

**GRADE 6 SCIENCE ACTIVITIES  
FIRST QUARTER  
(WEEK 1 – 10)**

ACTIVITY NO.	ACTIVITIES
1.1	Pinoy Henyo
1.2	Mystery Combinations
1.3	Mix It Up!
1.4	Mix and Match
2.1	Mixtures Foldables
2.2	Mysterious Waters
2.3	Speed Up My Solutions
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4.1	Mix and Pick!
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4.4	Heavy and Light Liquids!
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ACTIVITY NO.	ACTIVITIES
6.1	Dry it Up!
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7.1	Activities in the Community Involving Sieving
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7.4	Benefits of Separating Mixtures Through Decantation
7.5	Benefits of Separating Mixtures Through Filtration
7.6	Benefits of Separating Mixtures Through Evaporation
7.7	Benefits of Separating Mixtures Through the Use of Magnet
8.1	Benefits of Water Refilling Stations in the Community
8.2	Benefits of Mining and Quarrying in the Community
9.1	Benefits of Food Production/Preparation in the Community
9.2	Benefits of Herbal Medicines Production/Preparation in the Community
10.1	Benefits of Waste Segregation in the Community

**Pinoy Henyo**  
**Activity 1.1**  
**Day 1**

**LESSON CONCEPT:**

Matter is anything that occupies space and has mass. There are three physical state of matter : Solid, Liquid and Gas.

Solids have definite shape and volume such as rock, wood, sand and steel. Liquids have indefinite shape, definite volume and take the shape of the container such as water, alcohol and wine. Gases have indefinite shape and volume such as air, oxygen and carbon dioxide.

**TIME:** 1 class period

**MATERIALS:**

Flash cards with words having solid, liquid and gas examples  
Scoreboard

**PROCEDURE:**

1. Find a partner. One person will guess the word on his/her forehead and the other person will answer questions from the guesser with **yes**, **no** and **can be**. There will be a time limit of 1 minute to guess the word/s.
2. The terms will be supplied by the teacher.
3. All the terms either guessed or not will be posted on the board. You will define it in your notebook.

Sample Flash Cards

**SOLID**

**GAS**

# Mystery Combinations

## Activity 1.2

### Day 2

#### LESSON CONCEPT:

Mixture is the combination of two materials without any chemical changes or reaction. Liquid mixture is a common and observable mixture in our daily living. A solid, liquid, and gas matter can be combined with another liquid to form a liquid mixture.

**TIME:** 1 class period

#### MATERIALS:

Coffee powder  
Glasses (at least 3 pieces)  
Mud  
Salt (table salt)  
Stirrer  
Water

#### PROCEDURE:

Using PROBEX(Predict, Observe, and Explain),

1. The teacher presents three glasses of water and three materials (salt, coffee and mud). Using the form below, you will make predictions of what will happen if the three materials are added to the water in each glass.

Mixtures	Predictions	Observation	Explain
Salt in water			
Coffee in water			
Mud in water			

2. After giving your predictions, add the materials to the water. Then, write your observations.
3. For every observation, give a reasonable explanation.

#### Guide Questions:

1. What are the states of the materials used that were combined with water?
2. What happened to these materials when mixed with water?
3. What is the appearance of the combination of the materials?
4. What can you conclude in doing this activity?

#### Evaluation:

If you are given a chance to change the materials, what materials will you replace? What could be the possible output?

## Mix It Up!

### Activity 1.3

#### Day 3

#### LESSON CONCEPT:

The three physical state of matter can be combined with each other. This lesson will try out different mixtures including liquid mixture and classify it according to the phase of the produced mixture. If there is one phase, it is uniform or homogeneous. If there is more than one phase, it is non-uniform or heterogeneous mixture.

**TIME:** 1 class period

#### MATERIALS:

Containers  
Cooking oil  
Pebbles  
Sand  
Vinegar  
Water

#### PROCEDURE:

Directions: Mix the following and observe. Fill out the table below.

Task 1 – Put one cup of sand and one cup of pebbles in a plastic basin. Label the state of matter combined.

Task 2 – Put one spoonful cooking oil and one spoonful water on a beaker. Label the state of matter combined.

Task 3 – Put one spoonful vinegar and one spoonful soy sauce in a glass bowl. Label the state of matter combined.

Task 4 – Put one tablespoonful white sugar into a glass of water. Label the state of matter combined.

Table #1. Mix It Up!

Activity Number	Name of Substance	State of Matter	Changes observed when mixed
Task 1			
Task 2			
Task 3			
Task 4			

Guide Questions:

1. What do you think happened to the combined materials?
2. Which of the following mixture is / are homogeneous?
3. Which of the following mixture is/are heterogeneous?

Sample Laboratory Sheet

Name: \_\_\_\_\_ Score: \_\_\_\_\_

Title of Activity: \_\_\_\_\_

Scientific Problem/s: \_\_\_\_\_

Illustration/Setup of Activity: \_\_\_\_\_

Task 1   Task 2   Task 3   Task 4

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Table#1 Mix It UP

Activity Number	Name of Substance	State of Matter	Changes observed when mixed
Task 1			
Task 2			
Task 3			
Task 4			

Evaluation

Based on the activity, what is mixture?

## Mix and Match

### Activity 1.4

Day 5

#### LESSON CONCEPT:

A mixture is a combination of two or more physical materials (such as a solid, liquid and gas materials). When the chemical system of a mixture has the same appearance and properties, it is called **homogeneous**. When the chemical system of a mixture has nonuniform appearance and different phases can be recognized, it is called **heterogeneous**.

**TIME:** 1 class period

#### MATERIALS:

4 to 8 pictures/drawing of heterogeneous and homogeneous mixtures examples for every group

#### PROCEDURE:

1. Each group will be given several pictures of mixture.
2. Classify each picture according to the characteristics below:

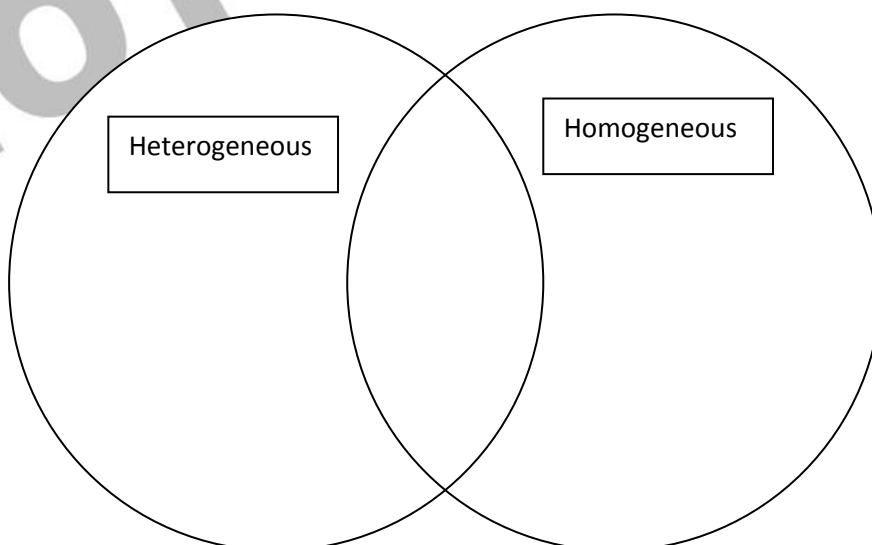
Uniform (Single Appearance)	Non-Uniform (Two or more Appearance)

Guide Questions:

1. What are examples of homogeneous mixtures?
2. What are examples of heterogeneous mixtures?

Evaluation

Compare and contrast homogeneous and heterogeneous mixture using the Venn diagram below.



### Grading Rubric for Presentation

	<b>Excellent</b> <b>4</b>	<b>Good</b> <b>3</b>	<b>Needs Improvement</b> <b>2</b>	<b>Poor</b> <b>1</b>	<b>Score</b>
<b>Content</b>	Content is accurate and all required information is presented in a logical order.	Content is accurate but some required information is missing and/or not presented in a logical order, but is still generally easy to follow.	Content is questionable. Information is not presented in a logical order, making it difficult to follow.	Content is inaccurate. Information is not presented in a logical order, making it difficult to follow.	
<b>Presentation</b>	<p>Presentation is logical and it flows well. Presentation reflects extensive use of tools in a creative way.</p> <p>Each member's information is represented and identified with their name.</p>	<p>Presentation flows well. Tools are used correctly</p> <p>Each member's information is represented and identified with their name. Overall presentation is interesting.</p>	<p>Presentation is unorganized. Tools are not used in a relevant manner. It lacks some of the members' information/ and or information is not identified</p>	<p>Presentation has no flow. Information is insufficient and it lacks some of the member's information.</p>	
<b>Mechanics</b>	There are no spelling and grammar errors. Text is in authors' own words.	There are few spelling and grammar errors. Text is in authors' own words.	There are some spelling and grammar error. Most of text is in authors' own words.	There are many spelling and or grammar errors. Text is copied.	
<b>TOTAL</b>					



### Grading Rubric for Laboratory

	<b>Excellent</b> <b>4</b>	<b>Good</b> <b>3</b>	<b>Needs Improvement</b> <b>2</b>	<b>Poor</b> <b>1</b>	<b>Score</b>
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<b>TOTAL</b>					
					<b>Score</b>

### Grading Rubric for Poster Presentation

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<b>Pictures, Clip Art Background</b>	Images are appropriate.  Layout is pleasing to the eye.	Images are appropriate. Layout is cluttered.	Images are inappropriate or layout is messy.	No images	
<b>Mechanics</b>	There are no spelling and grammar errors. Text is in authors' own words.	There are few spelling and grammar errors. Text is in authors' own words.	There are some spelling and grammar error. Most of text is in authors' own words.	There are many spelling and or grammar errors. Text is copied.	
<b>TOTAL</b>					

# Mixtures Foldables

## Activity 2.1

### Day 1

#### LESSON CONCEPT:

This activity is focused on reviewing the students' concept of mixtures. The information is based on the lesson learned by the students from the previous lessons on mixtures.

**TIME:** 1 class period

#### MATERIALS:

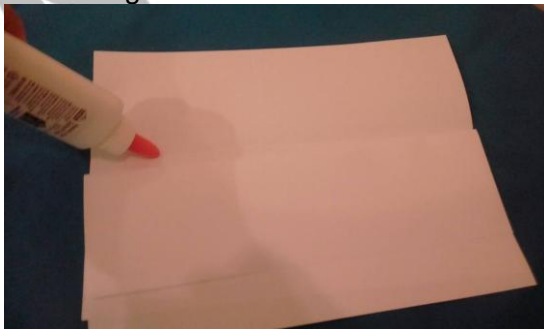
Ball point pen  
Bond papers  
Coloring materials  
Glue

#### PROCEDURES:

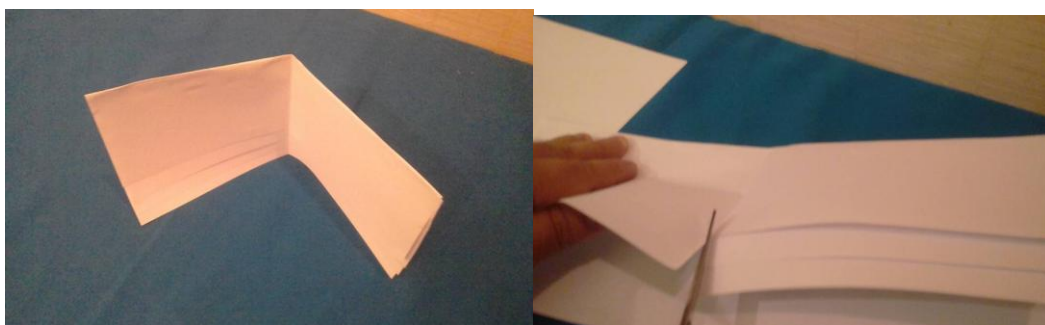
1. Prepare at least two bond paper, glue and scissors.
2. Fold a (8 ½" x 11") bond paper horizontally with 1" allowance between two edges.
3. Fold another (8 ½" x 11") bond paper horizontally with 2" allowance between two edges.



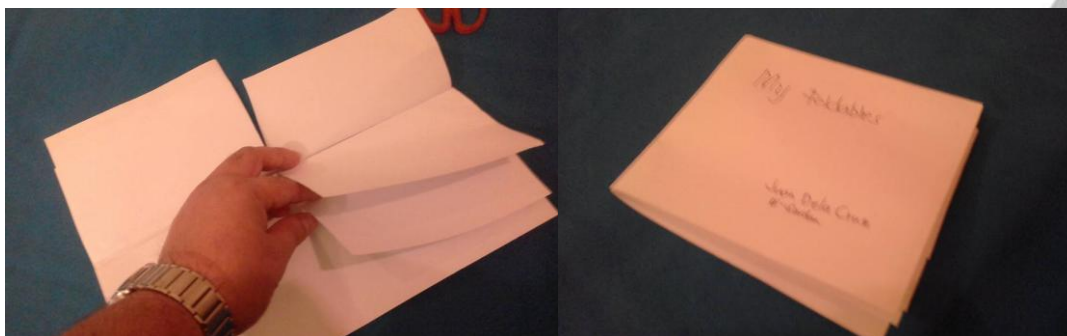
4. Insert the bond paper with 1" allowance into the other bond paper and glue it together.



5. Fold it vertically and unfold. Cut it at the vertical fold of the front part only.



6. The tabs will serve as the topics for the lesson learned.



7. Inside the folds are important terms/concepts from the lesson learned about mixtures.
8. You may include important illustrations.

Evaluation:

Please see rubric on making foldables

### Grading Rubric for Foldables

	<b>Excellent 4</b>	<b>Good 3</b>	<b>Needs Improvement 2</b>	<b>Poor 1</b>	<b>Score</b>
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<b>Presentation</b>	Presentation flows well and logically. Overall presentation is interesting.	Presentation flows well. Overall presentation is interesting.	Presentation is unorganized. Overall presentation is not interesting.	Presentation has no flow. Information is insufficient.	
<b>Creativity</b>	There are enough related artistic drawings or designs	There are few related artistic drawings or designs	There is at least one related artistic drawings or designs	No drawings or design at all	
<b>Mechanics</b>	There are no spelling and grammar errors. Text is in authors' own words.	There are few spelling and grammar errors. Text is in authors' own words.	There are some spelling and grammar error. Most of text is in authors' own words.	There are many spelling and or grammar errors. Text is copied.	
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## Mysterious Waters

### Activity 2.2

#### Day 2

#### LESSON CONCEPT:

When sugar is mixed with water, the sugar seems to disappear into the water. This is a process called **dissolution**. The sugar did not really disappear. Its molecules dissolved into the water that it can no longer be seen. The same happens with salt. You know that sugar and salt are still there because you can taste it, even though you cannot see it. The salt and sugar were dissolved completely into the water. This clear mixture is called **solution**.

The solid material like soap, powdered juice, powdered milk, chocolate powder, and others which is being dissolved is called solute. While the dissolving medium (ex. water) is called solvent.

**TIME:** 1 class period

#### MATERIALS:

Chocolate powder  
Coffee powder  
Creamer  
Detergent soap  
Glasses (8 pieces)  
Powdered juice  
Powdered milk  
Spoon  
Sugar

#### PROCEDURES:

1. Get samples of sugar, coffee, powdered milk, creamer, chocolate powder, powdered juice, and detergent soap.
2. Prepare a spoon, 8 drinking glasses, and water. Label the glasses 1 to 8.



3. Fill half of each glass with water.
4. Pour the sugar sample into glass 1. Pour the coffee sample into glass 2. Do this with the rest of the samples and glasses.
5. Mix the sample and water in each glass.
6. Describe what happens to the sample.

Table #1 Making Solutions

Solids		Observations when Mixed with water

Guide Questions:

1. What solid materials were dissolved in water?
2. What do you call this solid materials?

Evaluation:

1. Give 2 more solids that easily dissolve in water.

# Speed Up My Solutions

## Activity 2.3

### Day 3

#### LESSON CONCEPT:

Substances react differently when mixed with water. Some substances like sugar, coffee, milk, and salt spread evenly when mixed with water.

Several factors affect the way solute dissolves in a solvent. These are stirring, crushing, and heat energy.

Stirring or shaking a liquid mixture makes its solid particles dissolve faster. Stirring causes the surface of each tiny particle of such substances as sugar, and coffee to be exposed to the water. Substances dissolve faster when the surface of each tiny particle comes in contact with water.

Crushing a solid solute into smaller pieces makes it dissolve faster. Materials in powder form such as powdered soap and rocky salt dissolve faster than the same materials that are in solid or compact form.

Heat energy affects how a solute dissolves in a solvent. Heat increases the temperature of the solvent and the solute (such as hot water), causing the particles of such substances as sugar to move faster. As the motion of the solute and solvent increases, a greater chance occurs for the solvent and solute to come into contact with each other.

**TIME:** 1 class period

#### MATERIALS:

Cold water  
Detergent powder  
Detergent soap  
Glasses  
Hot water  
Salt  
Spoon  
Sugar

#### PROCEDURES:

##### Task 1

1. Prepare two drinking glasses half-filled with water.
2. Put one teaspoon of salt into each glass.
3. Stir the water in one glass. Do not stir the water in the other glass.
4. Observe what happens.
5. Answer the following questions. Write the answers in your notebook.
  - a. In which glass of water did the salt dissolve faster?
  - b. What do you think will happen if you did not stir the water in the other glass?
  - c. What made the salt particles dissolve faster? Why do you think this happened?



## Task 2

1. Fill half of a drinking glass with cold water.
2. With the help of an adult, fill half of another glass with hot water.
3. Place one teaspoon of sugar in each glass.
4. Observe what happens.
5. Answer the following questions in your notebook.
  - a. In which glass did the sugar dissolve faster?
  - b. What made the sugar in one glass dissolves faster than sugar in the other glass?
  - c. What factor affects the sugar to dissolve faster in one glass?

## Task 3

1. Prepare two drinking glasses, a teaspoon of powder soap, and a small piece of a detergent bar.
2. Place equal amounts of water in the glasses.
3. Put the powdered soap in one of the glasses and the piece of detergent bar in the other glass.
4. Observe which solid dissolves faster.
5. Answer the following questions. Write the answers in your notebook.
  - a. In which glass did the detergent dissolve faster?
  - b. What factors affect the speed of solubility between the powdered soap and detergent bar?

### Guide Questions:

1. How does stirring affect solubility?
2. How does crushing affect solubility?
3. How does temperature affect solubility?

### Evaluation:

1. Aling Nora sells cold buko juice in the school canteen. Everyday, she prepares jugs of buko juice for the pupils. For each jug, she mixes sugar, coconut meat, milk, and water. What do you think should Aling Nora do so that the sugar she uses would dissolve faster?

2. Ramon would like to soak his white uniform in water with powdered detergent. He found out that he no longer had powdered detergent. All he had was a detergent bar. What should he do so that the bar would dissolve faster?

## Are you suspended?

### Activity 2.4

#### Day 4

#### LESSON CONCEPT:

Solids that do not dissolve in water are called insoluble materials. For example, sand is insoluble in water. The particles of sand do not mix with the water. Instead the sand settles at the bottom of the water forming a sediment. Some insoluble solids such as flour seem to make the water appear cloudy. When the insoluble solid is spread throughout the liquid, making it cloudy, it is called a **suspension**.

**TIME:** 1 class period

#### MATERIALS:

Flour  
Glasses  
Sand  
Spoon  
Water

#### PROCEDURES:

##### Task 1

1. Prepare a glass.
2. Fill the glass with half-filled water.
3. Add a spoonful of flour into the glass then stir.
4. Observe and describe what happens.

##### Task 2

1. Prepare a glass half filled with water.
2. Add a spoonful of sand into the glass then stir.
3. Observe and describe what happens.

#### Guide Questions:

1. Did the solids used dissolve in water? Why ? Why not?
2. How many phases did you observe?
3. What type of mixture is shown in the activity?

#### Evaluation:

Why do you think medicine suspensions need to be shaken before they can be taken orally?

### Grading Rubric for Presentation

	<b>Excellent</b> <b>4</b>	<b>Good</b> <b>3</b>	<b>Needs Improvement</b> <b>2</b>	<b>Poor</b> <b>1</b>	<b>Score</b>
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## Crazy Colloid

### Activity 3.1

#### Day 1

### LESSON CONCEPT:

A **colloid** is a mixture that exhibits both properties of liquid and solid. Colloidal particles do not settle but remain dispersed throughout the medium. Colloid comes from the Greek word *kolla* which means glue. Familiar colloids are rubber, plastics, synthetic fibers, gelatin and foams.

**TIME:** 1 class period

### MATERIALS:

Cornstarch (1 box or 454g)  
Water  
Mixing Bowl  
Spoon  
Hammer  
Aluminum foils  
Plastic cups  
Ziplock sandwich bags  
Waxed paper  
Clothes pin  
Candle

### PROCEDURES:

1. Each group will mix the cornstarch and water. Observe the appearance of the mixture.
2. Review the properties of solids and liquids

SOLID Properties	LIQUID Properties
Do not change shape easily	Change shape easily (take the shape of the container)
Will not allow another solid to pass through them easily	Will allow solid to pass through them easily
Are usually visible	May be visible or invisible
Have a definite shape	Have a definite size (volume)
Have a definite size	becomes gas when heated
Becomes liquid when heated	becomes solid when cooled
remain solid when cooled	

3. Perform the nine tests and tell whether it exhibits solid or liquid property/ies.

Nine Tests	Liquid	Solid
1.Quick finger poke test -Try to poke your finger into the mixture so that the tip of your finger touches the bottom of the cup. To make sure that this is quick finger poke test, try to touch the bottom of the cup in 1 second.		
2.The slow finger poke test - Try to poke your finger into the mixture so that the tip of your finger touches the bottom of the cup. In order to make sure that this is the slow finger poke test, take 10 seconds to touch bottom.		
3.Conformity test -Put the mixture into another container or plastic baggie. Check to see if the mixture takes the shape of the container or stays in its original shape.		
4. Pour Test -Try to pour the mixture from one cup to another.		
5.Bounce test -Hold the mixture 50 cm up from the table or desk. Drop it.		
6. Shatter test -Put the mixture in waxed paper on the table or desk. Hit the mixture with a hammer.		
7. Shape test -Try to form the mixture into a ball. Check to see if it holds the shape for 5 seconds		
8. Heat test -Make a bowl out of foil. On one side leave a bump where you can clip a clothes pin. Heat one teaspoon of mixture in a bowl over a candle.		
9.Cool test -Let the mixture cool to room temperature.		

Guide Questions:

1. Which of the tests showed this mixture to be a liquid?
2. Which of the tests showed the mixture to be a solid?

Evaluation

Based on the activity, how can you characterize the properties of colloids?

**Oh my Jelo!**  
**Activity 3.2**  
**Day 2**

**LESSON CONCEPT:**

This activity aims to perform the task of making gelatin which is colloid. Gelatin only remains liquid when warm and becomes a gel when cooled. A gel is another type of colloid, where a liquid is dispersed through a solid. Warming a gelatin gel returns it to a liquid state. Any colloid, however, involves very large particles in solution. Colloids are very common in biological systems, because organic molecules can be abundant than most inorganic molecules.

**TIME:** 1 class period

**MATERIALS:**

3 bar/box/pack plain gelatin  
9 tablespoons or 75 ml water  
3-5 drops food color  
Plastic lid with a rim  
Saucepan  
Paper towels  
Cookie cutters  
Drinking straw  
Scissors

**PROCEDURES:**

1. Mix the water and food coloring in the saucepan and put over low heat.
2. Stir in the 3 packs of unflavored gelatin to dissolve. Cook and stir for 30 seconds or until thickened.
3. Pour the mixture into the plastic lid with a rim, push the air bubbles out with a spoon or other utensil, and let the gelatin cool on the counter for 45 minutes.
4. Remove the gelatin from the lid. It should be flexible and pliable.
5. Use the cookie cutters to make interesting shapes. Leftover scraps also make interesting pieces! Scissors may be used to make spirals or other designs. Use a plastic drinking straw to make holes for hanging pieces.
6. Shapes may be dried flat on a cookie sheet or cooling rack. Spirals may be hung by clothespins. Shapes with holes may be strung on a string to dry. The gelatin will be hard like plastic in 2-3 days.

Be creative! Have fun!

**USEFUL TIPS**

Teacher supervision is required!

**Guide Questions:**

Based on the activity, what are the substances mixed to form colloids?

## Catering for the PARTY!

### Activity 3.3

#### Day 3

#### LESSON CONCEPT:

Application of mixtures is almost seen everywhere, even in our daily lives. One of which is in food preparation.

**TIME:** 2 class period

**MATERIALS:**  
Food for the proposed menu

#### PROCEDURES:

1. Each group will prepare food and show how they are combined.

For Example:

#### Menu

*Chicken Salad*

*Orange Juice*

Sequence:

a. Present the

menu.

- b. Present the food preparation of each item in the menu.
- c. What are the state of matter of each materials used in each item in the menu?
- d. What type of mixture did you form? Why?

2. The students will be given time to prepare to show their creativity and style.

Rubrics for presentation will be followed.

**Mixtures Poster Making**  
**Activity 3.4**  
**Day 5**

**LESSON CONCEPT:**

This will synthesize the lessons from weeks 1 to 3 of what the students learned through a poster.

**TIME:** 1 class period

**MATERIALS:**

Coloring Materials  
Oslo Paper

**PROCEDURES:**

1. Create a poster that shows what you have learned about mixtures.
2. The outputs will be posted in a gallery inside the classroom.

Guide Questions:

1. What are the important things you learned about mixtures?

Evaluation:

The output will be graded using the rubric.



### Grading Rubric for Presentation

	<b>Excellent</b> <b>4</b>	<b>Good</b> <b>3</b>	<b>Needs Improvement</b> <b>2</b>	<b>Poor</b> <b>1</b>	<b>Score</b>
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<b>TOTAL</b>					

### Grading Rubric for Poster Presentation

	<b>Excellent</b> <b>4</b>	<b>Good</b> <b>3</b>	<b>Needs Improvement</b> <b>2</b>	<b>Poor</b> <b>1</b>	<b>Score</b>
<b>Content</b>	Content is accurate and all required information is presented in a logical order.	Content is accurate but some required information is missing and/or not presented in a logical order, but is still generally easy to follow.	Content is questionable. Information is not presented in a logical order, making it difficult to follow.	Content is inaccurate. Information is not presented in a logical order, making it difficult to follow.	
<b>Presentation</b>	Presentation is logical and it flows well. Presentation reflects extensive use of tools in a creative way. Each member's information is represented and identified with their name.	Presentation flows well. Tools are used correctly. Each member's information is represented and identified with their name. Overall presentation is interesting.	Presentation is unorganized. Tools are not used in a relevant manner. It lacks some of the members' information/ and or information is not identified	Presentation has no flow. Information is insufficient and it lacks some of the member's information.	
<b>Pictures, Clip Art Background</b>	Images are appropriate. Layout is pleasing to the eye.	Images are appropriate. Layout is cluttered.	Images are inappropriate or layout is messy.	No images	
<b>Mechanics</b>	There are no spelling and grammar errors. Text is in authors' own words.	There are few spelling and grammar errors. Text is in authors' own words.	There are some spelling and grammar error. Most of text is in authors' own words.	There are many spelling and or grammar errors. Text is copied.	
<b>TOTAL</b>					

# MIX AND PICK!

## Activity 4.1

### Day 1

#### LESSON CONCEPT:

There are various methods of separating mixtures that are commonly found in the surroundings. Handpicking is a convenient method of separating substances, when the quantity of impurities is usually not very large. This method of handpicking can be used for separating slightly larger sized impurities like the pieces of dirt, stone, and husk from wheat, rice or pulses.

**TIME:** 1 class period

#### MATERIALS:

5 clear plastic/glass containers	Assorted leaves
15 small saucers/small plate	1 pc box
5 timers	30 pcs. peanuts
	30 pcs. corn kernels
	50 pcs. mongo seeds
	15 pcs 10 cents
	15 pcs 25 cents
	15 pcs 1.00 coins

#### PROCEDURES:

9. Using some hints given by the teacher, guess the materials hidden in a box.
10. In your group, select one member to be the time keeper.
11. Mix the provided materials in your plastic/glass container and describe the appearance of the mixture.
12. On the cue of the teacher, you will try to separate the individual component of the mixtures. The group who finished first, wins.
13. Repeat the activity above using a second set of objects. Choose another member to be the time keeper. Record your data on the table.

**Table 1: Handpicking**

<b>Trial</b>	<b>Materials/Components</b>	<b>Appearance</b>	<b>Time taken for separating</b>
1	1. 2. 3. 4.		
2	1. 2. 3. 4.		

Guide Questions:

1. Describe the mixtures.
2. How were you able to separate the individual component of the mixtures?
3. Do you need any materials to separate the components of the mixture? Why?
4. Which mixture did you find easy to separate? Difficult? Why?

Evaluation:

1. Give five common materials in your home or school that can be separated easily through handpicking?

## TO WINNOW OR TO SIEVE?

### Activity 4.2

#### Day 2

#### LESSON CONCEPT:

**Winnowing** is used to separate heavier and lighter components of a mixture by wind or by blowing air. This method is commonly used by farmers to separate lighter husk particles from heavier seeds of grain. Another method of separating mixtures is **sieving**. It is a simple technique for separating particles of different sizes. A sieve such as used for sifting flour has very small holes. Coarse particles are separated or broken up by grinding against one-another and against screen openings. Depending upon the types of particles to be separated, sieves with different types of holes are used.

**TIME:** 1 class period

#### MATERIALS:

Container/ plastic cups	Dry sand
Plate/ flat container	Flour
Sieve/strainer with varied hole sizes	Rice grains
	Rise husks
	Sand
	Saw dust
	Small pebbles

#### PROCEDURES:

1. Gather materials.
2. Sort separately the materials in different containers/plastic cup.
3. Discuss among your group your reason for sorting the objects.
4. Listen as the teacher discusses the difference of winnowing and sieving and how these methods are done.
5. Choose five combinations of the materials and mix them in a separate container.
6. Try to predict first which method is more appropriate in separating the mixtures. Record it as your 1<sup>st</sup> method in the given table.
7. Perform the method of separation that you predicted and observe. Take note of the observations.
8. Try another method and observe how the materials are separated. This will be your 2<sup>nd</sup> method.
9. Decide which method is more appropriate in separating the materials by completing the given table.

**Table 1: Winnowing and Sieving**

Materials		1 <sup>st</sup> method	Observation	2 <sup>nd</sup> method	Observation
1	2				

Guide Questions:

1. Which mixtures did you predict can be separated by winnowing? Why?
2. Which mixtures did you predict can be separated by sieving? Why?
3. What properties of materials to be separated are appropriate for winnowing? Why?
4. What properties of materials to be separated are appropriate for sieving? Why?

Evaluation:

1. Illustrate any activities that use winnowing or sieving.

# LET IT SINK AND SEPARATE!

## Activity 4.3

### Day 3

#### LESSON CONCEPT:

**Decantation** is a process of separating mixtures by removing a layer of liquid, generally one from which a precipitate has settled. A mixture of an insoluble solid in liquid is allowed to stand. If the solid is denser than the liquid, it will settle at the bottom if kept undisturbed for some time. This process where particles settle at the bottom of the liquid is called sedimentation.

**TIME:** 2 class periods

#### MATERIALS:

500 mL beaker	Sand
Graduated cylinder	Water
Stirring rod and spoon	Wood shavings
Timer	
Tray	

#### PROCEDURES:

1. Gather all the needed materials.
2. Place two heaped tablespoons of soil or sand into one beaker and half fill with water.
3. Mix the sand and water. Leave the water to settle for 1 minute then attempt to pour off only clean water into the measuring cylinder.
4. Stop when the water starts to become cloudy (translucent). Repeat the activity increasing the time left to settle the sediment.
5. Record your observation in the table.
6. Take note of the following terms in describing the mixtures:

Transparent	Light can pass through and objects are clearly seen e.g. window
Translucent	Semi-transparent (fuzzy image) e.g. milky glass
Opaque	Light cannot pass through e.g. brick

**Table 1: Water and Sand**

Time to settle	Height/volume of clear water			Comment on Clearness of water		
	Test 1	Test 2	Test 3	Transparent	Translucent	Opaque
1 min.						
2 mins.						
5 mins.						

**Table 2: Water and Wood Shavings**

Time to settle	Height/volume of clear water			Comment on Clearness of water		
	Test 1	Test 2	Test 3	Transparent	Translucent	Opaque
1 mins						
2 mins.						
5 mins.						



Guide Questions:

1. Can the solid particles be separated from water right after mixing without letting it settle at the bottom of the container?
2. Did waiting a longer time improve the clarity of water? Why?
3. Do you think water becomes potable after decanting? Why?
4. What could water be used for after decanting?

Evaluation:

1. List down five (5) other solid materials which can be separated from water through decantation.

1.

## HEAVY AND LIGHT LIQUIDS!

### Activity 4.4

#### Day 5

#### LESSON CONCEPT:

**Decantation** can also be used for liquid mixtures. It is used when separating two or more immiscible liquids. Once the mixture components have separated by forming layer between them in a container, the lighter liquid is poured off leaving the heavier liquid behind.

**TIME:** 1 class period

#### MATERIALS:

Clear glass or cup container

Tray

Cooking oil

Kerosene

Soy sauce

Vinegar

Water

#### PROCEDURES:

1. Gather the materials needed.
2. Choose two liquids and mix them in an empty glass or cup container.
3. Leave the mixture for two to three minutes. Observe if the liquids completely mixed with each other. If they did, they are called miscible liquids. Liquids which do not mix together and form layer between them are called immiscible liquids. Record this on the table given by checking the appropriate column.

Take precautionary steps in handling kerosene. Ensure that its container is properly labeled and sealed. Wash your hand after holding it.

4. Describe the mixture formed. Which liquid submerged at the bottom of the container? Record it in the table.
5. For immiscible liquids, try to separate it through decantation by pouring or scooping into another container.

**Table 1: Miscible and Immiscible Liquids**

Liquids		Miscible	Immiscible	Description of the mixture	Liquid at the bottom of the glass
1	2				

Guide Questions:

1. What mixture of liquids is immiscible? Miscible?
2. Did waiting a longer time improve the clarity of liquid mixtures? Why?
3. Explain how you were able to remove and separate the two immiscible liquids?
4. What other method can you think that can be done to separate immiscible liquids?

Evaluation:

1. List down three (3) other liquid materials which can be separated through decantation.

## MAGNETIC OR NOT?

### Activity 5.1

#### Day 1

#### LESSON CONCEPT:

Objects have magnetic property depending on its composition. There is a common misconception that magnets attract all metals, largely due to the ubiquity of steel in metal products. One method to test whether an object is magnetic or not is through the use of permanent magnet.

**TIME:** 1 class period

#### MATERIALS:

Small permanent magnet

Steel item

Iron Item

Aluminum item

Plastic item

Wood item

Brass item

Other items that conveniently found

#### PROCEDURES:

1. Gather the needed materials.
2. List all the materials to be tested in the Table 1.
3. Predict first if the materials you have is either magnetic or not magnetic based from its physical appearance. Write your prediction in Table 1
4. Now, try to test if the materials are magnetic or not by testing if they can be attracted to a permanent magnet.
5. Upon completion of the tests, discuss the results as a whole class.

**Table 1: Magnetic Properties**

No.	Materials	Magnetic or Non-magnetic	
		Prediction	Observation
1			
2			
3			

4			
5			
6			
7			
8			

Guide Questions:

1. Which materials are attracted to magnet? Why?
2. Which materials are not attracted to magnet? Why?
3. What happens when you change your magnet with an electromagnet? Will the magnetic property of the material change? Why?

Evaluation:

1. List down five (5) materials found at your home that can be attracted to magnets.

# CLEAN THIS MESS!

## Activity 5.2

### Day 2-3

#### LESSON CONCEPT:

Magnets can be used in separating magnetic and non-magnetic materials. Magnetic separation is a process wherein magnetically susceptible materials are extracted from a mixture using a magnetic force. This technique is useful in industries such as in mining and coin making.

**TIME:** 2 class periods

#### MATERIALS:

Picture of scrap metal yard  
Various sample of small metal sheets

#### PROCEDURES:

##### Day One

1. You will be divided into four groups in which you will be asked to perform specific activity.
2. Read and answer the Scenario card that will set the problem of your activity. Share your answer to the class.

##### Scenario Card

##### Introduction

Congratulations, you have just been hired by the recycling company to streamline their sorting process. And, by streamline a sorting process, it means you have a room full of metal (show picture of scrap metal) that you need to sort into valuable steel, and considerably less valuable aluminum.

They must be able to answer: What are some ways to separate the steel from the Aluminum? List it down here.

3. Read the Challenge Card. It will tell you of the problem and your answers will be presented in different form:

Group 1 – Drawing/ Poster  
Group 2 – Dramatization  
Group 3 – Song  
Group 4 - Poetry

**Challenge Card:**

**Challenge:** You have been hired to run a recycling plant and put in charge of the valuable steel processing division. Unfortunately, the previous manager did not know the difference between aluminum and steel—he piled the room for valuable steel products full of considerably less valuable aluminum cans. You must come up with a method for retrieving the steel from the aluminum cans so that it can be properly processed and you can earn the money you were hired to bring into the recycling plant and conserve the earth's natural resources.

4. You will prepare your presentation for the rest of the period.

**Day Two – Presentation Period**

1. You will evaluate and assign grade to other group's presentation using the rubrics that your teacher will present. Use the attached Rubrics in evaluating.

**Guide Questions:**

1. What method did you show in your presentation to separate metals (steel from aluminum)? Why?
2. What possible problem will you encounter if that is used in reality (considering other factors like costing, manpower, efficiency etc.)?
3. Can you suggest a better way than what your group has presented to separate steel in the scrap metal yard?

# FILTRATION CHALLENGE

## Activity 5.3

### Day 4-5

#### LESSON CONCEPT:

**Filtration** is the process of separating suspended solid matter from a liquid, by causing the latter to pass through the pores of some substance, called a filter. The liquid which has passed through the filter is called the filtrate. The filter may be paper, cloth, cotton-wool, asbestos, slag- or glass-wool, unglazed earthenware, sand, or other porous material.

**TIME:** 2 class periods

#### MATERIALS:

Two liters (2L) of water prepared in advance with soil and sand in it  
3 test tubes prepared with the water standards "A," "B" and "C"  
Coffee filter  
Cotton balls  
Gauze squares  
Graduated cylinders  
Gravel / aquarium pebbles  
Paper towel  
Plastic containers/cups  
Sand  
Tissue

#### PROCEDURES:

1. You are asked to design methods to filter water using ordinary materials, while also considering the designs' material and cost efficiencies.
2. Your teacher will provide the two liters of dirty water and the water standards "A," "B" and "C" tubes.
3. Listen to the instructions of your teacher for the challenge:

You have been hired by ACE Water Supply Company. With the ongoing drought in the province, not enough water is available for all the things we need to supply – people, animals and plants. You will be given a sample of the dirty water that has remained in the province, and the standard for water testing "A," "B" and "C." A is nearly ready for human use, B is nearly ready for animal use, and C is nearly ready to water the plants. You will be paid for their supply of filtered water: A gets Php10 per mL, B gets Php5 per mL, and C gets Php1 per mL.

**Remember that you should not taste the water given.**



4. You must complete the worksheet to make sure that you understand the activity purpose, and to help you think about the components of engineering design.
5. Gather the needed materials that your teacher will give you.
6. Draw schematics of the layers of the filtration process you made. Once completed, your teacher will give you 50 ml of the dirty water to begin to filter in their plastic cups/container.
7. Once filtering is complete, ask from your teacher the test tubes A, B and C for observation. Decide if the water is A, B or C grade and measure the sample of filtered water in a graduated cylinder. Compute for the peso value of the filtered water sample and write it on the board.

## WORKSHEET

Name:

Section:

Date:

### **Identifying Design Components of the Filtration Design Challenge**

Worksheet No.1

- 1) What is the goal of the design challenge?
- 2) What are things to be considered when designing a water filter?
- 3) How can you determine the success of your design?
- 4) Illustrate your Filtration Design.

Guide Questions:

1. What is the best filtering agent in this activity? Why?
2. What other ways can we use to purify our water?
3. If you were to design a filtering package, how would you design it and what materials would you use? Draw your design.

Evaluation:

1. Compare and contrast your own filter design and the commercially available water filter devices. You may use concept map or diagram.

### Grading Rubric for Poster Presentation

	<b>Excellent</b> <b>4</b>	<b>Good</b> <b>3</b>	<b>Needs Improvement</b> <b>2</b>	<b>Poor</b> <b>1</b>	<b>Score</b>
<b>Content</b>	Content is accurate and all required information is presented in a logical order.	Content is accurate but some required information is missing and/or not presented in a logical order, but is still generally easy to follow.	Content is questionable. Information is not presented in a logical order, making it difficult to follow.	Content is inaccurate. Information is not presented in a logical order, making it difficult to follow.	
<b>Presentation</b>	Presentation is logical and it flows well. Presentation reflects extensive use of tools in a creative way.  Each member's information is represented and identified with their name.	Presentation flows well. Tools are used correctly  Each member's information is represented and identified with their name. Overall presentation is interesting.	Presentation is unorganized. Tools are not used in a relevant manner. It lacks some of the members' information/ and or information is not identified	Presentation has no flow. Information is insufficient and lacking some of the member's information.	
<b>Pictures, Clip Art Background</b>	Images are appropriate.  Layout is pleasing to the eye.	Images are appropriate. Layout is cluttered.	Images are inappropriate or layout is messy.	No images	
<b>Mechanics</b>	There are no spelling errors and grammar errors. Text is in authors' own words.	There are few spelling errors and grammar errors. Text is in authors' own words.	There are some spelling errors and grammar errors. Most of text is in authors' own words.	There are many spelling and /or grammar errors. Text is copied.	
<b>TOTAL</b>					

### Grading Rubric for Song Presentation

	<b>Excellent 4</b>	<b>Good 3</b>	<b>Needs Improvement 2</b>	<b>Poor 1</b>	<b>Score</b>
<b>Content</b>	Content is accurate and all required information is presented in a logical order.	Content is accurate but some required information is missing and/or not presented in a logical order, but is still generally easy to follow.	Content is questionable. Information is not presented in a logical order, making it difficult to follow.	Content is inaccurate. Information is not presented in a logical order, making it difficult to follow.	
<b>Presentation</b>	Presentation is logical and it flows well. Presentation reflects extensive use of tools in a creative way.  Each member's information is represented and identified with their name.	Presentation flows well. Tools are used correctly  Each member's information is represented and identified with their name. Overall presentation is interesting.	Presentation is unorganized. Tools are not used in a relevant manner. It lacks some of the members' information/ and or information is not identified	Presentation has no flow. Information is insufficient and lacking some of the member's information.	
<b>Performance</b>	Student performs very well and is well-prepared.	Student performs well and is mostly prepared.	More preparation would have improved student's performance.	Student performs poorly and was obviously unprepared.	
<b>Accuracy</b>	The song accurately matches the problem-solution.	The song matches the problem-solution.	Song strays from the problem-solution.	Song does not match problem-solution.	
<b>TOTAL</b>					

### Grading Rubric for Poetry Presentation

	<b>Excellent 4</b>	<b>Good 3</b>	<b>Needs Improvement 2</b>	<b>Poor 1</b>	<b>Score</b>
<b>Content</b>	Content is accurate and all required information is presented in a logical order.	Content is accurate but some required information is missing and/or not presented in a logical order, but is still generally easy to follow.	Content is questionable. Information is not presented in a logical order, making it difficult to follow.	Content is inaccurate. Information is not presented in a logical order, making it difficult to follow.	
<b>Presentation</b>	Presentation is logical and it flows well. Presentation reflects extensive use of tools in a creative way.  Each member's information is represented and identified with their name.	Presentation flows well. Tools are used correctly  Each member's information is represented and identified with their name. Overall presentation is interesting.	Presentation is unorganized. Tools are not used in a relevant manner. It lacks some of the members' information/ and or information is not identified	Presentation has no flow. Information is insufficient and lacking some of the member's information.	
<b>Performance</b>	Student performs very well and is well-prepared.	Student performs well and is mostly prepared.	More preparation would have improved student's performance.	Student performs poorly and was obviously unprepared.	
<b>Accuracy</b>	The poem accurately matches the problem-solution scenario.	The poem matches the problem-solution scenario.	Poem strays from the problem-solution scenario.	Poem does not match problem-solution scenario.	
<b>TOTAL</b>					

### Grading Rubric for Dramatization

	<b>Excellent</b> <b>4</b>	<b>Good</b> <b>3</b>	<b>Needs Improvement</b> <b>2</b>	<b>Poor</b> <b>1</b>	<b>Score</b>
<b>Content</b>	Content is accurate and all required information is presented in a logical order.	Content is accurate but some required information is missing and/or not presented in a logical order, but is still generally easy to follow.	Content is questionable. Information is not presented in a logical order, making it difficult to follow.	Content is inaccurate. Information is not presented in a logical order, making it difficult to follow.	
<b>Presentation</b>	Presentation is logical and it flows well. Presentation reflects extensive use of tools in a creative way.  Each member's information is represented and identified with their name.	Presentation flows well. Tools are used correctly  Each member's information is represented and identified with their name. Overall presentation is interesting.	Presentation is unorganized. Tools are not used in a relevant manner. It lacks some of the members' information/ and or information is not identified	Presentation has no flow. Information is insufficient and lacking some of the member's information.	
<b>Performance</b>	Student performs very well and is well-prepared.	Student performs well and is mostly prepared.	More preparation would have improved student's performance.	Student performs poorly and was obviously unprepared.	
<b>Accuracy</b>	The play accurately matches the problem-solution scenario.	The play matches the problem-solution scenario.	The play strays from the problem-solution scenario.	The play does not match problem-solution scenario.	
<b>TOTAL</b>					

## DRY IT UP!

### Activity 6.1

#### Day 1

#### LESSON CONCEPT:

Evaporation is the processes of changing the phase of liquid water to water vapor. This can also be used in separating a mixture of an insoluble material from one which is soluble like the mixture of water, sand and salt.

**TIME:** 1 class period

#### MATERIALS:

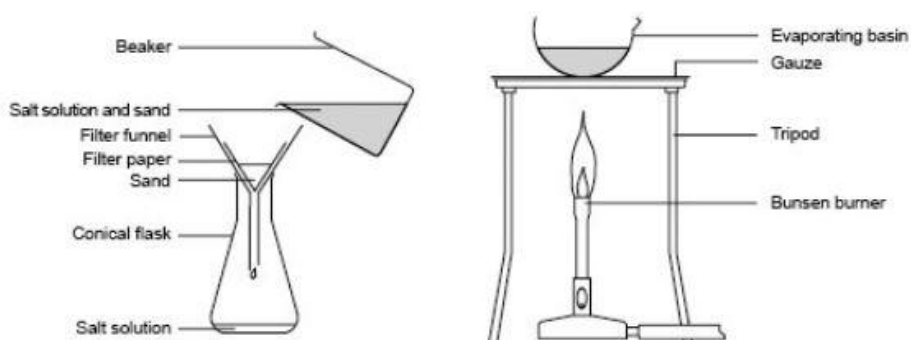
Beaker (250 mL)	Filter paper
Bunsen burner or alcohol lamp	Mat
Conical/Erlenmeyer flask (25 ml)	Salt
Evaporating basin	Sand
Filter funnel	Water
Wire gauze	
Stirring rod	
Tripod	

#### PROCEDURES:

1. Gather all the needed materials.
2. Pour the sand-salt mixture into the beaker so that it just covers the base. Add about 50 mL of water, or add water until the beaker is about one-fifth full. Stir the mixture gently for a few minutes.
3. Filter the mixture into a conical flask.
4. Pour the filtrate into an evaporating basin.
5. Heat the salt solution gently until it starts to decrepitate ("spit").

**CARE:** Keep eye protection on and do not get too close.

6. Note the time it takes for the water to completely evaporate.
7. Turn off the Bunsen burner and let the damp salt dry in the dish.



Guide Questions:

3. Describe the mixtures of water, salt and sand?
4. Which between the salt and sand dissolved in water?
5. How long did it take for the water to evaporate completely?
6. Do you think filtration is necessary to separate the components of the mixture? Why or why not?

Evaluation:

2. Give five (5) common materials in your home or school that can be separated from water through evaporation?



# GO AND SEPARATE!

## Activity 6.2

Day 3-4

### LESSON CONCEPT:

In this lesson, students explore how knowledge of the properties of objects (mainly size) can be useful in separating mixtures. Students cooperate as engineers to solve a real world problem. Given a container filled with water mixed with soil, Styrofoam, pebbles, and leaves, students use a variety of filtering tools to create a cleaner water sample.

**TIME:** 2 class periods

### MATERIALS:

Bins or boxes for catching filtered materials  
Broom and dustpan for spills  
Cheese cloth  
Coffee filters  
Container of dried beans  
Container of sand  
Containers of "polluted water" (with Styrofoam, soil, leaves, and pebbles)  
Cotton  
Empty container for mixing dried beans and sand  
Funnels  
Mesh screens with safe edges  
Objects good for sorting by size (e.g. buttons, beans, or blocks)  
Spoons and other scoopers  
Strainers

### PROCEDURES:

1. Listen to the teacher as he/she gives ideas about the activity. He/She will show a container filled with "polluted" water which is a mixture of soil, pebbles, leaves, and Styrofoam.

Scientists use knowledge about separating mixtures to solve real world problems. Humans and other animals need clean water to survive. Sometimes, water can get polluted from litter, oil spills, soil erosion, etc. When water is polluted, often scientists look for ways to clean the water.

2. Get the different filtering materials (strainers, mesh screens with safe edges, cheese cloth, coffee filter, funnel, cotton, spoons, etc.). You are tasked to find a way to separate the components of the mixture to obtain the cleanest water sample you can using the materials provided. After your group has created a plan, you need to sketch the plan, carry out the plan, and record the results.
3. Share the results of your investigations with the rest of the class.

**Worksheet:**

Name:

Section:

Date:

**Go and Separate!**  
**Worksheet No. 1**

Engineers use technology to solve problems. Work as a team to solve the problem below:

Problem:

Help! Some water has become polluted with extra soil, trash, and other materials. Find a way to clean up the water sample you have been given using materials provided by your teacher.

**1. PLAN**

Draw a sketch of your plan for cleaning the water in the space below. Be sure to label your sketch.

**2. TEST**

**3. RESULTS**

Use words and/or pictures to describe what happened after testing out your plan.

Guide Questions:

1. Which strategies and materials obtained the best results? Why?
2. How did the properties of the objects affect how the mixture could be separated?
3. What other kind of filter are you familiar with? Why is it use for specific materials/mixture?
4. Is there any part of the plan you would have changed? Explain.

Evaluation:

1. Can you give industries in your locality that apply different methods of separating mixtures to manufacture their products?

## ACTIVITIES IN THE COMMUNITY INVOLVING SIEVING

### Activity 7.1

#### Day 1

Lesson Concept: Sieving is a form of separating mixtures that can be observed in the different activities in the community like in school, home or kitchen and other set-ups.

Duration: 10 minutes

Materials:

Notebook

Pen

Procedures:

1. Think of the different activities in the different set-up in which sieving is being done.
2. List the activities with the use of the following template. You may add other set-up where sieving is observable.

Table 1. Activities in the community that use sieving

School	Home/Kitchen	Construction Site	Laboratory

3. Answer the following questions.
  - a. In which set-up was sieving done?
  - b. What particular things are being separated through the use of sieving?

Evaluation: What are the importance of sieving in our home? community? school?

## BENEFITS OF SEPARATING MIXTURES THROUGH SIEVING

Activity 7.2

Day 1

Lesson Concept: Separating mixtures through sieving benefit the community.

Duration: 10 minutes

Materials:

Individual Output in Activity 7.1

Manila paper or cartolina

Marking Pen

Procedures:

1. Each member will share output on the previous activity.
2. The group will discuss and consolidate the answers of the members.
3. Brainstorm on the benefits of separating mixtures from products in the community through sieving.
4. Use the following template.

Table 2. Benefits of Sieving in the community

Activities that use sieving	Benefits

5. Answer the following questions.
  - a. What are the different activities in the community that use sieving?
  - b. What are the importance/benefits of sieving in the community?

Evaluation: Give 3 practical applications of sieving in the community.

## ACTIVITIES IN THE COMMUNITY INVOLVING DECANTATION

### Activity 7.3

#### Day 2

Lesson Concept: Decantation is a form of separating mixtures that can also be observed in the different activities in the community like in school, home or kitchen and other set-ups.

Duration: 10 minutes

Materials:

Notebook

Pen

Procedures:

1. List different situations or activities in the community in which decantation can be applied.
2. Use the following template. You may add other set up if necessary where decantation can be observed.

Table 3. Activities in the community that use decantation

School	Home/Kitchen	Construction Site	Laboratory

3. Answer the following questions.
  - a. In which set-up can was decantation done?
  - b. What particular things are being separated through the use of decantation?

Evaluation: What is the importance of decantation in school? home? laboratory?

## BENEFITS OF SEPARATING MIXTURES THROUGH DECANTATION

### Activity 7.4

#### Day 2

Lesson Concept: The community is benefited when decantation as a mean of separating mixtures is involved in different activities.

Duration: 10 minutes

#### Materials:

Individual Output in Activity 7.3  
Manila paper or cartolina  
Marking Pen

#### Procedures:

1. Consolidate the answers of the members in the previous activity.
2. Discuss and brainstorm within the group about the benefits of separating mixtures through decantation.
3. Use the following template.

Table 4. Benefits of activities in the community through decantation

Activities that use decantation	Benefits

4. Answer the following guide questions.
  - a. What are the different activities in the community that use decantation?
  - b. What are the importance/benefits of decantation in the community?

Evaluation: Give 3 practical applications of decantation in the community.

## BENEFITS OF SEPARATING MIXTURES THROUGH DECANTING

Rubric  
Week 7-Day 2

CRITERIA	At Standard	Approaching Standard	Below Standard	TOTAL
	(3)	(2)	(1)	
<b>ACCURACY</b>  Content of the lesson is clearly shown	The team exhibits very clear ideas on the task related to their chosen field.	There are vague ideas on the context of the task and their field of interest.	There are unclear ideas on the context of the task given.	
<b>CREATIVITY</b>  Resourcefulness of the group with sense of uniqueness	It exhibits high value of creativity and uniqueness without compromising all the contents of their output.	It shows enough creativity and uniqueness compromising some of the contents of their output.	It has low value of creativity of the group compromising the essential contents.	
<b>TEAMWORK</b>  Cooperation and involvement of members are revealing	All members are cooperative and took each part that contributed to their success.	Most of the members show involvement.	Very few members take part in the activity.	
<b>PRESENTATION</b>  Clear explanation through presentation skills	They clearly and fully explained new understanding gained in the activity.	They explained some things learned in the activity but not entirely clear.	They were not able to explain important new understanding gained in the activity.	



# BENEFITS OF SEPARATING MIXTURES THROUGH FILTRATION

## Activity 7.5

### Day 3

Lesson Concept: Filtration is a form of separating mixtures that is important in the community.

Duration: 10 minutes

Materials:

Manila paper

Marking Pen

Procedures:

1. Discuss within the group the activities in the community which involve separating mixtures through filtration.
2. Share ideas on how each activity regarding filtration is beneficial to the community.
3. Use the following template in accomplishing the activity.

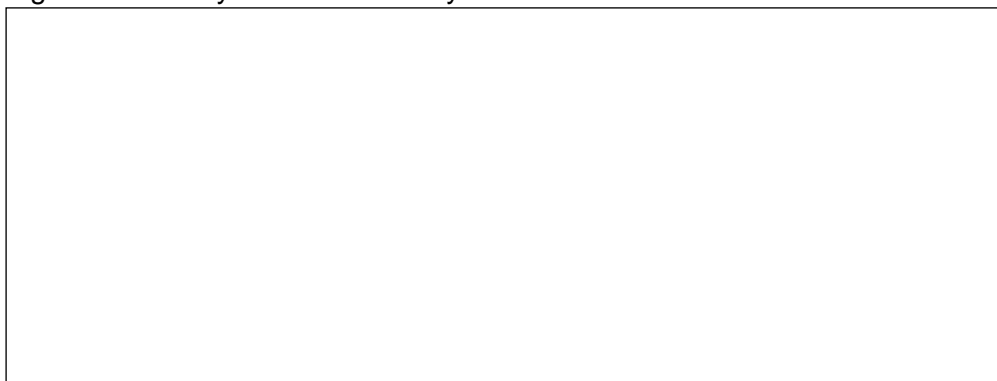
Table 5. Benefits of separating mixtures in the community through filtration

Activities involving filtration	Benefits

4. Answer the following questions.
  - a. What are the different activities in the community that use filtration?
  - b. What are the importance/benefits of filtration in the community?

Evaluation: Illustrate one of the activities in the community that uses filtration.

Diagram 1. Activity in the community that uses filtration



# BENEFITS OF SEPARATING MIXTURES THROUGH EVAPORATION

## Activity 7.6

Day 4

Lesson Concept: Evaporation is a form of separating mixtures that is important in the community.

Duration: 10 minutes

Materials:

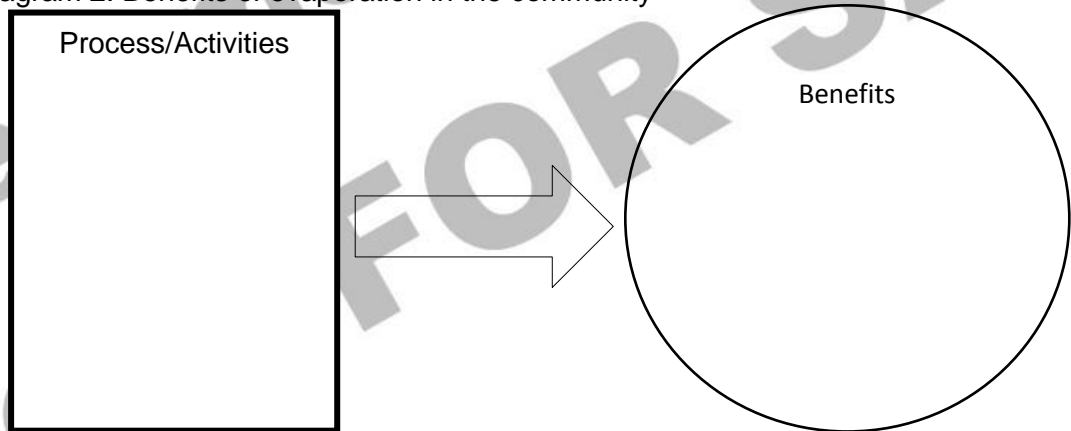
Manila paper

Marking Pen

Procedures:

1. Discuss within the group the activities in the community which involve separating mixtures through evaporation.
2. Share ideas on how each activity regarding evaporation becomes beneficial to the community.
3. In the diagram, write the activities involving evaporation while the benefits at the center.

Diagram 2. Benefits of evaporation in the community



4. Answer the following guide questions:
  - a. What are the different activities in the community that use evaporation?
  - b. What are the importance/benefits of evaporation in the community?

Evaluation: Give 3 practical applications of evaporation.

# BENEFITS OF SEPARATING MIXTURES THROUGH THE USE OF MAGNET

Activity 7.7

Day 5

Lesson Concept: Use of magnet is a form of separating mixtures that is important in the community.

Duration: 10 minutes

Materials:

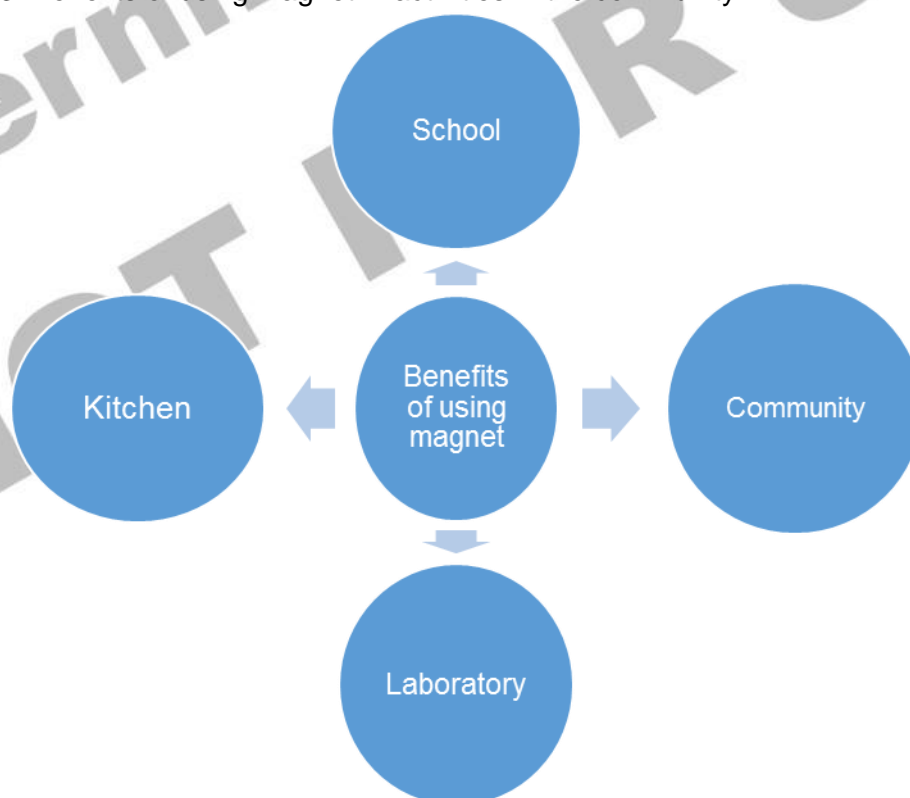
Manila paper

Marking Pen

Procedures:

1. Discuss within the group the activities in the community which involve separating mixtures through the use of magnet.
2. Share ideas on how each activity regarding use of magnet in separating mixtures becomes beneficial to the community.
3. Using the following template, write the activities in the community that use magnetic separation of mixtures and their benefits.

Diagram 3. Benefits of using magnet in activities in the community



4. Answer the following questions.
  - a. What are the different activities in the community that use magnetic separation of mixtures?
  - b. What are the importance/benefits of magnetic separation in the community in terms of separating mixtures?

Evaluation: Give 3 applications of using magnetic separation as means of separating mixtures in the community.

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## BENEFITS OF SEPARATING MIXTURES THROUGH THE USE OF MAGNET

Rubric  
Week 7-Day 5

CRITERIA	At Standard  (3)	Approaching Standard  (2)	Below Standard  (1)	TOTAL
<b>ACCURACY</b>  Content of the lesson is clearly shown	The team exhibits very clear ideas on the task related to their chosen field.	There are vague ideas on the context of the task and their field of interest.	There are unclear ideas on the context of the task given.	
<b>CREATIVITY</b>  Resourcefulness of the group with sense of uniqueness	It exhibits high value of creativity and uniqueness without compromising all the contents of their output.	It shows enough creativity and uniqueness compromising some of the contents of their output.	It has low value of creativity of the group compromising the essential contents.	
<b>TEAMWORK</b>  Cooperation and involvement of members are revealing	All members are cooperative and took each part that contributed to their success.	Most of the members show involvement.	Very few members take part in the activity.	
<b>PRESENTATION</b>  Clear explanation through presentation skills	They clearly and fully explained new understanding gained in the activity.	They explained some things learned in the activity but not entirely clear.	They were not able to explain important new understanding gained in the activity.	

# BENEFITS OF WATER REFILLING STATIONS IN THE COMMUNITY

## Activity 8.1

### Day 1 & 2

**Lesson Concept:** Water refilling stations are facilities that provide clean and potable water that benefit the community. Different forms of separating mixtures can be observed in water refilling stations.

**Duration:** 10 minutes

**Materials:**

Manila Paper  
Paper  
Pen

**Procedures:**

1. With your group, analyze the problem or scenario below.
2. List the things that you know and what do you still want to know about the scenario or problem.
3. List essential questions about the problem/scenario.
4. Discuss within the group the problem and answers to the listed questions.
5. If necessary, as additional activity/assignment, validate the answers through immersion or interview of a person from a water refilling station.
6. Meet with the team again to further analyze the problem given to you by infusing ideas gained from the interview.

**Problem/Scenario:** *Your relative would like to establish a water refilling station in your barangay which needs to be discussed first with the officials and your neighbours. Your relative asked you to give him some suggestions on how he would explain the importance or benefits of having this facility in the barangay aside from economic purposes. What would you suggest to him?*

**Guide Questions:**

- a. How did your group find the problem? Was it easy or difficult?
- b. What challenges did you encounter when dealing and answering the problem?
- c. How did you address the issues/challenges?
- d. Did you revisit/review your answers? If you did, which aspect/s did you revisit/review?

**Evaluation:** Give at least one practical application of ways on how to separate mixtures that is used in water refilling stations?

# BENEFITS OF MINING AND QUARRYING IN THE COMMUNITY

Activity 8.2

Day 3 & 4

Lesson Concept: Mining and quarrying involve processes that use separation of mixtures which are considered also as beneficial to the community.

Duration: 10 minutes

Materials:

Manila Paper  
Paper  
Pen

Procedures:

1. With your group, analyze the problem or scenario below.
2. List the things that you know and what you still want to know about the scenario or problem.
3. List essential questions about the problem/scenario.
4. Discuss within the group the problem and answers to the listed questions.
5. Conduct additional research on the benefits of the different techniques of separating mixtures on mining and quarrying in your community.
6. Meet the team again to further analyze the problem given to you by infusing ideas gained from the interview.

***Problem/Scenario: The mining/quarrying company that has been operating in your barangay is facing an issue. Even though they have permit to operate, the residents are concerned about its bad effects to the environment. You know that there are advantages of having this company in your barangay. How will you inform your neighbors about the benefits of having the company in your community?***

7. Answer the following questions.
  - a. How did your group find the problem? Was it easy or difficult?
  - b. What challenges did you encounter when dealing and answering the problem?
  - c. How did you address the issues/challenges?
  - d. Did you revisit/review your answers? If you did, which aspect/s did you revisit/review and why?

Evaluation: What processes of separating mixtures that are used in mining and quarrying?

## RUBRIC FOR OUTPUT IN PROBLEM BASED-LEARNING (PBL)

Week 8-Day 5

Phases of Accomplishing PBL Scenario	At Standard (3)	Approaching Standard (2)	Below Standard (1)	TOTAL
<b>ACCURACY</b> Analysis of the scenario/problem	Members exhibit very clear ideas on the problem/scenario.	There are vague ideas on the context of the scenario or problem.	There are unclear ideas on the context of the scenario or problem.	
<b>CONTENT</b> Inputs to the problem by gathering/sharing of ideas	More/enough ideas known are given about the problem/scenario.	Few ideas known are given about the problem/scenario.	Very few ideas known are given about the problem.	
<b>RELEVANCE</b> Development of essential questions related to the problem/scenario	Questions show very close relationship with the scenario/problem that encourages quality discovery of solutions.	Questions show little relationship with the scenario/problem.	Questions show very little relationship with the scenario/problem.	
<b>PRESENTATION</b> Presenting Products/Answers to the bigger/driving question	They clearly and fully explained new understanding gained in the activity.	They explained some things learned in the activity but not entirely clear.	They were not able to explain new important understanding gained in the activity.	



# **BENEFITS OF FOOD PRODUCTION/PREPARATION IN THE COMMUNITY**

Activity 9.1

Day 1 & 2

Lesson Concept: In food production or preparation, some techniques in separating mixtures are being used. Food production or preparation is important in the community.

Duration: 10 minutes

Materials:

Manila Paper  
Paper  
Pen

Procedures:

7. With your group, analyze the problem or scenario below.
8. List the things that you know and what do you still want to know about the scenario or problem.
9. List essential questions about the problem/scenario.
10. Discuss within the group the problem and answers to the listed essential questions.
11. If necessary, as additional activity/assignment, validate the answers through interviewing a person inclined with cooking or in food production or preparation.
12. Meet the team again to further analyze the problem given to you by infusing ideas gained from the interview.

***Problem/Scenario: Your younger sibling would like to ask for your help on how he/she will cook "ginataang manok" as part of their activity in their cooking lesson in EPP. If you were a culinary arts graduate, what processes or steps will you tell him/her?***

13. Answer the following questions.
  - e. How did your group find the problem? Was it easy or difficult?
  - f. What challenges did you meet upon dealing and answering the problem?
  - g. How did you address the issues/challenges?
  - h. Did you revisit/review your answers? If you did, which aspect/s did you revisit/review?

Evaluation: Give 3 examples of processes of separating mixtures observed in food production or preparation

## BENEFITS OF HERBAL MEDICINES PRODUCTION/PREPARATION IN THE COMMUNITY

Activity 9.2

Day 3 & 4

Lesson Concept: Some techniques in separating mixtures are being used in the production or preparation of herbal medicines which are important to the community.

Duration: 10 minutes

Materials:

Manila Paper

Paper

Pen

Procedures:

8. With your group, analyze the problem or scenario below.
9. List the things that you know and what do you still want to know about the scenario or problem.
10. List essential questions about the problem/scenario
11. Discuss within the group the problem and answers to the listed essential questions.
12. Conduct additional researches on the benefits of production of herbal medicines to the community in relation to its processes dealing with separating of mixtures.
13. Meet the team again to further analyze the problem given to you by infusing ideas gained from the interview.

***Problem/Scenario: Your father works as a call center agent in a company. He always complain about his hoarse voice everytime he comes home. He knew that making a ginger tea would help him soothe his throat. What suggestions or steps can you give him in preparing the mentioned herbal tea? Focus on the important processes of separating mixtures?***

14. Answer the following guide questions.
  - e. How did your group find the problem?
  - f. What challenges did you meet upon dealing and answering the problem?
  - g. How did you address the issues/challenges?
  - h. Did you revisit/review your answers? If you did, which aspect/s did you revisit/review and why?

Evaluation: How do processes of separating mixtures observed in food production help the community?

## RUBRIC FOR OUTPUT IN PROBLEM BASED-LEARNING (PBL)

Week 9-Day 5

Phases of Accomplishing PBL Scenario	At Standard (3)	Approaching Standard (2)	Below Standard (1)	TOTAL
<b>ACCURACY</b> Analysis of the scenario/problem	Members exhibit very clear ideas on the problem/scenario.	There are vague ideas on the context of the scenario or problem.	There are unclear ideas on the context of the scenario or problem.	
<b>CONTENT</b> Inputs to the problem by gathering/sharing of ideas	More/enough ideas known are given about the problem/scenario.	Few ideas known are given about the problem/scenario.	Very few ideas known are given about the problem.	
<b>RELEVANCE</b> Development of essential questions related to the problem/scenario	Questions show very close relationship with the scenario/problem that encourages quality discovery of solutions.	Questions show little relationship with the scenario/problem.	Questions show very little relationship with the scenario/problem.	
<b>PRESENTATION</b> Presenting Products/Answers to the bigger/driving question	They clearly and fully explain new understanding gained in the activity.	They explained some things learned in the activity but not entirely clear.	They were not able to explain new important understanding gained in the activity.	

# BENEFITS OF WASTE SEGREGATION IN THE COMMUNITY

Activity 10.1

Day 1 & 2

Lesson Concept: In waste segregation some techniques in separating mixtures are being used thus making it important in the community.

Duration: 10 minutes

Materials:

Manila Paper  
Paper  
Pen

Procedures:

1. With your group, analyze the problem or scenario below.
2. List the things that you know and what do you still want to know about the scenario or problem (KWL Chart).
3. List essential questions about the problem/scenario
4. Discuss within the group the problem and answers to the listed essential questions.
5. If necessary, as additional activity/assignment, validate the answers through interviewing a person who works as a garbage collector.
6. Meet the team again to further analyze the problem given to you by infusing ideas gained from the interview.

***Problem/Scenario: You are an officer of the YES-O in your school. One of the organization's income-generating projects is selling of garbage that can be reused or recycled. How would you gather the garbage and pile them properly?***

7. Answer the following questions.
  - a. How did your group find the problem?
  - b. What challenges did you meet upon dealing and answering the problem?
  - c. How did you address the issues/challenges?
  - d. Did you revisit/review your answers? If you did, which aspect/s did you revisit/review and why?

Evaluation: Give some processes of separating mixtures that are used in waste segregation.

## RUBRIC FOR OUTPUT IN PROBLEM BASED-LEARNING (PBL)

Week 10-Day 3

Phases of Accomplishing PBL Scenario	At Standard (3)	Approaching Standard (2)	Below Standard (1)	TOTAL
<b>ACCURACY</b>  Analysis of the scenario/problem	Members exhibit very clear ideas on the problem/scenario.	There are vague ideas on the context of the scenario or problem.	There are unclear ideas on the context of the scenario or problem.	
<b>CONTENT</b>  Inputs to the problem by gathering/sharing of ideas	More/enough ideas known are given about the problem/scenario.	Few ideas known are given about the problem/scenario.	Very few ideas known are given about the problem.	
<b>RELEVANCE</b>  Development of essential questions related to the problem/scenario	Questions show very close relationship with the scenario/problem that encourages quality discovery of solutions.	Questions show little relationship with the scenario/problem.	Questions show very little relationship with the scenario/problem.	
<b>PRESENTATION</b>  Presenting Products/Answers to the bigger/driving question	They clearly and fully explain new understanding gained in the activity.	They explained some things learned in the activity but not entirely clear.	They were not able to explain new important understanding gained in the activity.	