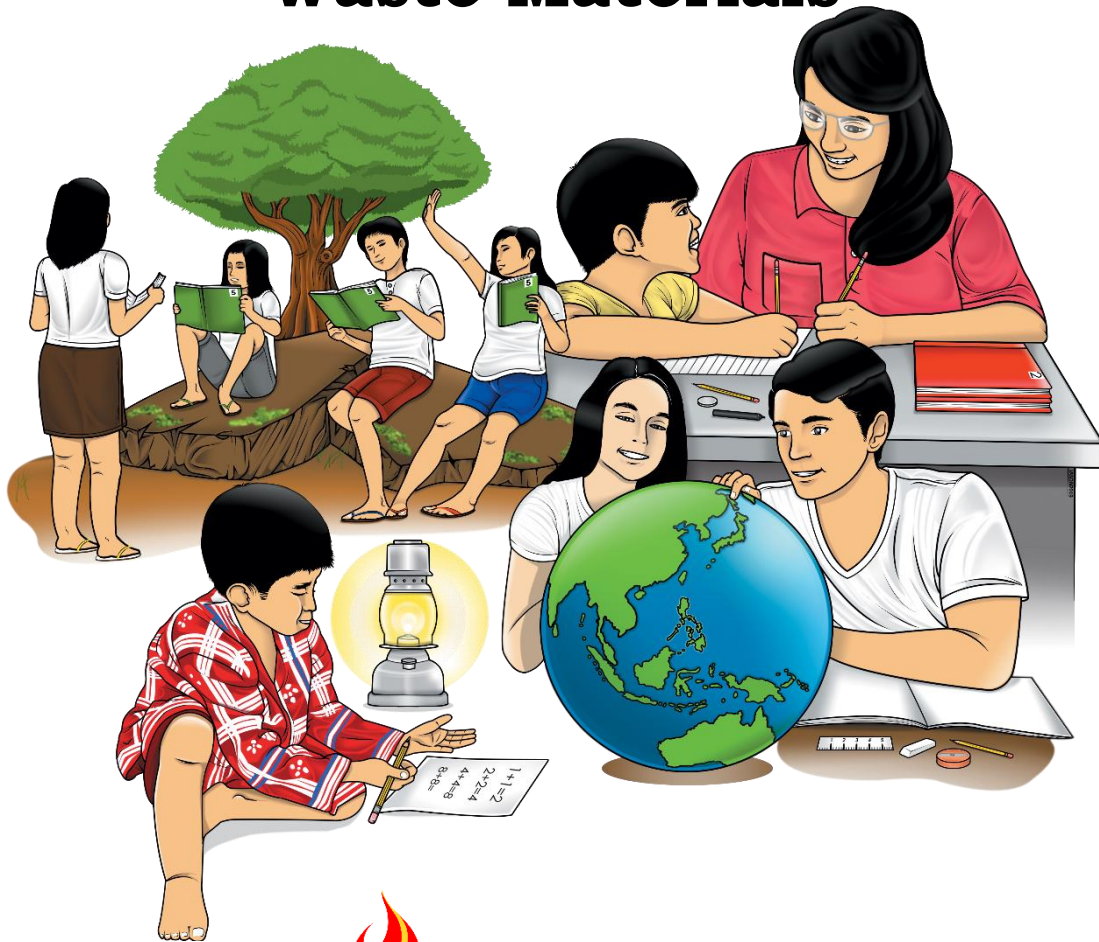


Technology and Livelihood Education

Industrial Arts – Module 14: Products from Recycling of Waste Materials



TLE-IA – Grade 6
Alternative Delivery Mode
Quarter 2 – Module 14: Products from Recycling of Waste Materials
First Edition, 2020

Republic Act 8293, section 176 states that: No copyright shall subsist in any work of the Government of the Philippines. However, prior approval of the government agency or office wherein the work is created shall be necessary for exploitation of such work for profit. Such agency or office may, among other things, impose as a condition the payment of royalties.

Borrowed materials (i.e., songs, stories, poems, pictures, photos, brand names, trademarks, etc.) included in this module are owned by their respective copyright holders. Every effort has been exerted to locate and seek permission to use these materials from their respective copyright owners. The publisher and authors do not represent nor claim ownership over them.

Published by the Department of Education
Secretary: Leonor Magtolis Briones
Undersecretary: Diosdado M. San Antonio

Bumuo sa Pagsusulat ng Modyul

Writer:	Gerald V. Samson
Editors and Reviewers:	Jeanalyn L. Jamison Ana Lee C. Bartolo Petronilo R. Bartolo Velly P. Seguisa Ivy Dalisay
Illustrator:	Jofel D. Nolasco
Layout Artists:	Jofel D. Nolasco Ana Lee C. Bartolo Jera Mae B. Cruzado
Management Team:	Ramir B. Uytico, Pedro T. Escobarte, Jr. Neri Anne M. Alibuyog, Bernie L. Libo-on Elena Gonzaga, Donald T. Genine Melgar B. Coronel, Ana Lee C. Bartolo Jeanalyn L. Jamison

Printed in the Philippines by Department of Education – Region VI - Western Visayas

Office Address: Duran St., Iloilo City
Telefax: (033) 509-7653; (033) 336-2816
E-mail Address: region6@deped.gov.ph

Technology and Livelihood Education

Industrial Arts – Module 14: Products from Recycling of Waste Materials

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.

Thank you.



What I Need to Know

This module was designed and written with you in mind. It is here to help you master the skills in identifying waste materials for recycling. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using

This module focuses on the following topics:

- a. List of recyclable waste materials; and
- b. Products from recyclable waste materials

After going through this module, you are expected to:

- a. Recycles the identified products/waste materials into functional items (binding of used papers into notebooks, or memo pad; bottled plastics into lampshades, flowers, plants, etc. (TLE6IA-0j- 14)



What I Know

Directions: Read each sentence carefully and choose the letter of the best answer.
Write your answer on a separate answer sheet.

1. Paper is the primary material on this recycled item.
 - a. scrap book
 - b. wind chime
 - c. pencil holder
 - d. flower holder
2. Which of the following materials can be used to beautify walls or cabinet?
 - a. wine bottles
 - b. used tires
 - c. wood
 - d. metal
3. Which of the following materials can be utilized as chairs, wooden tiles and other wooden utensils?
 - a. paper
 - b. metal
 - c. glass
 - d. wood

4. It refers to the materials that can be cut, painted and turned into beautiful pencil holders.
 - a. tins and cans
 - b. bottle
 - c. paper
 - d. wood
5. These materials can be transformed to garden decorations such as birds, swans, and other figures.
 - a. used tires
 - b. papers
 - c. heavy metal
 - d. wood
6. In what part of a project plan tells the reason/s why you want to make that project?
 - a. Title of the project
 - b. Project objectives
 - c. Bill of Materials
 - d. Procedure
7. Why we must practice recycling?
 - a. to reduce waste
 - b. to save money
 - c. to protect our environment
 - d. all answers are correct
8. The following materials are considered recyclable. Which among these is NOT included?
 - a. used newspapers
 - b. used surgical gloves
 - c. used tires
 - d. used plastics
9. It is the part of a plan where you make a model look of your project.
 - a. List of tools needed
 - b. Project objectives
 - c. bill of materials
 - d. Working drawing
10. What are the best recyclable materials you can recycle?
 - a. Waste materials that can be found in your community.
 - b. Waste materials that can be found in other places.
 - c. Waste materials that can be in some hospitals.
 - d. Waste materials that come from abroad.

Lesson 1

Recycles Identified Materials into Functional Items

Identifying recyclable materials around you is very important. Choosing one among these materials is suitable for you to work on is another thing.

We choose to recycle things that will benefit us especially to our house, garden, or workplace. We can reduce the bulk of waste, we can have extra income, and we can have enjoyable recreational activities which we and our other family members can work on together.

In this module we will learn more about recycling. What materials within our locality can be used and turned into functional items?



What's In

Directions: The following illustrations below show the process of recycling. Arrange them in correct sequence. Write number 1 for step 1 and so on. Write your answer on a separate sheet of paper.

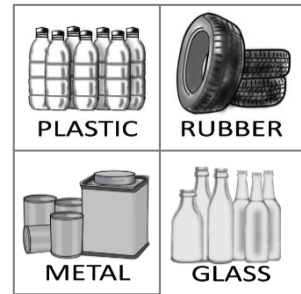
A.



B.



C.



D.



E.



Notes to the Teacher

To our beloved teachers:

The following words listed below are defined according to how they are referred to this module.

Please help the pupils understand these words.

New Words to Learn

1. Suitable – something that is proper to use.
2. Decoration – ornament or things that are used to add beauty to a place or site.
3. Wall decors – refer to decorations on the wall.
4. Garden decors – refer to decorations on the garden.
5. Kitchen utensils – instruments used in kitchen for cooking.



What's New

Recycling is very interesting and exciting in the sense that it will challenge your creativity and resourcefulness.

A lot of recyclable materials can be made into various unique and useful new products. Recycled items serve a purpose to households, offices and even to gardens. They can be beautiful and elegant decorations too.

Did you see any recyclable materials that are turned into unique and useful products in your school? In your community?

What makes them to become useful products?



What is It

Listed below are some recyclable materials and products that can be made out of them.

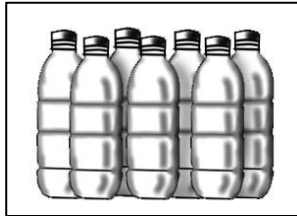
Paper



Jofel D. Nolasco, file of newspaper,2019

- ❖ Old newspapers and other scratch papers can be made into paper charcoal.
- ❖ Paper is the most important ingredient in making paper mache with different unique figures.
- ❖ Clean and tidy papers can be cut into uniform sizes, then bind them into scrap books, memo pads and notebooks.

Plastic bottles



- ❖ They can be made into beautiful plastic flowers.
- ❖ Can be cut in uniform sizes, painted and displayed as unique desk organizers.
- ❖ They can be used also as materials in constructing plant boxes for vegetable garden.

Tins and cans



- ❖ Tins and cans can be cut and painted turning them into useful pencil holders.
- ❖ They can be made into lanterns and other Christmas decors.

5

Empty wine bottles



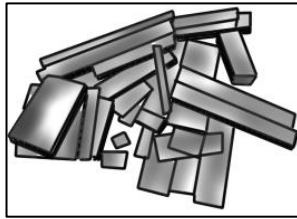
- ❖ They can be made as decorative flower holder.
- ❖ Colored wine bottles can also be made into wall decorations.
- ❖ They can also be painted and hanged on corners as decorations.
- ❖ Can be arranged on the cabinet artistically.

Empty plastic bottles



- ❖ They can be cut and used as pots both for flowers and vegetables.
- ❖ They can be cut with design as pots for hanging plants.
- ❖ Some of these plastic bottles are cut and formed as animals for garden decors.

Wood



- ❖ Wood from house and construction wastes can be turned into wooden tiles, chairs, tables, kitchen wooden utensils, and other garden decorations.

Tires



- ❖ Used tires can be made into different garden decorations. There are people who are experts and very creative in cutting and forming tires into different figure, like birds, swan and other animals suitable for garden decorations.

Have you ever tried recycling? If you do, then it is sure that you had experienced that feeling of joy and success.

But if you have not tried recycling yet, it's okay. We will introduce to you some of the suggested recycle projects that you will surely love to make.

In module 6, it was presented and discussed to you the importance of a Project Plan. Planning is essential in every project we make especially recycling.

To recall, here are the parts of a Project Plan.

- A. **Project Title** – tells what the project is all about.
- B. **Project Objectives** – tell the purpose/s of the project.
- C. **Bill of Materials** – tell the materials to be used. This part contains the unit, quantity, description, the unit price and the total price for each item needed.
- D. **Tools Needed** – tells about the different tools, machines or gadgets needed in the making of the project.
- E. **Procedure** – tells the exact steps in the preparation of the project.

- This will serve as the guide in project making.

F. **Working Drawing** – shows the scale drawing of an object to be made; or structure to be built, intended for direct use of the workman.

Knowing the parts of a project plan, you can now recycle identified materials into functional items.

The first project is a desk organizer made, out of empty plastic bottles.

A. Project Title: Desk Organizer

B. Project Objectives:

1. To create a simple project according to the prepared plan.
2. To be able to make a desk organizer out of empty plastic bottles.

C. Bill of Materials:

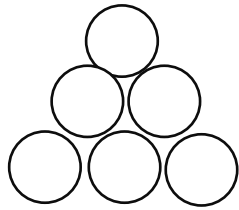
Quantity	Unit	Description	Unit Price	Total Price
6	pcs.	Empty plastic bottle (1 liter)	₱ 1.00	₱ 6.00
1	meter	Decorated lace	₱ 10.00	₱ 10.00
1	pc.	Glue stick	₱ 5.00	₱ 5.00
			Total	₱ 21.00

D. Tools Needed:



E. Procedure:

1. Clean the bottles and let it dry.
2. Measure around 2 ½ - 3 inches from the base of the bottle going up then mark it all around.
3. Cut the mark area using a sharp cutter. Set aside the upper part of the bottle for future recycling projects.
4. Smoothen the cut edges using scissor.
5. Cover all the edges with decorated lace.
6. Glue together the six receptacles in manner seen below



7. Decorate with sticker, labels or anything to make it colorful and attractive.

Note: Always observe safety measures when using sharp tools.

F. Working Drawing:



The second recycle project we will introduce is tin can pencil holder.

A. Project Name: Tin Can Pencil Holder

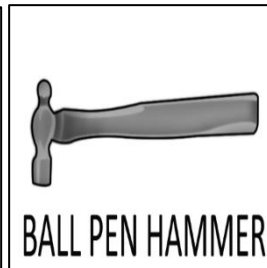
B. Project Objectives:

1. To be able to recycle identified materials into useful items or products.
2. To be able to create a tin can pencil holder.

C. Bill of Materials:

Quantity	Unit	Description	Unit Price	Total Price
3	pcs.	Tin cans (sizes of your choice)	₱ 0.00	₱ 0.00
3	pcs.	Scrap cloth or paper enough to cover the tin can	₱ 0.00	₱ 0.00
3	pcs.	Glue stick	₱ 5.00	₱ 15.00
1	meter	½ inch wide ribbon	₱ 5.00	₱ 5.00
			Total	₱ 20.00

D. Tools Needed:



E. Procedure:

1. Remove the top cover of the can the can opener.
2. Smoothen the edges of the can by pounding it with a ball pen hammer.
3. Wash the can with soap and water. Let it dry under the heat of the sun.
4. Glue the cloth or paper all around the side of the can and let it dry.
5. Glue the ribbon around the top and bottom edges of the can.
6. Repeat the same procedure for the rest of the cans.
7. Glue together the ten can holders. You can arrange the can depending on their sizes and height.

F. Working Drawing:



Note: Always observe safety measures when using sharp tools.

What have been presented to you are just simple recycled projects. These encourage you to be creative in discovering more projects to do.



What's More

Activity 1: Using Imaginations

Learning the Skill: Imagining Ideas

Directions: Using your imagination and creativity, try to list down possible projects that can be made, out of the following items listed below. Write your answer on a separate sheet of paper.

1. Colored wine bottles:

2. 5-liter empty plastic bottles:

3. Old magazines:

4. Colored bottles of soft drinks:

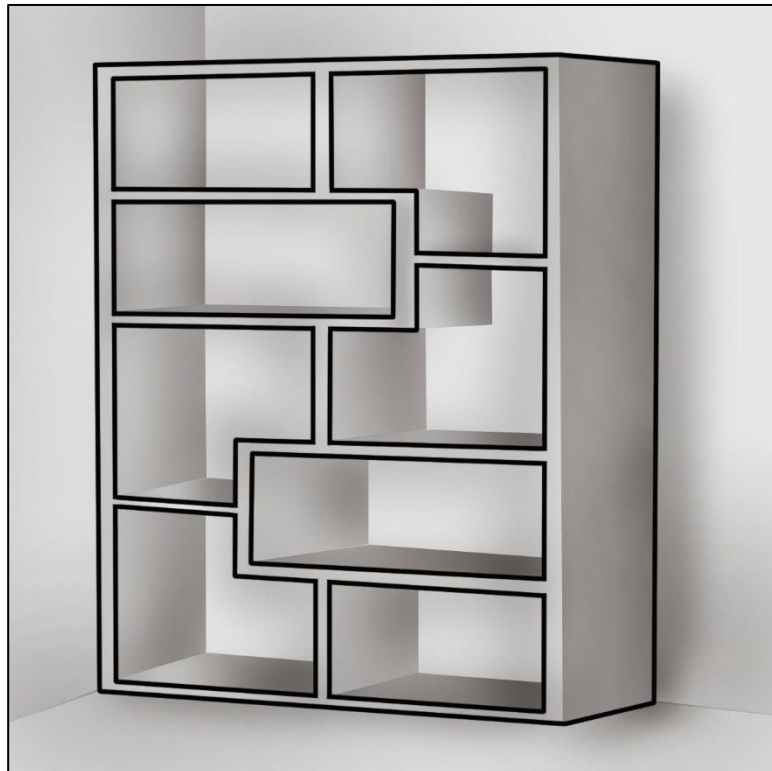
5. Tins and cans:

Activity 2: You Can Do It!

Learning the Skill: Creating and designing something

The cabinet below is empty.

1. Redraw it.
2. Using your resourcefulness and creativity, draw something that can be put on this cabinet to make it more beautiful and attractive.
3. Label the kind of recyclable materials you use.
4. Do this in a separate sheet of paper.



Jofel D. Nolasco, Cabinet, 2019

Activity 3: Make a Message

Learning the Skill: Writing a free verse poem.

1. Make at least 3-stanza-poem with 3 to 4 lines in every stanza, related to (3Rs) – reduce, reuse, and recycle.
2. You can use English or Filipino language in expressing your ideas.
3. Use separate sheet of paper for this activity.



What I Have Learned

Directions: Choose the correct word/s inside the parenthesis to make the statement true. Write your answer in a separate sheet of paper.

1. Materials like paper, plastic, glass, wood, metals and tins are called _____ materials. **(waste, toxic, recyclable)**
2. Recyclable materials usually came from _____ that we usually consume every day. **(food packages, industrial waste, animal waste)**
3. Each of these materials are useful when converted into _____ needed at homes, offices, schools and gardens. **(functional items, trash, foods)**
4. Recycling supports the proper waste management program and brings - _____ to people. **(danger, disaster, livelihood)**
5. Creativity and _____ is very important in recycling. **(money, resourcefulness, support)**
6. _____ is the process of converting waste materials into useful and functional items. **(reusing, reducing, recycling)**
7. _____ can be recycled into memo pads and scrap book. **(papers, plastic bottles, tins and cans)**
8. _____ can be made into beautiful plastic flowers. **(paper, plastic bottles, tins and cans)**
9. In project plan, the _____ tells you the unit, quantity and price of materials needed. **(project title, project objectives, bill of materials)**
10. The _____ is the step-by-step process in project making. **(project objectives, tools needed procedure)**



What I Can Do

Directions: Read and do the activity below. Write your plan in a separate sheet of paper.

1. Look for available recyclable materials in your house or community.
2. Make a project plan on how to transform it into functional and useful item.
3. Do the recycling according to your project plan.
4. Always observe safety precaution while handling sharp and pointed tools.



Assessment

A. Multiple choice:

Directions: Read each sentence carefully and choose the letter of the best answer. Write your answer on your answer sheet.

1. What do you think is the most suitable recyclable materials to be used in making a scrapbook and memo pads?
c. Papers and cardboards c. tins and cans
d. Plastic bottles d. electronic waste
2. Which of the following materials can be used to beautify walls or cabinet?
a. wine bottles b. used tires c. wood d. metal
3. Which of the following materials can be utilized as chairs, wooden tiles and other wooden utensils?
a. wood b. metal c. glass d. paper
4. It refers to the materials that can be cut, painted and turned to beautiful pencil holders.
a. tins and cans b. bottle c. paper d. wood
5. These materials can be transformed to garden decorations such as birds, swans, and other figures.
a. used tires b. papers c. heavy metal d. wood
6. In what part of a project plan tells the reason/s why you want to make that particular project?

- a. Title of the project
 - b. Project objectives
 - c. Bill of Materials
 - d. Procedure
7. Why we must practice recycling? 13
- a. to reduce waste
 - b. to save money
 - c. to protect our environment
 - d. all answers are correct
8. The following materials are considered recyclable. Which among these is NOT included?
- a. used newspapers
 - b. used surgical gloves
 - c. used tires
 - d. used plastics
9. It is the part of a plan where you make a model look of your project.
- a. List of tools needed
 - b. Project Objectives
 - c. Bill of Materials
 - d. Working Drawing
10. What are the best recyclable materials you can recycle?
- a. Waste materials that can be found in your community.
 - b. Waste materials that can be found in other places.
 - c. Waste materials that can be in some hospitals.
 - d. Waste materials that come from abroad.



Additional Activities

In this activity you are going to use your imagination on how and what materials will be used to produce certain recycled products.

Direction: Put a check mark (/) under each column of recyclable materials that is best to use in producing recycled item listed below.

Recycled Products	Tins and Cans	Plastic Bottles	Papers	Wood	Metal	Colored Bottle	Rubber and Tires
1. Notepads							
2. Desk Organizers							
3. Colored Basket							
4. Pencil Holder							
5. Swans on Garden							
6. Wooden Tiles							
7. Wall Decors							
8. Cabinet Decors							
9. Colored Flowers							
10. Paper Mache'							



Answer Key

<p>Additional Activities</p> <p>Note: The teacher will facilitate the checking.</p> <p>Answers of pupils may vary from one another</p>	<p>What's More</p> <p>Note: The teacher will facilitate the checking.</p> <p>Answers of pupils may vary from one another</p>	<p>What I Know</p> <p>A.</p> <p>1. A</p> <p>2. A</p> <p>3. B</p> <p>4. A</p> <p>5. A</p> <p>6. D</p> <p>7. B</p> <p>8. C</p> <p>9. A</p> <p>10. A</p>
<p>What I Have Learned</p> <p>1. recyclable</p> <p>2. food packages</p> <p>3. functional items</p> <p>4. livelthood</p> <p>5. resourcefulness</p> <p>6. recycling</p> <p>7. papers</p> <p>8. plastic bottles</p> <p>9. bill of materials</p>	<p>What I Can Do</p> <p>Note: Answers may vary. Teacher may facilitate the checking.</p>	<p>What's In</p> <p>A. 2</p> <p>B. 5</p> <p>C. 3</p> <p>D. 4</p> <p>E. 1</p>

References

Department of Education Curriculum Guide 2016, EPP 6, Industrial Arts pages 38 – 41

Department of Education MELCs in EPP/TLE Grade 6 Industrial Arts pages 353 – 354

Grade 6 Industrial Arts pages 353 – 354

https://en.wikipedia.org/wiki/Recycling_by_product

https://en.wikipedia.org/wiki/Tire_recycling

https://en.wikipedia.org/wiki/Paper_recycling

Para sa mga katanungan o puna, sumulat o tumawag sa:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqad@deped.gov.ph * blr.lrpd@deped.gov.ph