling whenever possible.
- _____ 3. Choose to eat seafood that is both healthful and sustainable to help reduce the demand for overexploited species.
- _____ 4. Avoid interfering with wildlife, or removing rocks and corals while exploring the ocean.
- _____ 5. Purchase items such as coral jewelry and shark products.
- _____ 6. Release aquarium fish into the ocean or other bodies of water.

_____7. Try to volunteer for hands-on work or advocacy with a national organization.

_____8. Patronize restaurants and groceries that offer sustainable seafood.

_____9. Throw your empty bottle overboard.

_____10. Be aware about oceans and marine Life.



What's In

Let's try to recall your previous lesson. Answer the following questions:

Activity 1.2 "CAN I STILL REMEMBER THIS?"

Read and analyze each item carefully. Write your answer in the space provided before the number.

____1. Waste is any material that is not needed by the

- (A) owner
- (B) producer
- (C) processor
- (D) all of the above

____2. Which of the following is **NOT** true?

- (A) there is no real waste in nature
- (B) all processes of production and consumption produce waste
- (C) the apparent waste from one process becomes an input to another
- (D) spoiled foods such as fruits and vegetables thrown in seas are not considered as garbage or waste

____3. Most disposable wastes are in the form of _____.

- (A) liquids
- (B) slurries
- (C) solids
- (D) all of the above

___ 4. In the cities, the simplest and most common method is to collect and dump the waste in a ____.

- (A) forest
- (B) landfill
- (C) ocean
- (D) river

___ 5. Feature(s) of Zero Waste Management is (are):

- (A) Separate collection of each kind
- (B) Separation of garbage at the source
- (C) Involvement of community in all activities
- (D) all of the above



What's New

Activity 1.3 “BEHIND A PICTURE IS A STORY”

Below is a picture taken from the article of Robert Frerck entitled “Top Ocean Stories of 2017”. Share your interpretation of the picture through a short story. Create a title for your story too. I’m so excited to hear from you.



Title



What is It

Marine Environment is considered as one of the most important resources on Earth as the sea accounts for up to 70.8% of the Earth's area, and is known as the hometown of life. Marine ecosystems also perform key environmental functions such as regulating the climate, preventing erosion, accumulating, and distributing solar energy, absorbing carbon dioxide, and maintaining biological control.

The ocean is closely related to human beings, and human society depends a lot on seas for survival, may it be for the economic prosperity of human society, or social well-being, and quality of life. Increasing human population, and activities has a huge impact on the marine environment, waste contaminants are being introduced that causes pollution to the ocean. Contaminants in the marine environment that comes from treated, and untreated wastewater, agriculture, shipping, port activities, aquaculture, offshore oil exploration, consumption of fossil fuels, and industrial activities can be dissolved in water, stored in sediments, or ingested by the animal and can become a threat to a healthy marine environment. We all benefit from the seas, and therefore have a moral obligation to use them wisely.

Prevention of Pollution cause by Garbage from Ship

The garbage from ships can be just as deadly to marine life as oil or chemicals, and the greatest danger comes from plastic, which can float for years. In some cases, fish, and other marine mammals ingest plastics mistaken for food. Plastics thrown overboard as well as nets, bags, and other items could also trapped marine animals living in the ocean.

It is clear that a good deal of the garbage washed up on beaches comes from people on shore - holiday-makers who leave their rubbish on the beach, fishermen who simply throw unwanted refuse over the side - or from towns and cities that dump rubbish into rivers, or the sea. But in some areas, most of the rubbish found comes from passing ships which find it convenient to throw rubbish overboard rather than dispose of it in ports.

For a long while, many people believed that the oceans could absorb anything that was thrown into them, but this attitude has changed along with greater awareness of the environment. Many items can be degraded by the seas - but this process can take months or years.

11 Different Marine Garbage Categories

Garbage includes all kinds of food, domestic, and operational waste excluding fresh fish, and parts thereof, generated during the normal operation of the vessel, and liable to be disposed continuously or periodically. More specifically:

1. **Plastics** - Are used for a variety of marine purposes including packaging (vapour-proof barriers, bottles, containers, liners), ship construction (fiberglass, and laminated structures, siding, piping, insulation, flooring, carpets, fabrics, paints, and finishes, adhesives, electrical and electronic components), disposable eating utensils, and cups, bags, sheeting, floats, strapping bands, rope, line and incinerator ashes from plastic products.
2. **Food wastes** - Any spoiled or unspoiled food substances, such as fruits, vegetables, dairy products, poultry, meat products, food scraps, food particles, and all other materials contaminated by such wastes, generated aboard ship, principally in the galley or dining area.
3. **Domestic wastes** - All types of food wastes and wastes generated in the living spaces onboard the ship that are not being covered in other waste categories such as paper products, rags, glass, metal, bottles, crockery, etc.
4. **Cooking Oil** - Any type of edible oil, or animal fat used or intended to be used for cooking (not the food that has been prepared with these oils/fats).
5. **Incinerator ashes**- Ash and clinkers produced from shipboard incinerators.
6. **Operational wastes**- All solid wastes (including slurries) that are not covered by other waste categories. Operational are wastes produced from cargo stowage, and handling (dunnage, shoring, pallets, lining, and packing materials, plywood, paper, cardboard, wire, and steel strapping) and from maintenance (collected from the engine, and deck departments while maintaining the operating vessel: soot, machinery deposits, scraped paint, deck sweeping, wiping wastes, rags, and oily rags, etc.).
7. **Animal Carcasses**- Bodies of any animals carried on board as cargo that die or euthanized during the voyage.
8. **Fishing gear**- Includes any physical device placed in the water, or on the sea-bed for purposes of capturing, controlling, or harvesting marine, or freshwater organisms.
9. **E-Waste**- Electronic cards, gadgets, instruments, equipment, computers, printer cartridges, etc.
10. **Cargo Residues (non-HME)** - these are the remaining wastes on deck, or in holds after cargoes are unloaded.

11. **Cargo Residues (HME)** - The term HME refers to cargoes under certain criteria classified as Harmful to the Marine Environment.

There are two best practices to be followed for the segregation of garbage in ships:

- **Specify the storage areas:** These areas are identified in the garbage Management Plan and equipped with adequate reception/storage receptacles following the specified color code for each category.

- **Waste receptacles:** The garbage storage receptacles should be convenient to use and easy to maintain. They should be secured in the specified storage areas, in order to be protected from the pitch and roll of the vessel. They should be in a good condition for storage without any side or bottom openings.

Strategies on Marine Environment Protection

In response to the threat to a healthy marine environment, several protection measures were established internationally such as:

- ✓ Establishment of MARPOL (Marine Pollution) Convention is the main international convention aimed at the prevention of pollution from ships caused by operational or accidental causes.
- ✓ Identification and establishment of Marine Protected Areas (MPA's)- these are areas designated and efficiently managed to protect marine ecosystems, processes, habitats, and species that can contribute to the restoration and replenishment of resources for social, economic, and cultural enrichment.
- ✓ Establishment of Sustainable Development Goal (SDG) 14- aims for conservation and sustainable use of the oceans, seas, and marine resources.
- ✓ Government Mandates on Proper waste Segregation and Disposal- aims to instill discipline in people to do proper segregation and disposal of garbage both for marine and terrestrial environment.



What's More

Activity 1.4 “Let’s Familiarize It”

You have just read the different ways of how to protect our marine environment. So far, so good.

In the table below are the lists of unfamiliar terms/concepts encountered in the lesson, write what you think they mean, then give your new meaning after reading the discussion.

Unfamiliar word	What I think it means	What it really means
1.) Marine environment		
2.) Marine Ecosystem		
3.) Marine Pollution		
4.) Waste Contaminants		
5.) Waste Segregation		



What I Have Learned

Take your time to review the things that we have discussed previously and make use of your realizations and learn to answer the next activity.

Activity 1.5 “Designing Solution”

“In every problem, there is a solution”. After reading the previous discussion in this module, I am sure that you have realized many problems in our marine environment. Among those different problems, cite at least **three** of them and share its corresponding solution(s).

PROBLEM	SOLUTION
1.)	
2.)	
3.)	



What can I do

You are now equipped with knowledge about the different issues, solutions, and even policies concerning the Protection of the Marine Environment. As a responsible citizen, you can make your own part in the preservation and protection of our Marine Environment.

You can answer the next activity carrying with you the lessons and realizations gained from our previous activities and discussion.

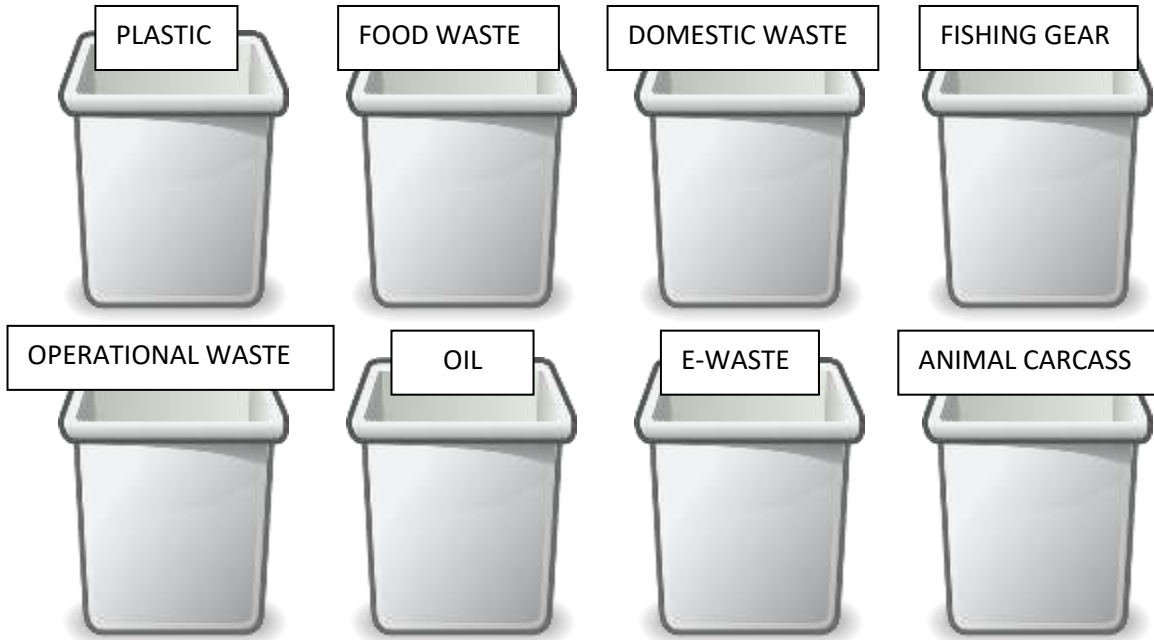
Activity 1.6 “Let’s Do It!”

In this activity, you are to perform segregation of garbage identified as a contributor to marine pollution. Segregate the waste contaminants listed below according to its category by writing them inside the garbage cans provided. After the activity, answer the process questions that follow.

Waste Contaminants:

- | | | |
|---------------------|-----------------|---------------|
| 1. Electronic Cards | 6. Food scraps | 11. Crude oil |
| 2. Apple Core | 7. Paper Plates | 12. wire |

- | | | |
|-----------------|-----------------------|---------------------|
| 3. Water bottle | 8. Scratch paper | 13. metal |
| 4. Dead mouse | 9. Broken glass | 14. Fishing net |
| 5. Rags | 10. Damaged computers | 15. Paint container |



Process Questions:

1. How do you find the activity?

2. Why should we practice proper waste/garbage segregation?



Assessment

Activity 1.7 “Modified True or False”

After going through the lesson and completing all the exciting activities, you are already equipped with knowledge on protecting the marine environment, it is now time to check what you have learned.

Carefully read the statements below and identify if it is true or false. Write “TRUE” if the statement is correct and write “FALSE” if it is incorrect, then replace the underlined word/s to make the statement correct. Write your answer in the space provided before the number.

- ___ 1. The marine environment is a vital resource for life on Earth.
- ___ 2. Human activity has a huge impact on the marine environment.
- ___ 3. Food scraps are considered plastic waste.
- ___ 4. Damaged gadgets belong to operational waste.
- ___ 5. Used cooking oil thrown in seas is considered as waste.
- ___ 6. Garbage or waste thrown in oceans can become water contaminants.
- ___ 7. Damaged fishing nets belong to the category of operational waste.
- ___ 8. Animal carcasses are one of the marine garbage categories.
- ___ 9. Mandates on proper waste segregation are one of the strategies done to protect the marine environment.
- ___ 10. Excess plywood thrown in the ocean is E-waste.



Additional Activities

Activity 1.8 “Protected Marine Environment”

Since you are already equipped with knowledge on protecting the marine environment, it’s time for you now to share your Vision about the beauty of the

Protected Marine Environment. You may share it with us through **DRAWING**. Your drawing must depict a Protected Marine Environment and an explanation of it is not less than 50 words.





Answer Key

Activity 1.1

1.) I Will
 2.) I Will
 3.) I Will
 4.) I Will
 5.) Not
 6.) Not
 7.) I Will
 8.) I Will
 9.) Not
 10.) I Will

Activity 1.2

1.) D
 2.) D
 3.) D
 4.) B
 5.) D

Activity 1.6

E -Waste
 F
 P
 A
 D
 animal carcass
 D
 omestic waste
 F
 D
 ood waste
 O
 perational waste
 O
 perational waste
 10.) E waste
 11.) Oil
 12.)
 Operational waste
 13.) Domestic waste
 14.) Fishing
 15.) Plastic

Activity 1.7

1.) TRUE
 2.) TRUE
 3.) FALSE, FOOD
 WASTE
 4.) FALSE, E WASTE
 5.) TRUE
 6.) TRUE
 7.) FALSE, FISHING
 GEAR
 8.) TRUE
 9.) TRUE
 10.) FALSE,
 OPERATIONAL WASTE

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