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# Science

## Quarter 1 - Module 6A:
## Changes in Materials that are Useful in the Environment

**Department of Education • Republic of the Philippines**

Science – Grade 4

Alternative Delivery Mode

Quarter 1 - Module 1: Identify Changes in Materials that are Useful in the Environment

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# Science

## Quarter 1 - Module 6A: Changes in Materials that are Useful in the Environment

This instructional material was collaboratively developed and reviewed by educators from public schools. We encourage teachers and other education stakeholders to email their feedback, comments, and recommendations to the Department of Education at region10@deped.gov.ph.

**We value your feedback and recommendations.**

**Department of Education • Republic of the Philippines**

## *What This Module is About*

This module contains lessons intended for a Grade Four pupil like you. The different activities provided are simple and easy to follow. You will learn at a pace that is appropriate for you. It is expected that after you finish this module, you will learn more and have a better understanding of changes in materials that are useful to the environment.

Discover, explore and have fun in learning through this module and develop an awareness of the things around you. Study and be a productive member of your community.



## *Notes to the Teacher*

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## *What I Need to Know*

Many kinds of things surround us. These things may stay the same or may change. Have you observed some materials which changed after some time? What changes do you observe in things around you? Why do changes occur? How do changes in materials affect the environment? These are some of the questions that will be answered in this module.

At the end of this module, you will be able to:

1. identify changes in materials that are useful to one's environment
2. describe the useful effects of the changes in the materials to the environment
3. suggest ways of utilizing recyclable materials

**Time duration:** 4 days

## *How to Learn from this Module*

To achieve the objectives cited above, you are to do the following:

- Take your time reading the lessons carefully.
- Follow the directions and/or instructions in the activities and exercises diligently.
- Answer all the given tests and exercises.

## *Icons of this Module*

| | | |
|---|---|---|
|  | What I Need to Know | This part contains learning objectives that are set for you to learn as you go along the module. |
|  | What I Know | This is an assessment as to your level of knowledge to the subject matter at hand, meant specifically to gauge prior related knowledge |
|  | What's In | This part connects the previous lesson with that of the current one. |
|  | What's New | An introduction of the new lesson through various activities, before it will be presented to you |
|  | What is It | These are discussions of the activities as a way to deepen your discovery and understanding of the concept. |
|  | What's More | These are follow-up activities that are intended for you to practice further in order to master the competencies. |
|  | What I Have Learned | Activities designed to process what you have learned from the lesson |
|  | What I Can Do | These are tasks designed to showcase your skills and knowledge gained, and applied into real-life concerns and situations. |
|  | Post Assessment | This assessment evaluates your level of mastery in achieving the learning objectives |
|  | More Activities | Activities designed to increase the strength of your skills and knowledge gained and tends to induce repetitions of actions / learning |

## *What I Know*

**A. Direction:** Write YES if the situation has a GOOD EFFECT in the environment and NO if it DOES NOT HAVE GOOD EFFECT. Write your answers in your answer sheet.

_____1. Building houses.

_____2. Burning garbage.

_____3. Cutting of trees.

_____4. Collecting and selling old newspapers and magazines.

_____5. Making doormats using old sacks and strips of cloth.

_____6. Making toys.

_____7. Placing left-over food in the trash can.

_____ 8. Selling the empty bottles of vinegar.

_____ 9. Sewing clothes.

_____10. Throwing unusable plastic bags in the compost.

**B. Direction:** In the table below are some materials commonly found at home. Suggest ways of disposing of these waste materials (*Recycle, Reuse, Rot*) and identify how these materials are recycled, reuse, etc. Write your answers in your answer sheet.

| Material | Ways disposing of the material | What recycled materials is/are produced |
|---|---|---|
| 1. used car tire | | |
| 2. cracked basin | | |
| 3. banana peels | | |
| 4. empty bottle | | |
| 5. juice pack | | |

# Lesson 1 Identify Changes in Materials that are Useful in the Environment

We are surrounded by many things referred to as matter. Matter may change. A Change in the matter may bring good or bad to the environment. In this lesson, you will discover that different materials undergo changes. You will study various changes in the materials and ways or activities on how changes will have useful effects on the environment.

| Week 9 | Day 1 |
|---|---|

## *What's In*

**Quick Check!**

All materials around us undergo certain changes. Do you remember the different ways?

Below are some changes that may happen to some materials when you perform the following given activities. Write your answers in your answer sheet.

1. 

cutting a cloth

2. 

bending an iron

3. 

4. 

press a cloth using flat iron hammer a piece of wood

1. What happens when you perform the following?

a. cut a piece of cloth _____

b. bend an iron _____

c. press a cloth using flat iron _____

d. hammer a piece of wood _____

2. Was there a change of materials taking place in the examples above? What type of changes took place?

_____

## *What's New*

**Change for the Better!**

Study the pictures below. Identify the following changes in the materials. Cite in 2 to 3 sentences the changes that took place in the material. Write your answer in your answer sheet.

A 

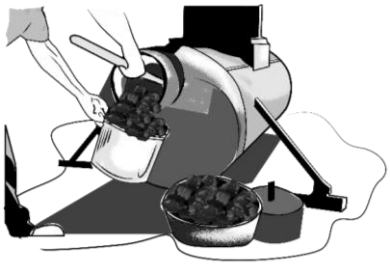
cutting a cloth

B 

bending an iron

C 

carving on wooden chair

D 

making charcoal

1. What changes occurred in each of the material?
   a. cutting of cloth
   b. bending of iron
   c. carving on wooden chair
   d. making charcoal
2. Were the changes in the materials useful?

_____

3. In what ways the changes in these materials useful?

_____

## *What is It*

If you have scratch papers, empty cans, empty plastic bottles and empty glass bottles at home what are you going to do with these materials? Write your answers in your answer sheet.

Answer the following questions.

1. How do you dispose waste materials at home?

2. Why do you think it is good to segregate waste materials?

3. What are the possible ways to make trash and waste materials become useful?

4. What will happen to the physical appearance of the following after recycling?

   a. empty can made into pencil holder _____

   b. empty glass bottle reused as container _____

   c. plastic bottles made into a hanging plant pots _____

   d. scratch papers made into paper mache _____

5. What kind of change will take place when the size and shape of paper, plastics, cans and bottles will change?

6. Why does the recycling of materials bring a good effect on the environment?

**Learning Circuit!**

At present, too much garbage, is one of our biggest problems. Composting and recycling could help reduce this. **Composting** is a way of reusing biodegradable materials. **Recycling** is a way of reusing non-biodegradable materials instead of throwing them away. There is the **5R's** of Responsible waste management. Reduce, Reuse, Recycle, Repair and Rot.

**5R's of Responsible Waste Management**

**Reduce**

- Buy items in refillable containers
- Use cloth bag/eco bag/ paper bag/native baskets in buying instead of plastic bags, when you buy groceries,.
- Avoid buying disposable items or single use products such as batteries, razors, utensils, plates and cups, etc.

**Reuse**

- Donate or sell re-usable items
- Use both sides of paper when printing and re-use as scratch paper, gift wrapper, etc.
- Consider the potential life span or durability when buying new products.
- Buy durable food/ storage containers and reuse them instead of using foil, plastic bags/wraps.

**Recycle**

- Do not throw away used newspapers or used writing pads. Sell them or bring them to paper mills which can turn them into usable paper again.
- Used bottles, tin cans, rubber tires can be recycled into useful materials.

**Repair**

- Have appliances, office equipment, lightning fixtures and automotive parts repaired instead of buying new ones.
- Have an old furniture reupholstered or refurbished instead of buying new one.

**Rot**

- Set a compost pile to compost yard trimmings
- Make a compost pit/bin in the yard for your biodegradable materials such as fruits, vegetables,coffee grinds, dried leaves etc.

Biodegradable materials such as leaves, food scraps, fruit and vegetable peelings can be placed in the compost pit. This process of change in the materials is called **composting**. Composting involves the breakdown of left-over food and other decaying materials with the help of fungi, bacteria, earthworm and insects. The compost material now produces nutrients that are needed by plants to grow well. The change in biodegradable materials brings a good effect on the environment. So let us practice composting at home instead of throwing biodegradable materials elsewhere.

| Week 9 | Day 3 |
|---|---|

## *What's More*

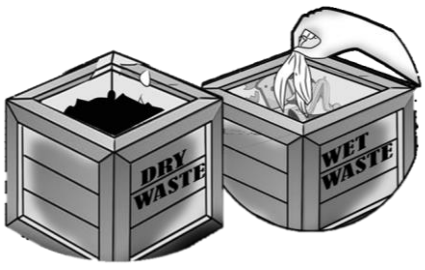
**Activity 1: Let's Dig it Up!**

How do you dispose of biodegradable wastes at home? Are you familiar with composting? Do you have a compost pit at home?

In this activity, you will learn how composting is done.

**1. Choose a location.**

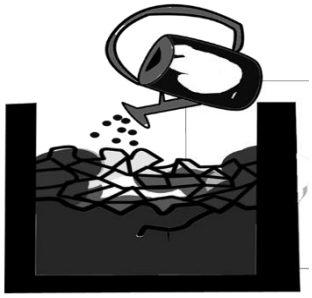
Choose a place outside your home that is dry and shady. Make a hole with a 3x3x3 feet dimension or make a bin made of wood.




**2. Segregate your waste.**

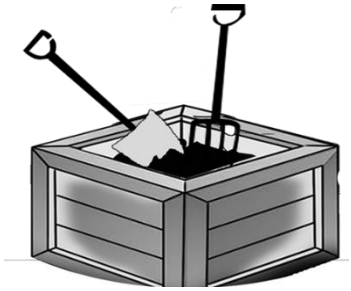
Separate your wet edible waste like fruit/vegetable peelings and leftover food with dry waste like dry leaves with another container.

**3. Add the materials alternately.**



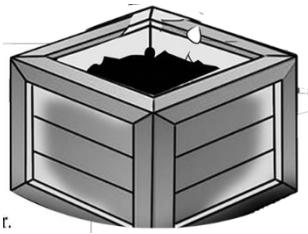
Make sure to add dry and wet wastes alternately in the compost pit until the compost is full. Do not forget to add soil once a week. Sprinkle some water if the compost turns too dry.

**4. Maintain your compost pit.**



Mix or turn the compost using a rake once a week to help fasten the breakdown process and eliminate odor.

**5. Wait for a while.**



Finish your compost for 3-6 months. Harvest your compost when it is ready and done. Start using your compost once it becomes dry, brown and crumbly. You may add this to your plant as organic fertilizer.

Answer the following questions and write it in your answer sheet.

1. What types of garbage materials will be thrown into the compost pit?

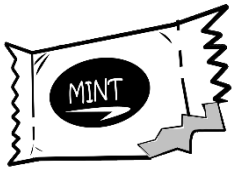
_____

2. Is composting environmental friendly? Explain your answer.

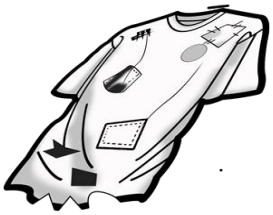
_____

**Activity 2: Think outside the trash… Recycle!**

Look at the waste materials below. Think how these materials can be recycled. Write your answers in your answer sheet.




candy wrapper

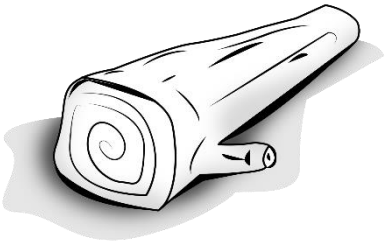


old shirt

glass jar

1. _____ 2. _____ 3. _____

can



log

4. _____ 5. _____

***What I Have Learned***

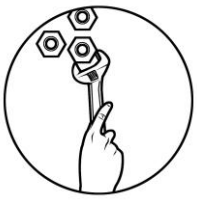
**Can You Fill Me?**

Direction: Fill in the missing words. Choose from the words inside the parenthesis and write it in your answer sheet.

Changes in materials have 1. _____ (*good, bad*) effects in the environment. A certain material is useful when the materials could be 2. _____ (*reused, thrown*) and eventually made into new and 3. _____ (*useful, harmful*) products and environmentally-friendly such as plastic bottles used as a bird feeder, plant starters, pencil case, flower vase, etc.

Considering our problem on too much garbage, recycling and 4. _____ (*eating, composting*) could help lessen the problem. Recycling is a way of 5. _____ (*keeping, reusing*) non-biodegradable materials instead of throwing them away and composting is a way of reusing 6. _____(*biodegradable, non-biodegradable*) materials through decomposition. The 5R's of Responsible waste management means Reduce, 7._____ (*Repeat, Reuse*), 8._____ (*Recycle, Recall*), 9._____ (*Retain, Repair*) and 10. _____ (*Rot, Rat*).

| Week 9 | Day 3 |
|---|---|



## *What I Can Do*

**Save It, Reuse It!**

Choose any recyclable material at home and recycle it. The purpose and design depend on you. (Submit your recycled material to your teacher for checking after you are done with this lesson and this module.)

## *Post Assessment*

**How Much Did You Learn?**

**A. Direction:** Write YES if the situation has a GOOD EFFECT on the environment and NO if it does not have a good effect.

_____ 1. Making doormats using old sacks and strips of cloth.

_____ 2. Cutting of trees for firewood and charcoal.

_____ 3. Selling the empty bottles of vinegar.

_____ 4. Placing left-over food in the trash can.

_____ 5. Building houses.

_____ 6. Throwing unusable plastic bags in the rivers.

_____ 7. Making toys.

_____ 8. Selling collecting old newspapers and magazines.

_____ 9. Burning of non-biodegradable garbage.

_____ 10. Sewing torn clothes.

**B. Directions:** In the table below are some materials commonly found at home. Suggest ways of disposing of these waste materials (*Recycle, Reuse, Rot*) and identify how these materials are recycled, reuse, etc. Write your answers in your answer sheet.

| Material | Ways disposing of the material | What recycled materials is/are produced |
|---|---|---|
| 1. beads | | |
| 2. broken pail | | |
| 3. eggshells | | |
| 4.empty sachet of shampoo | | |
| 5. interior tire of motorcycle | | |

| Week 9 | Day 4 |
|---|---|

## *Additional Activities*

**Do something drastic, Cut the plastic!**

Get an empty plastic bottle and turn it into a dish garden. Make it at home using your recycled and indigenous materials.

1. Take a picture of it and post it on Facebook with the caption, "Do something drastic, cut the plastic!"

   #recycle #savemotherearth.

2. For those who do not have a Facebook account, you may let your parent/guardian rate your recycled dish garden output using the rating sheet and rubrics provided.

Name: _____ Date: _____

Rater: _____Score: _____

**RATING SHEET FOR THE DISH GARDEN**

| CRITERIA | POINTS (1-4) |
|---|---|
| Resourcefulness | |
| Creativity | |
| Accessories | |
| Proportion | |
| Organization | |
| Total Score | |

Rater: _____

Print Name & Signature

**RUBRICS FOR RECYCLED DISH GARDEN**

| CRITERIA | PERFORMANCE INDICATOR | | | |
|---|---|---|---|---|
| | 4 | 3 | 2 | 1 |

| | | | | |
|---|---|---|---|---|
| Resourcefulness | All the materials used were recyclable and indigenous materials. | Three of the materials used was recyclable and indigenous materials. | Two of the materials used were recyclable and indigenous materials. | One of the materials used were recyclable and indigenous materials. |
| Creativity | The landscape design was unique and artistic. | The landscape design was unique and innovative. | The landscape design was very commercial. | The landscape design was a mixture. |
| Accessories | Appropriate and attractive accessories were used. | Appropriate accessories were used. | Appropriate but limited accessories were used. | Over decorated or under accessorized. |
| Proportion | The plants used were proportioned to the size of the vase. | Three plants were proportioned to the size of the vase. | Two plants were proportioned to the size of the vase. | One plant was proportioned to the size of the vase. |
| Organization | The plants and accessories used were well organized. | Three plants and accessories used were well organized. | Two plants and accessories used were well organized. | One plant and accessory used were well organized. |

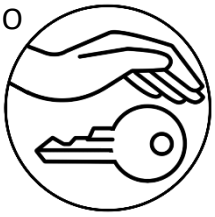
Congratulations for working diligently with this module. Try to share your experience with your teacher or elder brother or sister at home.

| B. (What I Know) | | |
|---|---|---|
| 1.used car tire | Recycling/recycle | Flower pots, garden chairs, swing |
| 2.cracked basin | Recycling/recycle | Flower pot, vegetable pot |
| 3. banana peeling | rot | Compost fertilizer |
| 4. bottle | reuse | Container for water/suka, pen holder etc |
| 5. juice pack | Recycling/recycle | eco bag, mat, trapal etc |



| What I Know |
|---|
| A. |
| 1.YES |
| 2.NO |
| 3.NO |
| 4.YES |
| 5.YES |
| 6.YES |
| 7.NO |
| 8.YES |
| 9.YES |
| 10.NO |

***Answer Key***



| |
|---|
| B.  The size and shape of the cloth changed when cut. |
| C. The size and shape of the wood changed when carved. |
| D. The size and shape of the wood changed, even the texture when turned into charcoal. |
| 2. A. YES |
| B. YES |
| C. YES |
| D. YES |
| 3. A. Bending of iron is useful in constructing buildings and houses. |
| B. Cutting of cloth is useful, it can be used in making clothes and rags. |

| What's In |
|---|
| 1. cutting |
| 2. bending |
| 3. pressing |
| 4. hammering |
| |
| 1. a. The size and shape of the paper changed after cutting. |
| b. The size and shape of the iron changed after bending. |
| c. The texture of the cloth changed after ironing. |
| d. The size and shape of an empty can changed after hammering. |

2. None. Only the physical characteristics of the material changed.

| What is it |
| --- |
| 1. At home, we dispose waste materials by segregating biodegradable and non-biodegradable. |
| 2. It is good to separate waste materials because it is easier to recycle, and we can lessen the wastes thrown into the landfill. |
| 3. We can turn trash materials into useful ones by recycling and reusing it. |
| 4A. The physical appearance of paper will change after recycling it, specifically its size and shape. |
| B. The physical appearance of plastic bottle will change after recycling it, specifically its size and shape. |
| C. The physical appearance of can will change after recycling it, specifically its size and shape. |
| D. The physical appearance of glass bottle will change after recycling it, specifically its size and shape. |
| 5. Only the physical appearance of the material has been changed. |
| 6. Recycling bring good effects to the environment by minimizing the wastes thrown into the landfill and prevents pollution. |

| |
|---|
| 1.YES |
| 2.NO |
| 3.YES |
| 4.NO |
| |



| |
|---|
| 1. good |
| 2. reused |
| 3. useful |
| 4. composting |
| 5. reusing |
| 6. biodegradable |
| 7. reuse |
| 8. recycle |

| What's More<br><br>Activity 1 |
|---|
| 1. The types of garbage materials thrown into the compost pit are biodegradable. |
| 2. Yes, composting is environmental friendly. It benefits the environment by recycling organic wastes and conserves landfill space. Compost is an organic fertilizer that can be added to soil to help plants grow healthier. |
| Activity 2 |
| 1. decorative flower |
| 2. cement pot |
| 3. sugar container |
| 4. sell to the junk shop |

5. wooden furniture

| B. | | |
|---|---|---|
| 1. beads | Fashion jewelry | minimize garbage, can be worn as fashion jewelry |
| 2. broken pail | pot | minimize garbage, can be planted with flowers |
| 3. egg shell | collage | minimize garbage, can be used in making a collage |
| 4. empty sachet of shampoo | Fashion jewelry | minimize garbage, can be worn as fashion jewelry |
| 5. tire interior of motorcycle | pot | minimize garbage, can be planted with flowers |

## *References:*


Abutay, L. R., Bonao, D. C., Crucis, E. B., Eslabra, J. C., Gramaje, E. T., Guadamor, M. H., . . . Zape, J. S. (n.d.). *Science 4 Teacher's Guide* (Philippines, Department of Education, Department of Education-Instructional Materials Council Secretariat). Manila, NCR: Lexicon Press.

Abutay, L. R., Bonao, D. C., Crucis, E. B., Eslabra, J. C., Gramaje, E. T., Guadamor, M. H., . . . Zape, J. S. (n.d.). *Science 4 Learners Material* (Philippines, Department of Education, Department of Education-Instructional Materials Council Secretariat). Manila, NCR: Lexicon Press.

Llarinas, J.F. & E. Pelobello. *Into the Future: Science and Health Grade 5 Textbook*. Diwa Scholastic Press Inc.,1999.

Lozada, B.A. & A.T. Mendoza. *Science for Daily Use Textbook for Grade 4*. Jica Enterprises, 2011

"LR Portal." Accessed July 7, 2020. https://lrmds.deped.gov.ph/list/kto12/subject/536?page=2.

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