



# Module 6

## Waste Management



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UP Department of Broadcast Communication  
UP National Institute for Science and Mathematics Education Development



**UP COLLEGE OF MASS COMMUNICATION**  
**DEPARTMENT OF BROADCAST COMMUNICATION**



## **DZUP EskweKalikasan: Para sa kabataan, kapaligiran, at bayan**

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## Preface

Para sa bayan, kalikasan, at kabataan? Kayang-kaya!

The project **DZUP EskweKalikasan: Para sa kabataan, kapaligiran, at bayan** is a publicly-funded initiative of the academe, with support from the government and advocates, that aims to contribute to the initiatives to integrate climate change knowledge and concepts about the Philippine environment in formal education.

According to the Climate Change Commission (n.d.), “the Philippines is one of the countries at greatest risk from present and projected climate-related hazards such as tropical cyclones, floods, landslides, and droughts.” These teaching modules were designed to encourage students with a comprehensive examination of the issues confronting the environment. Recognizing the curriculum visions and the objectives of inquiry-based teaching and learning that are adopted and promoted by the Philippine Basic Science Education Curriculum, these modules go beyond increasing public awareness of the environment’s significance in sustaining life on Earth to examining the effects of human actions in the protection or degradation of the environment.

Results of the early studies of Belland, Glazewski, and Richardson (2012) claim that issue-based learning is closely linked with evidence-based learning. It is thus appropriate to use scientific argumentation to implement these modules. Embedded in the modules is the provision for students’ opportunities to deeply engage in evidence-based scientific argumentation while simultaneously developing their critical thinking and communication skills. Thus, the basic components of scientific argumentation such as **claim, evidence, and justification** were strategically presented in the teaching modules. The modules, identified in the Curriculum Entry Points section, can be used in the following Senior High School Core Curriculum Subjects: Earth and Life Science or Earth Science; Understanding Culture, Society, and Politics; and Disaster Readiness and Risk Reduction.

These modules use multimodal learning to create an engaging and exciting learning environment that recognizes diverse learning styles. The concepts and issues presented in each lesson are mirrored in the podcast “*Kayang-kaya!*” to supplement classroom discussion using aural storytelling. Case studies that highlight local experiences while recognizing the various contexts that surround environmental issues, particularly climate change, are made available so the students can better grasp the environmental challenges that we are facing and be acquainted with examples of adaptation and mitigation measures that are currently being practiced.

**DZUP EskweKalikasan** aims to contribute to the wider discussion of environmental issues and the impacts of climate change and disasters in our everyday life, and to enrich conversations about sustainable living, sustainable development, and mindful consumption. These modules aim to be of utmost help for teachers to supplement their resources in their implementation of the Senior Science Education Curriculum.



## The Project

**DZUP EskweKalikasan: Para sa kabataan, kapaligiran, at bayan** is an on-air and online modular educational project about the environment for the youth. The UP Department of Broadcast Communication (CHED Center of Excellence for Broadcasting) and DZUP 1602 (the official radio station of UP Diliman) spearheaded the project with funding support from the Philippine Government under the General Appropriations Act for Fiscal Year 2019 through the initiative of the Office of Senator Loren Legarda. The UP Diliman Office of the Chancellor also provided additional funding support.

Ten modules were conceptualized and developed in collaboration with the UP National Institute for Science and Mathematics Education Development (UP NISMED).

- Module 1.** The Environment and Me
- Module 2.** The Philippine Environment
- Module 3.** Biodiversity Conservation
- Module 4.** Sustainable Living
- Module 5.** Climate Change
- Module 6.** Waste Management
- Module 7.** Management of Environmental Resources
- Module 8.** Environment and Disasters
- Module 9.** Renewable Sources of Energy
- Module 10.** The Youth, the Nation, and the Environment

Each of the teaching modules comes with a **Kayang-kaya!** podcast and an episode of **Go Teacher Go sa DZUP EskweKalikasan (GTG sa DZUP Eskwe)**.

The **Kayang-kaya!** podcast, developed and produced by the UP Department of Broadcast Communication, chronicles the adventure of three Senior High School students residing in Brgy. Luntian, as they seek to understand and uncover the issues confronting the environment.

Meanwhile, DZUP EskweKalikasan and UP NISMED's radio program Go Teacher Go, collaborated to produce **GTG sa DZUP Eskwe**, video guides for teachers in implementing the modules in their classes. **GTG sa DZUP Eskwe** also discusses tips on how to adjust the modules into different modes of learning, i.e. blended, online, remote, etc. All the teaching modules and other learning resources are available for download at [www.dzup.org/eskwekalikasan](http://www.dzup.org/eskwekalikasan).



## How to use this module

The modules promote inquiry-based teaching and learning through scientific argumentation and were designed to encourage students to appreciate Mother Nature and examine the issues confronting our environment. Each module is composed of the following sections:

### Introduction Page / Table

This page contains the general information about the teaching module and its corresponding podcast. These include the following: **module number** and **title**, **podcast topic**, main question in the podcast, **synopsis** of the podcast, and the **teaching module objectives**.

### Curriculum Entry Points

The curriculum entry points serve as guides for the educators in the appropriate use of the teaching module. This will help the educators identify the student **grade level**, **subjects**, and **subtopics** that this material can be applied to, as well as the **content standard**, **performance standard**, and **learning competencies** from the Department of Education's curriculum guide. This part also contains the **prerequisite concepts** based on students' prior knowledge from previous grade levels.

### Teaching and Learning Process

The teaching and learning process guides the teacher in inquiry-based teaching using argumentation. This section identifies the **teaching approach**, and the **materials** that will be used to teach this module. The modules adopt the guided inquiry-based approach through argumentation as a teaching approach. It is composed of two major parts: the **lesson procedure** proper and the **assessment**. Embedded in the lesson procedure in each module is the eliciting of the three main components of argumentation: claim, evidence, and justification. They are placed differently depending on how the concepts are formed whether inductively or deductively. Assessment is used in the module in three ways: for learning (formative assessment), as learning (on-going), and of learning (summative assessment).

### Related Concepts

This part contains the science and other related concepts and their contextualized definitions depending on how they were used in the modules.

### References

This contains all the references used by the writers in writing the modules. The educators may revisit these references for additional information.

### Activity Sheets / Worksheets

Activity sheets may include **case studies** and **guide questions** to answer while listening to the podcast or for presentation purposes, and other types for individual and group activities.

### Answer Keys

The activity sheet/worksheet in each module comes with the corresponding answer key that can help the educators in assessing the student outputs.







## Teaching Module

<b>Module No. and Title</b>	Module 06. Waste Management
<b>Podcast Topic</b>	Waste Management in the Philippines and the Zero-Waste Lifestyle (Best practices and community experience)
<b>Main Question</b>	Mapupuno ba ng basura ang barangay namin?
<b>Podcast Synopsis</b>	<p>Kali and Alab go to the beach one weekend, and they find huge amounts of trash in the water and on the beach. When they get home, they find out that the garbage in Barangay Luntian has not been collected for two days now. They investigate how serious the problem of solid waste management is and its effects on health and the environment. They also talk about and try to live off of zero-waste along with discovering other possible solutions to our problem with solid waste management.</p> <p><i>Habang lumalangoy sina Kali at Alab sa beach, makikita nila ang dami ng basura sa dagat at dalampasigan. Sa kanilang pag-uwi, malalaman nilang hindi pa nakokolekta ang basura sa Barangay Luntian sa loob ng dalawang araw. Dito, sisiyasatin nila kung gaano ba kalala ang problema ng solid waste management at mga epekto nito sa kalusugan at kalikasan. Pag-uusapan nila at susubukang mamuhay ng zero-waste kasama ng pagtuklas sa iba pang mga posibleng solusyon sa ating problema kaugnay ng solid waste management.</i></p>
<b>Podcast Objectives</b>	<p>After listening to the podcast, the learners should be able to:</p> <ol style="list-style-type: none"><li>1. describe how people generate different types of waste (solid, liquid, and gaseous) as they make use of various materials and resources in everyday life;</li><li>2. explain how different types of waste affect people's health and the environment; and</li><li>3. cite ways of reducing the production of waste at home, in school, and around the community.</li></ol>
<b>Teaching Module Objectives</b>	<p>(Adapted from the DepEd curriculum guides)</p> <p>At the end of this lesson, the learners should be able to:</p> <ol style="list-style-type: none"><li>1. describe how people generate different types of waste (solid, liquid, and gaseous) as they make use of various materials and resources in everyday life;</li><li>2. explain how different types of waste affect people's health and the environment; and</li><li>3. cite ways of reducing the production of waste at home, in school, and around the community.</li></ol>

## Curriculum Entry Points

Grade Level: Grade 11/12 (Earth Science)

Content: Earth materials and processes

<b>Content Standard</b>	<b>Performance Standard</b>	<b>Learning Competency</b>
<i>The learners demonstrate an understanding of:</i>	<i>The learners shall be able to:</i>	<i>The learners:</i>
<ol style="list-style-type: none"> <li>1. Human Activity and the Environment</li> <li>2. Waste generation and management</li> </ol>	<p>Prepare a plan that the community may implement to minimize waste when people utilize materials and resources</p>	<ol style="list-style-type: none"> <li>1. Identify kinds of waste and its proper management;</li> <li>2. Describe sources of waste;</li> <li>3. Understand how different types of waste affect people's health and the environment;</li> <li>4. Cite ways of reducing the production of waste at home, in school, and around the community.</li> </ol>

## Prerequisite Concepts

1. Ecosystem (Grade 3)
  - recognizing that there is a need to protect and conserve the environment
2. Earth and Space (Grade 3)
  - relating the importance of surroundings to people and other living things
3. Ecosystems (Grade 4)
  - beneficial and harmful interactions occur among living things and their environment as they obtain basic needs
4. Ecosystems (Grade 6)
  - organisms interacting with each other and with their environment to survive
5. The Particle Nature of Matter (Grade 8)
  - the particle nature of matter as basis for explaining properties, physical changes, and structure of substances and mixtures

6. Interactions in the Atmosphere (Grade 7)
  - explaining how some human activities affect the atmosphere
7. Ecosystems—Impact of human activities on an ecosystem (Grade 8)
  - suggesting ways to minimize human impact on the environment

## Teaching Process

<b>Teaching Approach</b>	Inquiry-based approach through argumentation
<b>Materials</b>	<ol style="list-style-type: none"> <li>1. Podcast audio file</li> <li>2. PowerPoint presentation</li> <li>3. Household waste management and reduction plan sheets (to be prepared)</li> </ol> <p><i>(Please visit <a href="http://www.dzup.org/eskwekalikasan">www.dzup.org/eskwekalikasan</a> to access the podcast, PowerPoint and/or student's worksheet.)</i></p>

**Assumption: The students have already listened to the podcast episode at home as part of their homework.**

### I. PRELIMINARY DISCUSSION

1. Prepare the PowerPoint presentation. Show **SLIDES 1-2** (Project introduction).

#### SLIDE 1



## SLIDE 2



### DZUP ESKWEKALIKASAN PROJECT

**DZUP EskweKalikasan: Para sa kabataan, kapaligiran, at bayan** is a publicly-funded initiative of the academe, with support from advocates and the government. It aims to raise awareness on emerging and evolving discussions about climate change, disaster risks, sustainable living and development and mindful consumption. Especially designed for senior high school teachers and students, the project has produced several teaching and learning resources such as modules, video guides, podcasts, and radio episodes that are available for free online at [dzup.org/eskwekalikasan](http://dzup.org/eskwekalikasan).

The project (whose title is a portmanteau of the Filipino words for school and nature) is spearheaded by the Department of Broadcast Communication of the University of the Philippines (UP) College of Mass Communication and DZUP 1602, in partnership with the UP National Institute for Science and Mathematics Education Development (UP NISMED) and the UP Diliman of the Office of the Chancellor. It is principally funded by the Philippine Government under the General Appropriations Act for Fiscal Year 2019 through the initiative of the Office of Senator Loren Legarda.

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2. Introduce the podcast and read the synopsis of the episode. Show **SLIDE 3** (General information about the podcast episode).

## SLIDE 3



### KAYANG-KAYA! PODCAST

**Kayang-Kaya!** is a 10-episode podcast in Filipino that follows the adventures of three senior high school students, Kali, Naya, and Alab, as they seek to understand and uncover issues confronting the environment. As an educational tool, the podcast serves to supplement classroom discussion using aural storytelling.

In **Episode 6**, titled **"Mapupunô ba ng basura ang barangay namin?"**, Kali and Alab visit the beach one weekend but they find huge amounts of trash in the water and on the beach. When they get home, they find out that the garbage in Barangay Luntian has not been collected for two days now. They investigate how serious the problem of solid waste management is and its effects on health and the environment. They also talk about and try to live off of zero-waste along with discovering other possible solutions to our problem with solid waste management.

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3. Replay a part of the podcast: amount of waste generated and effects on the community **[TIMESTAMP: 09:40–12:35]**.

- **Question 1: How did the audio clip make you feel? Why?**

**Possible Answer/s:**

1. **Negative** (scared, worried, etc.)  
Because it seems like the world will be overflowing of trash (plastics in the oceans, health risks of the trash-filled environment)
2. **Neutral** (no immediate feeling, neutral feeling, apathetic, "it's fine")  
Because there are a lot of factors to consider in solid waste management and that the world seems to accommodate these changes, no one is solely responsible.
3. **Positive** (inspired, optimistic etc.)  
We are now more aware of the impacts of solid waste in our health and environment and, we can move forward from here.

- **Question 2: If waste management laws are to be implemented more strictly, do you think you can classify and segregate waste properly? How so?**

**Possible Answer/s:**

1. **Yes**, because we can follow strictly and may develop good practices in solid waste management in our household.
2. **No**, people can still be violating them.
3. **No**, people will just ignore them.

- **Question 3: Why is it important to plan to reduce waste production?**

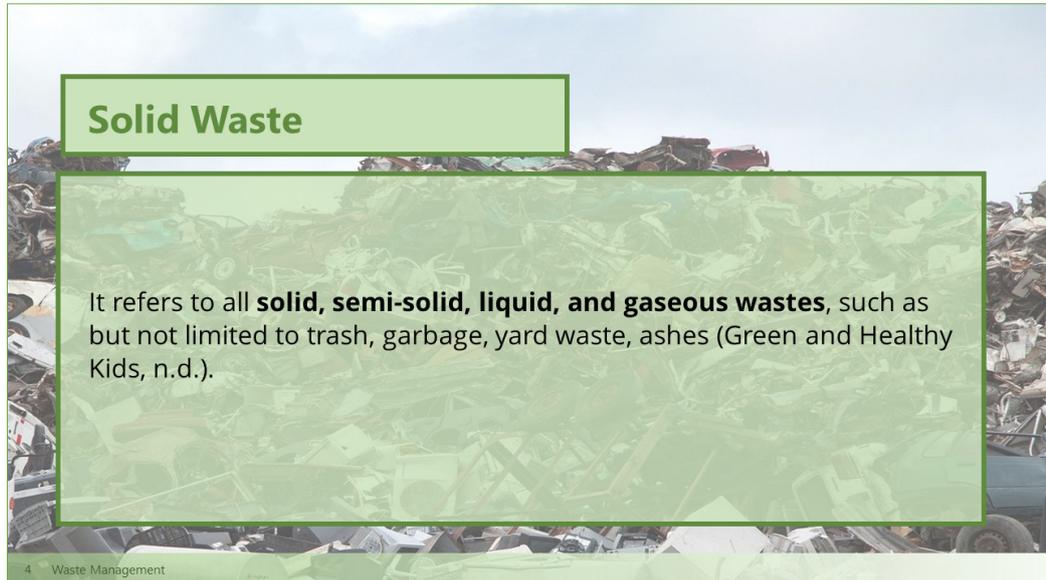
**Possible Answer/s:**

Every day, as we go about our lives, we produce wastes. We only have one planet where we source our needs and put our wastes. Reduction of solid waste is important because it:

- raises the quality of life in our communities;
- promotes healthful living;
- helps not aggravate existing solid waste management problems; and
- preserves our natural environment.

4. Discuss the concepts on waste management and 5R's. Show **SLIDES 4-15**.

**SLIDE 4**



**Solid Waste**

It refers to all **solid, semi-solid, liquid, and gaseous wastes**, such as but not limited to trash, garbage, yard waste, ashes (Green and Healthy Kids, n.d.).

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**SLIDE 5**



**Kinds of solid waste**

It is the local classifications of waste required for a minimum of collection, in accordance with **Republic Act 9003 or the Ecological Solid Waste Management Act of 2000**.

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SLIDE 6



**Kinds of solid waste**

**Compostable Waste**

It means that a product is **capable of disintegrating into natural elements** in a compost environment, leaving no toxicity in the soil. It typically must occur in about 90 days (Good Start Packaging, n.d.).

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SLIDE 7



**Kinds of solid waste**

**Recyclable Waste**

It refers to **any waste material retrieved from the waste stream and free from contamination and is convertible into suitable beneficial use or for other purposes**, including but not limited to newspaper, ferrous scrap metal, non-ferrous scrap metal, used oil, corrugated cardboard, aluminum, glass, office paper, and tin cans (Republic Act No. 9003, Article 2, Section 3 (z)).

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## SLIDE 8

### Kinds of solid waste according to Republic Act 9003

#### Non-recyclable

It is the **non-compostable**, **non-recyclable**, and **non-hazardous** waste.

#### Special waste

Special wastes shall refer to household hazardous wastes such as paints, thinners, household batteries, lead-acid batteries, spray canisters and the like. These include wastes from residential and commercial sources that comprise of bulky wastes, consumer electronics, white goods, yard wastes that are collected separately, batteries, oil, and tires. These wastes are usually handled separately from other residential and commercial wastes. (Republic Act 9003, Article 2, Section 3, (pp)).

## SLIDE 9



### The 5Rs of solid waste management

It is a hierarchical guide for effective solid waste reduction and management.

SLIDE 10



## 5Rs of solid waste management

### REFUSE

It is the step that involves saying “no” to waste in the forms of single-use disposables like bags, straws, cutlery, cups, as well as to junk mail, promotional freebies, and other short-lived non-necessities that have a one-way ticket to the garbage bin (Zero Waste Xchange, 2017).

REDUCE

REUSE

RECYCLE

ROT

REFUSE

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SLIDE 11



## 5Rs of solid waste management

ROT

REFUSE

### REDUCE

“Reduce” might mean letting go, donating, and/or selling of no longer of use household items, thereby alleviating and creating space. “Reducing” might also mean shopping with a purpose and focusing on necessary purchases as opposed to random splurges on things that you don’t need. Too often, these items quickly make their way into the dumpster or the back of the closet or come swaddled in swaths of unsustainable packaging. Good examples of these are fast-fashion, cheap electronic gadgets, and processed food (Zero Waste Xchange, 2017).

REUSE

RECYCLE

ROT

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SLIDE 12



## 5Rs of solid waste management

RECYCLE  
ROT  
REFUSE  
REDUCE

### REUSE

It is to switch up disposable items for reusable and permanent alternatives. It means (1) sourcing a reusable beverage container and carrying it with you when you are out and about, and (2) carrying reusable cutlery with you as a measure to avoid disposable cutlery (Zero Waste Xchange, 2017).

RECYCLE  
ROT  
REFUSE

SLIDE 13



## 5Rs of solid waste management

ROT  
REFUSE  
REDUCE

### RECYCLE

It is to segregate recyclable waste for processing in recycling facilities. Contrary to the notion that recycling is the way-to-go, this option does not come first in the hierarchy of waste reduction (Zero Waste Xchange, 2017).

ROT  
REFUSE  
REDUCE

## SLIDE 14



## 5Rs of solid waste management

RECYCLE  
ROT  
REFUSE  
REDUCE  
RECYCLE

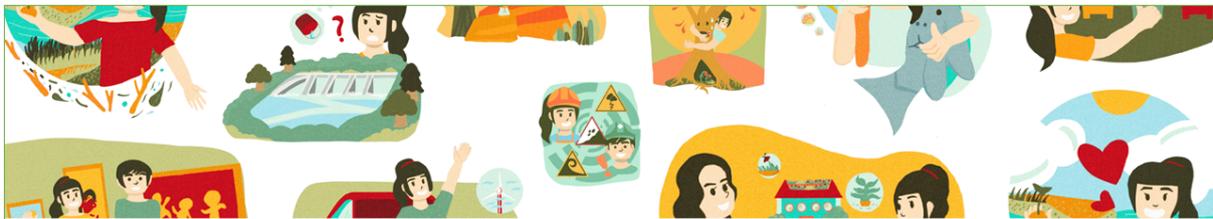
### ROT

It is the composting of compostable wastes (Zero Waste Xchange, 2017).

REFUSE  
REDUCE

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## SLIDE 15



You may listen to this podcast episode at [dzup.org/eskwekalikasan](http://dzup.org/eskwekalikasan). Catch all ten episodes of *Kayang-kaya!* Podcast at [dzup.org](http://dzup.org).

**Episode 1:** Ano ang carbon footprint?

**Episode 2:** Kakaunti na lang ba talaga ang mga isda natin sa Pilipinas?

**Episode 3:** Ano ang kahalagahan ng pagtatanim ng punò sa tao at sa kapaligiran?

**Episode 4:** Ano ang epekto ng "fast fashion" sa ating kalikasan?

**Episode 5:** Bakit kayà summer na pero bumabagyo pa rin sa barangay namin?

**Episode 6:** Mapupunò ba ng basura ang barangay namin?

**Episode 7:** Bakit walang lumalabas na tubig sa gripo?

**Episode 8:** Paano maghahanda ang buong barangay laban sa disaster?

**Episode 9:** Paano napapagana ang cellphone ng hangin at tubig?

**Episode 10:** Bakit kailangang lumahok ang kabataan sa environmental movement?

If you'd like to know more about waste management, you may listen to the radio episodes of DZUP EskweKalikasan's Module 6. Waste Management:

**Radio Episode 1: Our Waste Problem**

Guests: Sonia S. Mendoza and Leizel D. Licay

**Radio Episode 2: E-waste**

Guest: Pamela Jane Maucesa

**Radio Episode 3: Waste and Our Health**

Guest: Paolo Victor N. Medina

**Radio Episode 4: Waste in Our Ocean**

Guest: Caroline Marie B. Jaraula

**Radio Episode 5: Best Practices in Waste Management**

Guest: Rosie Ducot Dones

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## II. LESSON PROPER

### 1. Group Activity

Group the class into three. Ask the groups to discuss among themselves the activities in their household, school, or barangay and how these contribute to daily waste production. Give the groups 10 minutes to discuss among themselves.

## Concept Formation and Gathering of Evidence

*(Answers to the series of questions in this part will serve as pieces of EVIDENCE that the students are expected to answer in order to back-up their CLAIMS in the argumentative question or statement.)*

### 2. Continuation of the group activity

Read the instructions and questions below to complete the household waste management and reduction plan. Give the groups 10 minutes to discuss among themselves.

- **Question 4: Enumerate common wastes produced in the activities listed in item 1 (Group Activity).**

**Possible Answer/s:**

1. Eating our meals – leftover foods, plastic containers (for takeout meals)
2. Taking a bath, washing clothes, washing dishes – dirty water that goes to sewerage systems
3. Grocery shopping – plastic, bottle, can, or paper boxes as container of either solid or liquid items

- **Question 5: Which of these wastes can disintegrate organically within approximately 90 days in a compost pit without leaving toxic components into the soil?**

**Possible Answer/s:** Leftover food

- **Question 6: Which of these wastes can be recycled?**

**Possible Answer/s:** plastic, bottles, cans, or papers

- **Question 7. Which of these are electronic wastes? If there are none, please cite some.**

**Possible answer/s:** Electronic wastes come from disposed batteries, used phones, worn-out flashlights, keyboards, printers, mouse, wire cables, lamps, calculators, etc.

- **Question 8. Which of these are hazardous and toxic wastes? If there are none, please cite some.**

**Possible answer/s:** lithium batteries (from car, mobile phones, etc.), pesticides, kerosene, cleaning or polishing materials

- **Question 9. Why do humans generate or produce wastes?**

**Possible answer/s:** Because humans consume materials to perform their daily tasks like cooking, cleaning the house, etc., for survival.

- **Question 10. Which activities generate most compostable wastes?**

**Possible answer/s:** Food preparation

- **Question 11. Where can we find most of our recyclable wastes?**

**Possible answer/s:** We usually generate recyclable wastes from the containers of our household products, such as food, cleaning materials, hygiene materials, etc.

- **Question 12. Can you identify some of the frequently used items on a daily basis that are non-recyclable?**

**Possible answer/s:**

- Napkins
- Tissue paper
- Paper towels
- Wax paper
- Wrapping paper
- Bubble wrap
- Waxed/waterproof cardboard
- Motor oil cans
- Metal and cardboard containers contaminated with oil-based products
- Paint cans
- Light bulbs
- Mirror glass
- Window glass
- Ceramic or marble

- **Question 13. What are the examples of special wastes?**

**Possible answer/s:**

- Commercial/industrial waste  
It is non-hazardous industrial process waste, treated infectious waste, and similarly potential harmful waste that require special handling. Examples include processed sludge, ash, filters, sandblast media, and dusty wastes. Commercial/industrial waste must not contain "free" liquids and must be containerized if it can become airborne.

- **Liquid/semi-solid waste**  
The Iowa Department of Natural Resources permits the Waste Commission of Scott County to accept liquid and semi-solid waste. These wastes are mixed with absorbent materials to allow for beneficial use and proper disposal in the landfill.

Examples include industrial liquids, cooling fluids, cutting oils, rinse water, latex paints and inks, food production waste, municipal waste, tank bottoms/sludges, and drilling waste. Petroleum Contaminated Soils: These soils are non-hazardous but contaminated with petroleum products. This type of waste is treated by aeration and then used as a daily cover at the Scott Area Landfill.

- **Other Special Waste:** These need special handlings, such as spill cleanup materials, off-spec products, animal carcasses, drums and pressurized containers, fluorescent lights, and asbestos.

Source: Waste Commission of Scott Country. "Special Waste." (n.d.).  
<https://www.wastecom.com/Content/Business-Industry/Special-Waste.aspx?PF=True>

3. Present the argumentative question/s or statements. Elicit students' opinions as a leveling-off of students' prerequisite knowledge. Their answers may be conceptual knowledge or experiential knowledge (*This question will be used to elicit the students' CLAIM in scientific argumentation.*)

## Argumentative Questions

Based on our recent discussion, can humans totally eradicate their wastes?

If yes, why? If no, why not?

- **Question 14. If we cannot totally eradicate wastes, what can be done to manage them?**

**Possible answer/s:** Waste segregation and recycling

- **Question 15. What are some of our waste segregation and recycling methods?**

**Possible answer/s:** 5R's

- **Question 16. Using this classification of wastes, propose a viable waste reduction plan using the 5Rs method. Explain how each type of waste can be reduced or recycled.**

**Possible answer/s:** (*Answers may vary.*)

- **Question 17. Do you practice 5Rs at home? In school? In the community? How?**

**Possible answer/s:** *(Answers may vary.)*

- **Question 18. Do you segregate your wastes at home? In school? In the community? How?**

**Possible answer/s:**

For students living in the cities where there are waste collection schedules:

1. Yes, because the waste collectors will not take our wastes if these are not segregated properly.
2. Yes, because there are schedules in the collection of the different types of wastes.

For students living in the provinces:

1. Yes, we make our own compost pits for our food wastes.
2. Yes, we sell plastic containers, glass bottles, cans, and papers.

- **Question 19. How do you practice the “refuse” in the 5Rs?**

**Possible answer/s:**

1. minimize the single use of plastic containers
2. conserve the lifespan of lithium cell batteries and the likes

#### 4. Presentation of case studies

Have each group present their case studies for five (5) minutes each. After the presentation, ask the group one of these questions:

- **Question 20. What are the common misconceptions in waste management in your households?**

**Possible answer/s:**

Common household practices that are not good for solid waste management are usually due to lack of information, misconceptions, and the perception that solid waste management takes a lot of effort. Some of the misconceptions are as follows below.

- The garbage collectors must segregate solid waste.
- Burning trash is a responsible way of reducing trash.
- Recycling is the top choice for waste reduction.

#### **For additional ideas on the misconceptions about waste management:**

Source: PEGEX Hazardous Waste Experts. “6 Common Misconceptions About Waste.” (2014, May 2). <https://www.hazardouswasteexperts.com/6-common-misconceptions-about-waste/>

1. **Myth:** Eliminating waste is bad for the economy.  
**Truth:** In fact, many leading businesses recognize that waste equates to lost profit. Eliminating waste can ultimately benefit their bottom line and save them money.

2. **Myth:** A product that is labeled as a non-hazardous can be disposed of in the trash.  
**Truth:** All waste must actually be evaluated before its disposal. Before choosing a disposal method, be sure to check with environmental regulators. It is a good idea to have a program in place for managing wastes, and Hazardous Waste Experts can help you build one in a compliant and efficient manner.
3. **Myth:** Once a disposal facility accepted hazardous waste, people are no longer responsible for it.  
**Truth:** Under CERCLA legislation, people are still liable for cleanup even after they have arranged for proper disposal. It is important to choose a reliable vendor for their hazardous waste removal to ensure “cradle-to-grave” doesn’t come back and haunt them. Hazardous Waste Experts can assist, as well.
4. **Myth:** Existing laws and regulations always provide sufficient protection from hazardous materials and chemicals.  
**Truth:** Toxic chemicals are often released into the environment through hazardous waste management problems, exclusions to regulations, non-point sources, and permitted discharges.
5. **Myth:** Landfills solve all our waste problems.  
**Truth:** Unfortunately, landfills ignore the cost of waste and missed opportunities to conserve resources. Reliance on landfills is not an ideal solution because hazardous materials and substances find their way in, and because disposal of useful materials means our economy relies heavily upon—and often unnecessarily—on dwindling natural resources.
6. **Myth:** Recycling solves all our waste problems.  
**Truth:** Recycling is a valuable and promising process, but the current system is far from perfect. Several long-range problems need solutions, including the fact that most products are not designed for recycling. It means that to recover and reprocess materials can be costly.

- **Question 21. What is the importance of consciousness in consumption and waste production?**

**Possible answer/s:**

Consciousness in consumption and waste production is important because:

1. Awareness and refusing to produce waste, to begin with, is the best option for waste management.
2. Empowering people on what they can do for the environment and enjoining the community for solutions in our waste problems.

## Concluding Question to Elicit the Students' Justifications for Their Claims

*(This will serve as the justification for their claims. Their evidence will come from the concepts which were discussed in class.)*

Based on our recent discussion, can humans totally eradicate their wastes?

If yes, why? If no, why not?

### Elicit this answer as a consensus:

Humans cannot totally eradicate waste because these wastes usually come from products that are used for our survival.

5. Podcast replay: Replay Segment 5 of the podcast: Call to Action of Kali - "Isang Tabong Trash Challenge." **[TIMESTAMP 17:23-18:50]**

- **Question 22. What are the things that Kali and Alab realized after doing the "Isang Tabong Trash Challenge"?**

#### Possible answer/s:

1. Zero waste challenge is a worthy endeavor, but it demands great lifestyle changes.
  2. There are things we cannot forego that produce waste as we are limited by our options.
  3. Solid waste management is both an individual and a community effort.
  4. Consumers affect production practices and can demand for more sustainable market options.
6. Podcast reiteration  
Echo to the students the call to actions or the challenges that Kali posed at the end of the podcast:
    - a. Maging mas maalam tungkol sa ating mga kinokonsumo at solid waste management.
    - b. Gawin ang makakaya para masunod ang 5Rs at mag-segregate ng basura.
    - c. Makibahagi sa pagtuklas ng mga paraan para mabawasan ang basura.
    - d. Maging aktibo sa mga kampanya para sa mas malinis na komunidad.

7. Short Essay Writing

Let the students answer in not more than five sentences the question:

**What can the youth contribute to solid waste management and reduction in the community?**

**Possible answer/s:**

- Recognize and acknowledge that you have a role in solid waste management.
- Inform and educate yourself, family, and community about solid waste management and reduction.
- Join and launch local campaigns for better solid waste management.
- Encourage and promote sustainable living choices.

## Related Concepts

1. **Solid waste**

- It refers to all solid, semi-solid, liquid, and gaseous wastes, such as but not limited to trash, garbage, yard waste, ashes, industrial/construction waste, appliances/furniture, and etcetera.

2. **Kinds of solid waste**

- It is the local classifications of waste required for a minimum of collection, in accordance with RA 9003.
  - a. **Compostable** – It means that a product is capable of disintegrating into natural elements in a compost environment, leaving no toxicity in the soil. It typically must occur in about 90 days.
  - b. **Recyclable** – It refers to any waste material retrieved from the waste stream and free from contamination, and is convertible into suitable beneficial use or for other purposes, including but not limited to newspaper, ferrous scrap metal, non-ferrous scrap metal, used oil, corrugated cardboard, aluminum, glass, office paper, and tin cans.
  - c. **Non-recyclable** – It is the non-compostable, non-recyclable, and non-hazardous waste.
  - d. **Special wastes** – According to RA 9003, “Special wastes shall refer to household hazardous wastes such as paints, thinners, household batteries, lead-acid batteries, spray canisters and the like. These include wastes from residential and commercial sources that comprise of bulky wastes, consumer electronics, white goods, yard wastes that are collected separately, batteries, oil, and tires. These wastes are usually handled separately from other residential and commercial wastes.”

3. **Waste segregation**

- Solid waste management practice of separating different materials found in solid wastes in order to promote recycling and reuse of resources and to reduce the volume of waste for collection and disposal. Segregation at source refers to a solid waste management practice of separating, at the point of origin, different materials found in solid wastes in order to promote recycling and re-using of resources and to reduce the volume of wastes for collection and disposal.

#### 4. **Ecological Solid Waste Management Act of 2000**

- It is an act pertaining to the country's declaration to adopt a systematic, comprehensive, and ecological solid waste management program as policy. Also known as RA 9003, this policy declares that the citizens shall:
  - a. Ensure the protection of public health and environment;
  - b. Utilize environmentally-sound methods that maximize the utilization of valuable resources and encourage resources conservation and recovery;
  - c. Set guidelines and targets for solid waste avoidance and volume reduction through source reduction and waste minimization measures, including composting, recycling, re-using, recovering, green charcoal processing, and others, before collection, treatment, and disposal in appropriate and environmentally sound solid waste management facilities in accordance with ecologically sustainable development principles;
  - d. Ensure the proper segregation, collection, transport, storage, treatment and disposal of solid waste through the formulation and adoption of the best environmental practices in ecological waste management excluding incineration;
  - e. Promote national research and development programs for improved solid waste management and resource conservation techniques, more effective institutional arrangement and indigenous and improved methods of waste reduction, collection, separation and recovery.
  - f. Encourage greater private sector participation in solid waste management;
  - g. Retain primary enforcement and responsibility of solid waste management with local government units while establishing a cooperative effort among the national government, other local government units, non-government organizations, and the private sector;
  - h. Encourage cooperation and self-regulation among waste generators through the application of market-based instruments;
  - i. Institutionalize public participation in the development and implementation of national and local integrated, comprehensive and ecological waste management programs; and
  - j. Strengthen the integration of ecological solid waste management and resource conservation and recovery topics into the academic curricula of formal and nonformal education in order to promote environmental awareness and action among the citizens.

#### 5. **Philippine waste management strategies**

- **Open dump** – Open dumps have the lowest initial capital investment and operating cost of the three basic types of landfills. These are generally situated in vacant plots of land and are typically developed in low-lying marshy lands, often as a means of reclaiming land for subsequent development. These may be located adjacent to existing residential development because of constraints on the availability of suitable land or, alternatively, may attract the development of communities involved in recycling activities. Because of the proximity of residential communities, these are often of small size, limited in capacity, and pose high potential environmental risks.
- **Controlled dump** – It is a non-engineered disposal site at which municipal solid waste is deposited in accordance with minimum prescribed standards of site operation. Typically, controlled dumps have minimal site infrastructure. These are the first stage in the progression from open dumps. In upgrading from open dump to controlled dump, there are generally no significant investments required in capital works or equipment

purchases; rather, upgrading is concentrated primarily on improvements to operational and management issues.

- **Sanitary landfills** – The most significant jump in technology, expertise, and technical resources required arises at the transition from Controlled Dump to an engineered Sanitary Landfill. A Sanitary Landfill is a disposal site designed, constructed, operated, and maintained in a manner that exerts engineering control over significant potential environmental impacts arising from the development and operation of the facility. In particular, engineering of the site is undertaken to contain and regulate the uncontrolled migration of leachate (water contaminated from contact with decomposing waste) and landfill gas. In siting a Sanitary Landfill, significant effort is directed into identifying and selecting a favorable location with respect to existing environmental conditions in order that the requirements for landfill engineering are kept to a minimum or the overall potential impacts of site development are considered to be least significant. In practice, land availability is often the fundamental factor and most sites for Sanitary Landfills are selected in far from ideal settings, necessitating that the site is designed and engineered in a manner that minimizes environmental impact.
- **Materials Recovery Facilities** – RA 9003 mandates the establishment of a Materials Recovery Facility (MRF) in every barangay or cluster of barangays in barangay-owned, leased land, or any suitable open space the barangay designated. The MRF is expected to receive, sort, process, and store compostable and recyclable material efficiently and in an environmentally sound manner. Any resulting residual waste shall be transferred to a proper disposal facility.

## 6. Composting

It is the controlled decomposition of organic matter by micro-organisms, mainly bacteria, and fungi, into a humus-like product. Composting can also provide for gardening needs.

## 7. 5Rs of Solid Waste Management

- It is a hierarchical guide for effective solid waste reduction and management.
  - **Refuse** – It is the step that involves saying “No” to waste in the forms of single-use disposables like bags, straws, cutlery, cups, as well as to junk mail, promotional freebies, and other short-lived non-necessities that have a one-way ticket to the garbage bin.
  - **Reduce** – “Reduce” might mean letting go, donating, and/or selling of unusable household items, thereby alleviating and creating space. “Reducing” might also mean shopping with a purpose and focusing on necessary purchases as opposed to random splurges on things that you do not need. Too often, these items quickly make their way into the dumpster or the back of the closet or come swaddled in swaths of unsustainable packaging. Good examples of these are fast-fashion, cheap electronic gadgets, and processed food.
  - **Reuse** – It is to switch up disposable items for reusable and permanent alternatives. It means: (1) sourcing a reusable beverage container and carrying it with you when you are out and about, and (2) carrying reusable cutlery with you as a measure to avoid disposable cutlery.
  - **Recycle** – It is to segregate recyclable waste for processing in recycling facilities. Contrary to the notion that recycling is the way-to-go, this option does not come first in the hierarchy of waste reduction.
  - **Rot** – It is the composting of compostable wastes.

## 8. **Zero waste**

- It is an advocacy that promotes designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of wastes and materials and to conserve and recover all resources, and not indiscriminately dispose or burn them. “Zero waste” is an ethical, economical, efficient, and visionary goal to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use. In May 2014, former President Benigno Aquino III declared in Proclamation No. 760 that every month of January is a Zero Waste Month.

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